

ANNUAL REPORT OF THE COMMISSIONER OF PATENTS

VOL. 1 1856

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34TH CONGRESS, }
3d Session. }

SENATE.

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{ No. 53.

REPORT

OF THE

COMMISSIONER OF PATENTS

FOR THE YEAR 1856.

U. S. Patent Office
ARTS AND MANUFACTURES,

IN THREE VOLUMES.

VOLUME I.

WASHINGTON:
A. O. P. NICHOLSON, PRINTER.
1857.

IN THE SENATE OF THE UNITED STATES, *February 17, 1857.*

Resolved, That there be printed, in addition to the usual number, twenty-seven thousand copies of the Annual Report of the Commissioner of Patents on Arts and Manufactures for the year 1856—two thousand copies of which shall be for the use of the Commissioner of Patents, for the purposes of official distribution.

Attest:

ASBURY DICKINS, *Secretary.*

PATENT OFFICE,
Washington, February 5, 1857.

SIR: I have the honor to transmit herewith, to be laid before Congress, my annual Report for the year 1856, as required by the 14th section of the act of 3d March, 1837.

I have the honor to be, very respectfully, your obedient servant,

C. MASON,
Commissioner of Patents.

Hon. JAS. M. MASON,
President Senate United States.

CONTENTS.

I.—COMMISSIONER'S REPORT.

	Page.
Receipts and expenditures.....	1
Business of the Office.....	2

II.—LISTS OF EXPIRED PATENTS.

Alphabetical list of persons whose patents for inventions or discoveries have expired during the year 1856.....	8
Alphabetical list of persons whose patents for designs have expired during the year 1856	21
Classified list of patents for inventions that have expired during the year 1856.....	22
Classified list of patents for designs that have expired during the year 1856.....	45

III.—LISTS OF PATENTS ISSUED.

Alphabetical list of persons to whom patents for inventions and discoveries have been granted during the year 1856.....	47
Classified list of patents for inventions granted during the year 1856.....	157
I.—Agriculture, including implements and operations.....	157
II.—Metallurgy and manufacture of metals.....	167
III.—Manufacture of fibrous and textile substances	175
IV.—Chemical processes, manufactures, and compounds.....	181
V.—Calorifics, comprising lamps, stoves, &c	186
VI.—Steam and gas engines.....	191
VII.—Navigation and maritime implements	195
VIII.—Mathematical, philosophical, and optical instruments.....	198
IX.—Civil engineering and architecture.....	200
X.—Land conveyance	204
XI.—Hydraulics and pneumatics	209
XII.—Lever, screw, and other mechanical power.....	213
XIII.—Grinding-mills and mill-gearing	215
XIV.—Lumber, including machines and tools for preparing and manufacturing.....	216
XV.—Stone and clay manufactures	223
XVI.—Leather, including tanning, dressing, and manufacture.....	226
XVII.—Household furniture, machines and implements for domestic purposes.....	228
XVIII.—Arts polite, fine, and ornamental	233
XIX.—Fire-arms and implements of war.....	237
XX.—Surgical and medical instruments	240
XXI.—Wearing apparel, including implements for manufacturing	241
XXII.—Miscellaneous	242

	Page.
Extensions granted during the year 1856	244
Disclaimers entered during the year 1856.....	245
Additional improvements granted during the year 1856.....	246
Reissues granted during the year 1856	247
Patents for designs granted during the year 1856.....	251

IV.—DESCRIPTIONS AND CLAIMS.

Descriptions and claims of patents for inventions and discoveries issued during the year 1856.....	257
I.—Agriculture, including implements and operations.....	257
II.—Metallurgy and manufacture of metals.....	350
III.—Manufacture of fibrous and textile substances.....	432
IV.—Chemical processes, manufactures, and compounds.....	495
V.—Calorifics, comprising lamps, stoves, &c.....	534
VI.—Steam and gas engines.....	582
VII.—Navigation and maritime implements.....	621

REPORT

OF THE

COMMISSIONER OF PATENTS,

FOR THE YEAR 1856.

UNITED STATES PATENT OFFICE,
January 31, 1857.

SIR: The condition of this office remains nearly the same as at the time of my last annual report. The business has been constantly increasing, but the force employed has thus far been found adequate to its prompt and thorough discharge.

The number of cases in the office undisposed of at any one time throughout the year would probably average about one hundred. At the end of the year it was only forty. It is hardly practicable to have less unfinished business awaiting the action of the office at one time, or to dispose of applications more promptly than has been done with most of the classes of cases during the past year.

The following tables, continued from previous reports, will show, in a brief and general way, many important facts connected with the business of the office, and also in respect to its present condition.

No. 1.

Statement of moneys received at the Patent Office during the year 1856.

Received on applications for patents, reissues, additional improvements, and extensions, and on caveats, disclaimers, and appeals.....	\$177,965 00
Received for copies, and for recording assignments.....	14,615 02
Received for old sash	8 00
Total.....	\$192,588 02

No. 2.

Statement of expenditures from the Patent Fund during the year 1856.

Salaries, including \$6,695 28 allowed by act of Congress August 18, 1856....	\$86,626 11
Additional compensation, per act of April 22, 1854.....	2,382 65
Temporary clerks.....	36,834 45
Contingent expenses.....	31,271 52
Payments to judges in appeal cases	225 00
Refunding money paid into the treasury by mistake.....	198 00
Refunding money on withdrawals.....	42,393 29
Total.....	\$199,931 02

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Refunding money on withdrawals.....	42,393 29
Total.....	\$199,931 02

No. 3.

Statement of the Patent Fund.

Amount to the credit of the Patent Fund on the 1st of January, 1856.....	\$62,512 54
Amount paid in during the year.....	192,588 02
Total.....	255,100 56
From which deduct amount of expenditures during the year.....	199,931 02
Leaving in the treasury on the 1st January, 1857.....	\$55,169 54

No. 4.

Table exhibiting the business of the office for sixteen years, ending December 31, 1856.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
1841	847	312	495	\$40,413 01	\$22,065 87
1842	761	291	517	36,505 68	31,241 49
1843	819	315	531	35,315 81	30,776 96
1844	1,045	380	502	42,509 26	36,344 73
1845	1,246	452	502	51,076 14	39,395 65
1846	1,272	448	619	50,264 16	46,158 71
1847	1,531	533	572	63,111 19	41,878 35
1848	1,628	607	660	67,576 69	58,905 84
1849	1,955	595	1,076	80,752 78	77,716 44
1850	2,193	602	995	86,927 05	80,100 95
1851	2,258	760	869	95,738 61	86,916 93
1852	2,639	996	1,020	112,056 34	95,916 91
1853	2,673	901	958	121,527 45	132,869 83
1854	3,324	868	1,902	163,789 84	167,146 32
1855	4,435	906	2,024	216,459 35	179,540 33
1856	4,960	1,024	2,502	192,588 02	199,931 02

It appears from these statements that the disbursements for the past year have been \$7,343 greater than the receipts. This deficiency is chiefly owing to the fact that, by an item in the Civil and Diplomatic Appropriation Bill of the last session of Congress, extra compensation, amounting to \$6,695 28, was allowed to certain of the assistant examiners and clerks in the Patent Office for services rendered prior to the 4th of March, 1855. But for this allowance—which cannot at all events be regarded as a legitimate expenditure for the year 1856—the disbursements would have exceeded the revenue only \$647 72.

The foregoing tables also show that the business of the office has increased during the year in about the usual proportion. There have been 525 more applications, 118 more caveats, and 478 more patents than in 1855.

It will be seen that the patents have increased in a much greater ratio than the applications; in other words, there have been proportionally fewer rejections than during the previous year. This is pro-

bably attributable in a very great degree to progress made (both in and out of the office) in the knowledge of the proper principles and rules in accordance with which patents should be granted or refused. If perfection were attained in this respect, and if the condition of arts and inventions throughout the world were also thoroughly understood by both agents and examiners, there would be no rejections at all. The applicant and the examiner would come to one and the same conclusion. Disagreement would be as impossible as in an arithmetical calculation. Hence, every advance made in that direction tends to diminish the difference between the number of applications and the number of patents.

The following table will show how the number of patents in the United States compares with those of England and France for several years past:

Year.	England.		United States.		France.
	Patents.		Application for patents.	Patents granted.	Patents.
1846.....	493		1,272	619	2,088
1847.....	493		1,531	572	2,150
1848.....	388		1,628	660	853
1849.....	514		1,955	1,676	1,477
1850.....	513		2,193	995	1,687
1851.....	355		2,258	869	1,836
1852.....	469				
.....					
1852.....	Amendment act.		2,639	1,020	2,469
	Applications for provisional protection.	Patents passed thereon.			
.....					
1853.....	1,211	914			
1854.....	3,045	2,185	2,673	958	3,111
1855.....	2,764	1,876	3,324	1,902	3,492
1855.....	2,958	2,044	4,435	2,024	4,056

The number of patents issued from this office has now grown to exceed those granted by the English office, and the number of applications is greater than are made to that of France. In those two countries there is no examination of applications in the manner practised here, and nearly all patents applied for are granted.

Most of our present laws and regulations relative to patents have been derived from England, and it is probable that other features of their system might be studied with advantage as a means of improving our own.

One of these is the provisional protection or temporary patent for six months. This is somewhat in the nature of our caveat, but, if modified so as to be adapted to our system, would be found an improvement upon our present practice.

A caveat under our law only operates prospectively. It prevents the office from issuing a patent on any application made within one year

subsequent to the filing of the caveat without first giving the caveator a chance to be heard. But if an application for the self-same invention had been made one day previous to such filing, no notice whatever would be taken of the caveat. The very person employed to prepare the papers for the caveat, if sufficiently unscrupulous, can make an application himself for a patent for the same invention. If he anticipates the filing of the caveat by a single day, he may, at a subsequent date, obtain a patent of which there is now no power in this government to deprive him, until it has run its full length of fourteen years. Such a circumstance is known to have actually occurred in this office.

If, instead of a caveat, which only operates upon applications subsequently made, a provisional protection had been allowed which would apply to any case pending in the office, a six months' protection of this kind would be far preferable to a twelve months' caveat.

This protection might be allowed to issue as a matter of course, to be kept secret at the option of the applicant, who would receive a certificate showing his right to a provisional protection. After obtaining such protection, no patent for substantially the same invention should be allowed to issue to any other applicant, whether prior or subsequent in date of its being filed, without giving the holder of that protection an opportunity to show his superior title to such patent. And if, before the expiration of the provisional protection, an application were made by the holder thereof for a full patent, such patent, if allowed, might at the option of the applicant be dated and made to relate back to any day of the six months of the provisional protection, as is the case in England.

It might perhaps be deemed expedient to declare that no person should be made liable for the infringement of the provisional protection without being actually notified of its existence; but even with that qualification it would be a great safeguard of the rights of the inventor, and would prevent many outrageous wrongs for which our present law affords no protection or remedy.

Another feature of both the English and French regulations is, that the patent fee is paid by instalments, thus allowing the patentee, in effect, to surrender his patent whenever he finds it is of less value than the instalments still unpaid. A large majority of the patents are worthless.

The course pursued in England and France permits the inventor to feel his way by degrees, venturing from step to step, with the power of retreating at any moment he feels inclined to do so.

For instance, in England the applicant, in the first place, obtains a provisional protection for six months. This affords him time to perfect his invention, protects him in the mean time against piracy, and gives him an opportunity to satisfy himself to some extent whether it will be prudent for him to venture further. If so, he gives public notice of his intention to that effect; and if no opposition is then made, his patent issues as a matter of course, taking date, at his option, on any day of the six months of his protection.

If, before the end of three years from the date of his patent, he chooses to pay the further fee fixed by law, his patent possesses vitality

for four years longer; and if, before the end of that term, he pays another prescribed fee, the patent is continued for seven years more.

In this manner the revenues of the Patent Office are paid in a larger proportion than under our practice by those who derive most advantage from their patent, and can therefore best afford to pay them. If the same regulation existed here, the fee paid in the first instance might, in such cases, be reduced to a much smaller sum, in order to produce a given revenue, than under the present system. But the greatest advantage presented by such a regulation is, that it would wipe out of being at an early stage of their existence a large proportion of patents which are worthless and unused, and only stand in the way of other inventors.

During nine months prior to the first day of July, 1853, two thousand and forty-seven patents were issued by the English office. The fee necessary to prolong the existence of each of these, after the end of three years from its date, was only paid on 619 of the number, leaving 1,428 to expire at the end of three years.

Under our system, these would all have continued in existence for the whole fourteen years. The majority would have been valueless, and only have served as a clog upon other inventors, inasmuch as many meritorious and useful inventions, subsequently made, might be found so far to interfere with some of those worthless patents that the former could not be used, without paying tribute to the owners of the latter.

A French patent is granted for fifteen years, but becomes void upon a failure to pay a certain annual duty. A very small percentage of them ever continue their existence throughout the whole period of fifteen years.

It has been stated in the public prints that of the 2,088 patents issued in France in 1846 less than three hundred remain in force ten years afterwards, the rest having been swept away by the regulation requiring annual instalments of the patent duty.

These payments are inconveniently frequent in France, and perhaps are more numerous in England than would be deemed expedient; but with proper modifications the principle which lies at the bottom of these regulations has much to recommend it, and might, it is believed, be advantageously adopted by us.

Something in the nature of the English writ of *scire facias* might also with advantage be incorporated into our law. At present there is no power in this country to repeal a patent under any circumstances. Although the very day after it has issued it should be ascertained that the invention was pirated by the patentee from the real inventor, or although, for any other cause, the patent may have been erroneously granted, it must remain in existence the whole period of fourteen years. It is true in these cases the patent would be invalid, and, if granted to the wrong person, another patent may be issued to the real inventor; still the invalid patent is allowed to exist, and may be made productive of much mischief, enabling the holder to impose upon the public either by the sale of a worthless patent, or by extorting money for permission to use the invention, which most persons would pay in preference to engaging in litigation with the holder of a patent

issued in pursuance of the statute, and allowed by law to continue its existence.

Another regulation of the English patent office which deserves to be imitated is that by which all the patents that are issued are directed to be printed separately, and sold at prices which will merely defray expenses.

I regard such an arrangement as being in an eminent degree useful and desirable for the following among other reasons:

It would enable the office to furnish complete copies of any patent, including the drawings, for one-tenth part of what they cost at the present time. It would afford the means of placing a copy of all the patents wherever they are needed for the convenience of the office or of the public, instead of having only one single copy, as at present, for all to refer to, which is wanted often by two or more persons at the same time, and which becomes worn out, so as to require to be re-written after the end of a few years. It would be a great source of economy in another particular, as the mechanical reports of this office might thus be abridged in a very great degree, as nothing further would be necessary in the annual reports than to make a complete and full analytical index of all the patents that had been issued through the year. If, in addition to what is above suggested, a copy of all the patents for the year, with the drawings attached, were deposited in the office of the clerk of each district court of the United States, nothing further in this respect would seem to be requisite. The reports would point out the general nature of the inventions made within the year; whoever desired to obtain more minute information as to any particular case could, for a few dimes, obtain from the Patent Office a complete specification and drawing of the invention, and every State would be furnished with at least one complete copy of all the patents, deposited in the very place where it could be found most useful and convenient for the purpose of reference by litigants or inventors.

To make the system complete, however, a like publication should be made of all previous patents, and also a complete analytical index of the whole. This would indeed be a work that would be worthy of the office and of the country. I feel a strong desire and a confident hope that this work will soon be commenced and consummated with all convenient despatch.

Some of the other regulations of the English and French offices are of more doubtful expediency. Among these is the entire dispensing with all examinations, such as are made in this office. Such examinations are, doubtless, productive of much good. But at the same time I think it by no means certain that this portion of our official action is placed precisely upon the correct footing. I am every year yielding more and more to the conviction that the decisions of the office in reference to patentability should not be peremptory, but merely advisory, and that some system like that suggested in my last annual report might, with great advantage, be substituted for that now in force.

But radical changes should be made with caution, and upon the clearest convictions that such changes will prove salutary. I am, therefore, hardly prepared to urge such alterations at once. But I

feel firmly impressed with the belief that we shall come to this result at last, and that the right of an inventor to protection will not be left to the arbitrary determination of any officer under the government.

The propriety of changes in the rate of patent fees has been urged upon the attention of Congress in several of the last annual reports, and nothing new suggests itself to my mind on that subject at present.

Fully confident that the changes recommended would prove salutary, and that a rate somewhat increased over that now in existence is actually necessary to enable the office to effect completely the purposes for which it was established, the favorable consideration of Congress is again invited to this subject.

All which is respectfully submitted.

CHARLES MASON.

Hon. N. P. BANKS, Jr.,

Speaker of the House of Representatives.

ALPHABETICAL LIST OF PERSONS WHOSE PATENTS HAVE EXPIRED
DURING THE YEAR 1856, WITH THEIR INVENTIONS OR DISCOVERIES,
AND CLASS.

No.	Patentee.	Invention or discovery.	Class.
2490	Adams, John J.	Brushes, manufacturing	17
2820	Adams, John J.	Glass, window, flattening and tempering	15
44	Adams, John J.	Glass, window, flattening	Reissue.
2559	Adams, Lemuel	Churn	1
2660	Adams, Samuel	Blacking for leather	4
2440	Aiken, Herrick	Excavating ditches	9
2877	Alden, Timothy	Pens, metallic	18
2709	Aldrich, Elisha F.	Constructing ships' boats, &c., to be propelled by steam, &c.	7
2597	Allen, Horatio	Valves, cut-off, for steam engines	6
2723	Allen, Otis	Oakum picking	3
2568	Allen, Stephen M.	Chimney cowl	5
2427	Allen, Stephen M.	Stove, air-tight	5
43	Allen, Timothy	Rivets for coopers	Reissue.
40	Andrews, Ebenezer. (See Austin Packard.)		
2671	Archer, Ellis S.	Lamps, lard	5
2435	Armstrong, Martin N.	Cutlery, cleaning and polishing	2
2580	Arnold, Alonzo C.	Punching machine for the manufacture of covered buttons	2
2607	Atwood, Anson	Stoves, cooking	5
	Austin, Frederick J.	Inking type, machine for	Addit'l imp'ts.
	Austin, Stephen. (See Austin Packard.)		
2698	Ayres, Frederick J.	Nails, cutting, machinery for	2
2472	Ayres, Abraham	Spark arrestors and consumers	6
2801	Babbitt, Benjamin T., Shuler C. Higbee, and Peter W. Plantz.	Pumps and fire engines	11
	Bachelder, Lorenzo and Samuel H.	Seeding, seed planters	Addit'l imp'ts.
2484	Bacon, Jonathan	Springs for carriages	10
2644	Baird, Archibald H.	Lamps, lard	5
2654	Baker, William	Wood, manufacturing, to be used as a substitute for curled hair in stuffing beds	14
2776	Baker, William	Hinges, window blinds, and fastenings	2
2718	Baldwin, Cyrus B.	Corn shellers	1
2759	Baldwin, Matthias W.	Steam engines, locomotive, constructing, by which they adapt themselves to the curves and undulations of the road	6
2725	Baldwin, Stephen K.	Pegs, shoe, machine for cutting	14
2562	Ball, Daniel	Bedstead fastening	17
2809	Ball, Jonathan	Segars, making	22
2565	Ball, William	Padlocks	2
	Ball, William. (See E. H. Roper.)		
2761	Banks, Thomas	Tires, putting on wheels of railroad cars	10
2699	Bartholomew, Moses	Stoves, cooking, elevated ovens with	5
2512	Bartlett, Cromwell K.	Excavating, ditching, embanking, and draining prairie lands, &c.	9
2515	Bartlett, Cromwell K.	Plough, prairie land	1
2469	Bartlett, Sylvanus	Press, cheese	12
2418	Batchelder, Henry	Flue contractors or chimney valves, for fireplaces and grates	5
2647	Bates, Issachar, Asa Wood, and David Wells.	Cultivator	1
2477	Bates, Stephen, and George Titcomb.	Propelling boats and extinguishing fires	7
2543	Bauder, Charles L.	Chair, rocking	17

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2682	Bazin, James A.	Seraphines, improvement in	18
2585	Beach, William	Roofing, cast-iron	9
2669	Beale, Joshua T. and Benjamin.	Steam engine, rotary	6
2536	Beard, Josiah, and Abram Whitney.	Loom, temples for	3
2702	Beckwith, Amasa B.	Water-wheel	11
2710	Beebe, William	Stoves, cooking	5
	Beeson, Zachariah. (See Isaac N. Lesh.)		
2643	Benson, John, Ezekiel Page, and Richardson T. Hough.	Sawing boards into oars for rowing boats	14
2880	Benton, Benjamin H.	Surveying instruments	8
2626	Bergen, Cornelius	Plough	1
2741	Bigelow, Erastus B.	Loom-power, weaving counterpanes, &c.	3
2744	Bigelow, Erastus B.	Loom-power, weaving counterpanes, &c.	3
2625	Bigelow, Erastus B.	Loom, weaving carpets, &c.	3
2639	Bigelow, Erastus B.	Loom, weaving carpets, &c.	3
2653	Bigelow, Erastus B.	Loom, weaving counterpanes, &c., manner of mounting	3
2819	Bingham, Albert	Lock or latch, check-bolt of	2
2513	Bird, Josiah N., and Edward D. Weld.	Smut machine, for cleaning grain	1
2716	Birely, Valentine	Mill, bark, grain, &c., grinding	13
2419	Bishop, Seth	Butter, working, machines for	1
2892	Bishop, Thomas	Filters	11
2494	Blaisdell, Stephen	Matches, friction, ignitable compound	4
2577	Blake, Lemuel W., and George W.	Water-wheel	11
2802	Boardman, Luther	Spoons, casting, forming moulds for	2
2850	Boesch, John W.	Roofs, metallic, rendering water-tight	9
2861	Booth, Edwin	Bee-hives	1
2595	Bossert, Charles, and John Scho-macker.	Pianoforte	18
2538	Bosworth, Zephaniah	Stoves, air-tight	5
58	Botts, Charles T.	Straw cutter	Addit'l imp'ts.
2753	Bouton, Alexander M., and Andrew Perry.	Steam engine, changing reciprocating into rotary motion	6
2859	Bowler, Joshua S.	Boots and shoes	16
2661	Bowles, Jesse	Threshing machine	1
2540	Brady, Sam.	Cultivator	1
2434	Bragg, Appleton	Propelling boats by endless chains of paddles	7
3492	Branson, John, jr.	Excavating, ditching, and embanking, scraper for	9
2569	Brereton, John	Ranges, cooking	5
2857	Brewer, Richard	Furnace tuyeres	2
2734	Briggs, Elisha	Fence pickets, &c., turning	14
2770	Briggs, Joseph, jr.	Engine, fire	11
2847	Brooks, Oliver, and James A. Sloan.	Hats, cassimere	3
2542	Brown, Charles, and Francis S. Crans.	Mowing, cutting and cleaning grain	1
2687	Brown, Christopher F.	Gas metres	4
2479	Brown, Lorenzo D.	Paper sizing	3
2462	Brown, Robert S.	Buttons, forming, worked on the heads, handles, &c., of whips	16
52	Brown, Robert S.	Buttons, forming, worked on the heads, handles, &c., of whips	Addit'l imp'ts.
2789	Brown, Samuel G.	Spark arrestors	6
2450	Brundage, Henry C.	Garments, measuring instruments	21
2852	Bruner, J. H., & R. H. Thompson.	Barrels and other cooper's ware, machine to be used in combination with improved iron hoops in the manufacture of	14

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2711	Brunier, Louis.....	Hydraulic machines.....	11
2830	Brunier, Louis.....	Steam engine, reacting, &c.....	6
2890	Bryant, William.....	Beehives.....	1
2750	Buck, Erastus.....	Stoves, cooking.....	5
2771	Buckalew, James.....	Spikes, brads, and nails, clinching.....	2
2507	Bullock, S. W.....	Press, cotton, hay, &c.....	12
61	Barnham, George.....	Inkstands.....	Addit'l imp'ts.
2686	Burnham, Hiram.....	Spinning, twisting, and kinking hair.....	3
	Burnham, Sylvester E. (See Ransom Cook.)		
2581	Burrows, Joseph H.....	Millstones.....	13
2619	Carbonel, Antoine.....	Brick press.....	15
2591	Carbonel, Antoine.....	Moulds, sugar making.....	15
	Card, William F. (See Esau Whitney.)		
2561	Card, William J.....	Surveys, instruments for plotting.....	8
2635	Carleton, George W.....	Matches, friction, improvement in.....	4
	Carlile Jonathan. (See Aaron Francis.)		
2894	Carpenter, Luman.....	Copying machines.....	18
2514	Carr, Charles.....	Lamps, argand, spirits of turpentine, &c., burning.	5
2449	Carr, William.....	Windlass, ship's.....	7
2429	Carver, Eleazer.....	Gin roller, for ginning long staple cotton..	3
2745	Casselberry, Evans.....	Clocks, self-winding.....	8
	Caswell, Samuel, jr. (See Chas. Richmond.)		
2812	Chapman, John Lee.....	Hydrants.....	11
2845	Chase, A. Ralston.....	Propelling paddles, buckets, &c.....	7
2511	Chase, Moses.....	Carding and spinning machines.....	3
2461	Chevrier, Louis.....	Spark arrestors.....	6
	Clark, Edward.....	Salts, metallic.....	Extens'n
2676	Clayton, William. (See Sam- uel Guss.)	Carriage lock.....	10
2897	Cleveland, Horace.....	Excavating, ditching, and embanking earth	9
2586	Clinton, Charles.....	Boilers, steam.....	6
2551	Clirehugh, Vair.....	Composition, preparation for the hair.....	4
2875	Clute, Jeremiah, and Jacob Seabury.	Furnace, improvement in.....	2
2521	Coad, Patrick.....	Galvanic battery, &c.....	8
	Coburn, John H. (See Ros- well Douglass.)		
2842	Cochran, John W.....	Furs, process of blowing and cleaning....	3
	Collins, Fitch K. & G. S. (See Chester Stone.)		
	Collins, F. K. & G. S. (See Chester Stone.)		
2816	Conant, Abel.....	Bread, raising.....	17
2672	Connison, Alexander.....	Constructing paddle wheels, and combin- ing the same with steam vessels.	7
2872	Connison, Alexander.....	Steam engine.....	6
2423	Cook, Peter.....	Smut machine, cleaning grain, &c.....	1
2443	Cook, Ransom.....	Cannon, wrought iron and steel.....	19
2444	Cook, Ransom, and Sylvester E. Burnham.	Saw-mill saw, mode of straining.....	14
2623	Cook, Truman.....	Propelling steamboats and other vessels...	7
2807	Cooper, John M.....	Auger for boring earth.....	2
2743	Cooper, Peter, assignee of J. S. Gustin.	Furnace, puddling and refining iron.....	2
36	Copeland, Asa, jr.....	Gin, cotton, ribs.....	Reissue.
2724	Cornell, Abel, and Niram R. Merchant.	Stoves.....	5

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
	Crane, Benjamin. (See John Millholland.)		
	Crans, Francis S. (See Charles Brown.)		
2589	Creasey, Charles A.....	Cocks, manufacture of.....	11
2751	Creighton, John T.....	Lamps, lard.....	5
2804	Crosby, Pearson.....	Saw-mill, portable.....	14
2614	Cummings, Daniel M.....	Shingles, cutting.....	14
2881	Curtiss, Charles W.....	Bedstead.....	17
2655	Dakin, James H.....	Tents, portable.....	22
2576	Danforth, Charles.....	Spinning—cap spinner, mode of driving bobbins in.	3
2575	Danforth, Charles.....	Spinning—cap spinner, oiling spindles and tubes of.	3
2615	Darling, Samuel, 2d.....	Saw-mill, arranging the saw gate and fen- der posts of.	14
2783	Dauvergne, Peter L.....	Gold washing.....	2
2777	Davidson, Jesse W.....	Bee-hives.....	1
2826	Davis, Daniel, jr. (See John Plumbe, jr.)	Daguerreotype pictures, coloring.....	18
	Davis, Frederick. (See Levi Magers.)		
2602	Davis, George W., and George.	Steam engine, conducting off the steam from the cylinder.	6
2674	Day, Ebenezer.....	Clapboards, laths, staves, &c., cutting....	14
	Deardoff, Jacob. (See Isaac N. Lesh.)		
2765	Degen, Francis.....	Hats, setting or ironing brims of.....	3
2529	Delano, Howard.....	Plough, revolving, cutter for.....	1
	Denny, William H. (See Jno. J. Doane.)		
2558	Detmold, Christian Edward, as- signee of Wilhelm von Faber Du Faur.	Furnace, &c., heating.....	2
2781	Deville, F.....	Wigs.....	21
2519	Dexter, Henry.....	Sculptors, apparatus for, &c.....	18
2630	Dibble, Maria P.....	Supporters, umbilical, combined with cor- sets.	20
2840	Dick, John.....	Boots and shoes.....	16
2719	Dickinson, David B.....	Safes for preserving meats, &c.....	17
2606	Diehl, Samuel.....	Water-wheel.....	11
2863	Doane, John J., and William H. Denny.	Coal sifters.....	5
	Dobbs, Geo. (See Uel West.)		
2790	Domini, John.....	Sails, measuring, instrument for.....	7
2489	Douglass, Roswell, assignee of John H. Coburn.	Loom, weavers' shuttles.....	3
2895	Douglass, Wm. and Benjamin.	Pumps.....	11
2883	Dowell, William.....	Wigs.....	21
2891	Downer, Andrew O.....	Lock and latch-knobs, fastening to their spindles, &c.	2
2424	Draper, Francis.....	Lamps, glass, caps of.....	5
2464	Draper, George.....	Loom, power, rotary temples for.....	3
	Dukehart, Wm. (See Levi Magers.)		
2757	Dnrkee, Joseph.....	Water-wheel.....	11
2579	Durling, James.....	Flouring mills, combining a smut machine with the scouring stones.	13
2574	Duxbury, Caleb and Jas. Nield.	Loom, power.....	3
2658	Dyott, Michael B.....	Lamps, essential oils, burning.....	5
2627	Easterly, James.....	Grates, open.....	5
2578	Eastlack, Edwin, and Joseph A. Miller.	Gate, self-acting waste.....	11

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2454	Easton, Thomas S.	Explosion of boilers, preventing	6
2846	Easton, Thomas S.	Explosion of boilers, preventing	6
53	Easton, Thomas S.	Explosion of boilers, preventing	Add'l imp'ts.
41	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
42	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
46	Easton, Thomas S.	Explosion of boilers, preventing	Re-issue.
2764	Eley, Solomon M., and David N. Phelps.	Steam engine, rotary	6
2808	Eckler, James.	Spark arrestors	6
2535	Edday, Charles C.	Vinous fermentation	4
62	Edday, Charles C.	Vinous fermentation	Add'l imp'ts.
2772	Emmons, William.	Spikes, &c., clinching	2
	English, William. (See George T. Tate.)		
2533	Etzler, John A.	Navigating and propelling vessels by wind and waves.	7
2786	Eunson, Robert G.	Steam engine, discharging water and air from condensers of.	6
2795	Evans, Cadwallader.	Boilers, steam, applying a float to regu- late the height of water in.	6
	Evarts, Harry H. (See Peck- ham H. Green.)		
2888	Ewbank, Thomas. (See Jor- dan L. Mott.)	Chimney caps.	5
2560	Fahnestock, A. K.	Brick press	15
2835	Fahrney, Samuel.	Smut-machine, separating garlic from wheat.	1
2633	Farnam, Daniel H.	Bee-hives	1
	Farnum, Roswell. (See Wil- liam Jones.)		
2425	Fay, Jerub A.	Mortising timber	14
2884	Fentriss, Frederick	Washing machine	17
2740	Ferre, Moses.	Buttons, &c., forming collets, washers, &c.	21
2870	Ferris, Peter	Ink, black, making	4
	Field, Joshua. (See Joseph Maudslay.)		
	Fleming, Joseph. (See Webb Wallace.)		
2649	Flickinger, Daniel, and Sebas- tian Krim.	Smut machine, cleaning grain	1
2696	Flint, Thomas.	Loom, power, weaving carpets, &c.	3
2520	Folger, Aaron.	Lamps and reflectors of light-houses, ar- ranging, &c.	5
2636	Foot, Elisha, jr.	Stoves, regulating the draft in	5
2849	Foster, Matthew S.	Teeth, improvement in setting	20
2853	Foster, William.	Shingles, cutting	14
2715	Fowler, John.	Bedstead, fastening	17
2862	Francis, Aaron, and Jonathan Carlile.	Bee-hives	1
2667	Freed, Abraham.	Saddles, spring	16
2493	French, Aramus.	Knitting stockings, &c.	3
2666	French, Ira, assignee of May- nard French.	Stoves, rotary top	5
2701	Frew, Samuel.	Telegraphs	8
2889	Fry, John P.	Flax and hemp, braking	3
2611	Fry, Samuel.	Press, cotton	12
2555	Gardiner, P. G.	Press, cotton, hay, &c.	12
2537	Garfield, Samuel, sr., assignee of Thomas W. Harvey.	Mowing—scythes, fastening the nibs of...	1
2864	Geisendorff, J. C., G. W. & C. E.	Flax and hemp, cleaning and dressing....	3
2553	Gilbert, David H.	Paper, &c., applying paste or sizing to sheets of, in process of making cards.	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2742	Gilbert, John S.	Dock, floating dry	9
2900	Gilmore, John T.	Waterwheel, inclined	11
2486	Gilroy, Clinton G. (See Jere- miah Wilbur.)	Loom	3
2603	Goodwin, Roderick.	Churn	1
2763	Grannis, John.	Lamps, lard	5
	Grannis, Sidney S. (See Howe.)		
	Grant, Wm. (See Jas. Kerr.)	Loom harness, wire heddles	Reissue.
2833	Gray, Albert W.	Horse-power, endless chain	13
2485	Green, Peckham H., & Harry H. Evarts.	Steam engine, rotary, propelled by water or steam.	6
2466	Greenough, J. J.	Sewing or stitching all kinds of straight saws.	16
2621	Greenwood, Miles, assignee of George E. Sellers.	Latch and lock, gravitating combined, for doors.	2
2610	Greenwood, Miles, assignee of George E. Sellers.	Latch, door, right and left	2
2433	Gregg, John.	Air, condensing apparatus for, &c.	6
2532	Gregg, Mahlon.	Metal, plates or sheets of, cutting	2
2455	Grimes, William C.	Spark arrestors	6
2441	Griswold, Jesse.	Barrels of guns and fire-arms, manner of combining.	19
2760	Grout, John R.	Brakes of railroad cars, machinery for operating.	10
2645	Grumman, Elijah.	Bee-hives	1
2876	Grylls, John.	Capstans, or windlasses, ships', and cable stoppers.	7
2824	Guilford, Simeon.	Iron, sheet, manufacturing	2
2735	Guiteau, Calvin.	Salt works, improvement in	4
2676	Guss, Samuel, assignee of Wm. Clayton.	Brake or lock for arresting the motion of spring carriages.	10
2743	Gustin, John S. (See Peter Cooper.	Furnace, puddling and refining iron	2
	Guyon, Henry G.	Press, lever	Disclai'r
2768	Hall, Alfred.	Brick press	15
2704	Hamilton, James.	Saw-mill gates for curvilinear sawing....	14
2810	Hanks, Stedman W.	Stoves	5
2769	Harding, Robert.	Press, cotton, hay, &c., toggle joint	12
2839	Harlacher, Jacob.	Carriages, disengaging horses from	10
2832	Harn, William H.	Tenons, cutting	14
59	Harrison, Joseph, jr.	Car, railroad, &c.	Add'l imp't
2782	Hart, Alexander H.	Shingles, cutting	14
2537	Harvey, Thos. W. (See Sam'l Garfield.)	Mowing, nibs for scythes	1
2505	Hatch, Nathaniel.	Composition, rendering cloth water-proof.	4
2867	Haupt, Henry Y., and Abra- ham, jr.	Kiln for drying grain	5
2500	Hawkins, Thomas. (See Jas. G. Wilson.)	Shears, tailors'	21
2471	Hean, John.	Flour, bolting and dressing	13
2677	Hedge, Lemuel, and Edwin F. Johnson.	Saw-mill	14
2837	Hersching, John.	Gas-meters	6
2814	Herch, Zachariah R.	Bee-hives	1
2616	Hendrick, Benj. W., and Horace	Loom, weaving	3
2531	Henning, George.	Saw-mill dog, self-setting	14
2860	Henry, Robert H.	Wheels, felloes of carriage, machinery for shaping the inner side of.	10
2481	Herrick, Hiram H.	Shingles, cutting	14
2775	Hicks, Lucien E., and Thomas Miner.	Baths, medicated vapor	20

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2594	Hidden, Enoch, inventor in part with, and assignee of Samuel Sawyer. Higbee, Shuler C. (See Benjamin T. Babbitt.)	Cannon locks.....	19
2442	Hill, Selah.....	Dock, floating dry.....	9
2692	Hiser, Henry.....	Bee-hives.....	1
2800	Hilt, Daniel F.....	Churn.....	1
2496	Hoagland, John V. L.....	Spark arrestors.....	6
	Hobbs, Alfred C. (See Wm. S. Thompson.)		
2754	Hodges, Alexander, agent of New England Screw Company, assignee of Cullen Whipple.	Screws, wood, cutting threads of.....	2
2685	Hodges, Jonathan.....	Spark arrestors.....	6
2504	Hodgman, Daniel.....	Shoes, over.....	16
2656	Hoe, Richard M.....	Metallic surfaces, particularly saw-plates, grinding and polishing.	2
2629	Hoe, Richard M.....	Printing-press, double cylinder.....	18
2508	Holmes, William.....	Windlass and capstan, method of working ships.	7
2564	Homer, Daniel.....	Horse shoes for the relief and cure of hoof-bound horses.	2
2823	Hoover, Henry, assignee of Martin Stoner.	Cutting vegetables, &c.....	17
2678	Hopkins, Lansing E.....	Boilers, steam and generators.....	6
2641	Horn, Benjamin H.....	Lamps, lard.....	5
2413	Horn, Edwin B.....	Lamps.....	5
63	Horn, Edwin B.....	Lamps.....	Addit'l imp't.
2451	Hort, Benjamin S.....	Screening and sifting coals.....	5
	Horton, William F. (See Austin W. Sharp.)		
	Hough, Richardson T. (See John Benson.)		
2691	Houghton, Joel.....	Plough-beams.....	1
2599	Howd, Samuel B.....	Water-wheel.....	11
39	Howe, Abraham and Sidney S. Grannis.....	Loom harness, wire heddles.....	Reissue
2620	Hull, Nathan.....	Plough.....	1
2834	Humphrey, John.....	Veneers, &c., cutting from the circumference of a log.	14
54	Hungerford, Josiah.....	Truss.....	Addit'l imp'ts.
2792	Hunt, Marshall J.....	Plough, cultivating.....	1
2737	Hunter, Jacob Van Reed.....	Furnace, smelting iron.....	2
2487	Hunter, William W.....	Navigation, steam, by which the submerged propeller is made to operate as an air-pump and condenser.	7
2856	Iba, William, assignee of Caspar Kittinger.	Veneering curved surfaces.....	14
2549	Ingalls, Elias F.....	Cutting leather into soles.....	16
2544	Irvine, David.....	Saddles.....	16
2785	Jacobs, William L.....	Pumps.....	11
2608	James, Theodorick J.....	Gin-saw, for ginning cotton.....	3
2690	Jenkins, Oliver.....	Drawers, improvement in.....	17
2554	Johnson, Arthur L.....	Window-shutters, or guards.....	9
	Johnson, Edwin F. (See Lemuel Hedge.)		
2475	Johnson, John C.....	Spark arresters.....	6
2446	Joly, Charles.....	Water-wheel, &c., adjustable boxes, &c.....	11
2731	Jones, Alexander.....	Gin, cotton, saw-cylinder for.....	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2458	Jones, A. B., assignee of William H. Jones.	Silk, reel for reeling.....	3
2525	Jones, H. C.....	Padlocks for mail-bags, &c.....	2
2618	Jones, James.....	Bee-hives.....	1
2727	Jones, Thomas L.....	Propelling and steering boats, &c.....	7
2896	Jones, William, and Roswell Farnum.	Steam engine, rotary.....	6
	Jones, William H. (See A. B. Jones.)		
2588	Keagy, Abraham, and Michael Shimer.	Spark arrestors.....	6
2556	Kellogg, Salvin F.....	Stoves, air-heating.....	5
2480	Kelly, John.....	Horse power, endless chain.....	13
2670	Kelly, William.....	Steam engine.....	6
50	Kelsey, James E., and James A. Potter.	Press, cotton.....	Addit'l imp'ts.
2612	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	7
56	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	Addit'l imp'ts.
47	Kerr, James, William Grant, and John Potter.	Vessels' lining, constructed of sheet-iron..	Reissue.
2663	Kilburn, Wells.....	Seeding, seed planters.....	1
2457	Kinney, Avery.....	Shingles, cutting.....	14
2601	Kintzi, George.....	Carriages, releasing horses from.....	10
2856	Kittinger, Casper. (See William Iba.)	Veneering machine.....	14
2415	Knipe, James.....	Bedstead, fastening.....	17
2730	Knowland, Joseph, and Jacob F. Krim, Sebastian. (See Daniel Flickinger.)	Garment measuring instruments.....	21
2422	Kropff, Frederick C.....	Furnace, smelting, constructing.....	2
2825	Laing, John.....	Propelling boats, &c., segmental spiral propellers.	7
2838	Lake, Andrew.....	Strabismus, goggles for.....	20
2546	Lamb, William.....	Water wheel.....	11
2829	Landis, Edmund.....	Truss.....	20
2689	Langdon, Barnabas.....	Plough.....	1
2726	Lansing, Eli B.....	Water wheel.....	11
2799	Lawrence, Isaac R.....	Horse-power, endless chain.....	13
2478	Leach, Harvey.....	Bridge, manner of crossing rivers, &c., by means of a moving platform suspended to a.	9
2831	Learned, Charles.....	Flax and hemp, cleaning and heckling...	3
2652	Learned, Samuel.....	Staves, dressing, for barrels, casks, &c.	14
2755	Leavitt, Daniel.....	Loom, securing the bobbin in shuttles for weaving.	3
2854	Lee, John.....	Lamps, lard.....	5
	Lee, Milo. (See Ebenezer Wilson.)		
2570	Lee, Stephen S.....	Lamps, hydro-pneumatic.....	5
2693	Lesh, Isaac N. & Silas W., Jacob Deardorff, and Zachariah Beeson.	Steam generator, improvement in.....	6
2463	Lewis, James.....	Spark arrestors.....	6
2545	Lighthall, William A.....	Steam engine, marine.....	6
2758	Lindley, Noah H.....	Churn.....	1
2523	Loud, Thomas.....	Pianoforte, shifting movement for square or horizontal.	18
2640	L'Veret, Peter F.....	Garments, measuring instrument.....	21
2788	Lyon, Charles.....	Composition, water-proof.....	4
2502	Macgregor, James, jr.....	Bomb, subterranean or mine.....	19
2541	Mackay, James.....	Composition for the hair.....	4
2683	Magers, Levi, Frederick Davis, and Wm. Dukehart.	Cocks, stop, for hydrants.....	11

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2604	Maltby, Benjamin K. (See Jesse Neal.) Maltby, Benj. K. (See Jesse Neal.)	Lamp.....	5
2460	Mandell, David J.....	Ink-stands, manufacture of.....	18
2600	Marsh, Ebenezer.....	Candles, manufacture of.....	4
2657	Martine, Caleb.....	Press, cotton, hay, &c.....	12
2668	Mason, David H.....	Tanning by machinery.....	16
2650	Mason, John.....	Cultivator for vines.....	1
2668	Maudslay, Joseph, and Joshua Field.	Steam engine, marine.....	6
2746	McGrew, Alexander.....	Wind-mills.....	11
2688	McManaway, John C.....	Furnace, refining, iron.....	2
2796	McMillen, William.....	Flax and hemp, braking and cleaning....	3
	Merchant, Niram R. (See Abel Cornell.)		
2844	Merriam, T. P.....	Composition for preserving leather.....	4
38	Merrick, Solyman.....	Wrench, screw.....	Reissue.
2836	Miles, William.....	Water wheel, current.....	11
2592	Milholland, John, and Benjamin Crane.	Bee-hives.....	1
	Miller, Henry. (See Wm. A. Ronald.)		
	Miller, Joseph A. (See Edwin Eastlack.)		
2705	Miller, William H.....	Clasps for pantaloons straps, &c.....	21
	Miner, Thomas. (See Lucien E. Hicks.)		
2550	Mitchell, Reuben.....	Heating buildings.....	5
2694	Montrop, L.....	Tallow, rendering.....	4
2476	Morris, John.....	Cutting meat and other substances.....	17
	Morse, Lemuel. (See Benjamin R. Stevens.)		
2882	Moseley, Peter.....	Corn rows, &c., laying off.....	1
2887	Mott, Jordan L.....	Chimney caps.....	5
2888	Mott, Jordan L., assignee of Thomas Ewbank.	Chimney caps.....	5
2503	Mott, Jordan L.....	Stoves, cooking, tubular, &c.....	5
2465	Mulford, John H.....	Escapement of watches.....	8
2806	Munson, Sylvester.....	Shingles, cutting.....	14
2817	Murdock, Richard.....	Bonnets, &c., machinery for pressing....	3
37	Murray, Alexander J.....	Press, cotton, &c.....	Reissue.
2459	Murray, James & William.....	Corn and corn-cobs, breaking and grinding	13
2420	Myers, Lawrence.....	Statues, casting, method of.....	18
2712	Myers, Samuel.....	Plough.....	1
2604	Neal, Jesse, part inventor with and assignee of B. K. Maltby.	Lamps, lard.....	5
60	Neal, Jesse, part inventor with and assignee of B. K. Maltby.	Lamps, lard.....	Addit'l imp'ts.
2778	Nelson, George.....	Stoves.....	5
2574	Nield, Jas. (See Caleb Duxbury.)	Looms, power.....	3
2681	Norris, H. Ariel.....	Boring and tapping water and other pipes, while under hydrostatic pressure.	11
2794	Norris, H. Ariel.....	Boring, tapping, and reaming water pipes, under hydrostatic pressure.	11
45	Norris, H. Ariel.....	Boring and tapping water pipes, under hydrostatic pressure.	Reissue.
2793	Northrup, Joel G.....	Printing press.....	18
2784	Norton, Hiram L.....	Plough.....	1
55	Olds, Calvin.....	Seeding, seed-sower, or corn planter.....	Addit'l imp'ts.
2828	Oliver, Ebenezer.....	Traps for rats, &c.....	22

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
48	Orr, Isaac.....	Stove, air-tight.....	Reissue.
2497	Osborne, John J., assignee of William H. Porter.	Anchors.....	7
2646	Osborne, Marmaduke.....	Felting for coats, hats, &c.....	3
2470	Otto, Henry C.....	Paint, white, mode of preparing.....	4
40	Packard, Austin, assignee of E. Andrews and S. Austin.	Stove, cooking.....	Reissue.
2642	Packard, Otis.....	Furnaces, cooking, and air-heating.....	5
2483	Packard, Otis.....	Heating buildings, apparatus for.....	5
	Page, Ezekiel. (See John Benson.)		
2818	Pagett, William C.....	Plough, shovel.....	1
2518	Parker, Edmund.....	Latch-thumb, for doors.....	2
2495	Parker, Joseph J.....	Steam engine, rotary.....	6
2662	Parks, Stephen, jr.....	Valves, cut off for steam engines.....	6
2879	Parsons, James, jr.....	Plough, combined.....	1
2474	Paulsen, Herman G. C.....	Glue, manufacture of.....	4
	Perry, Andrew. (See Alexander M. Bouton.)		
2811	Perry, Enoch W.....	Lamps, wick tubes for.....	5
2878	Peters, Warner L.....	Mortising and tenoning machine.....	14
2506	Petree, David.....	Stoves, Franklin, burning coal.....	5
2516	Pettibone, Daniel.....	Lamps, argand, volatile materials, burning.	5
	Phelps, David N. (See Solomon M. Eby.)		
2851	Phillips, Philetus.....	Stoves.....	5
2426	Piggott, Robert.....	Geography and astrography, apparatus for teaching.	8
2822	Pitts, James.....	Shearing satinets and other woolen cloths.	3
	Plantz, Peter W. (See Benjamin T. Babbitt.)		
2826	Plumbe, John, jr., assignee of Daniel Davis, jr.	Daguerreotype pictures, coloring.....	18
2437	Pomeroy, Ralph.....	Steam engine.....	6
2752	Porter, Parry W.....	Press, cotton.....	12
2497	Porter, William H. (See John J. Osborne.)	Anchors.....	7
	Potter, James A. (See James E. Kelsey.)		
	Potter, John. (See James Kerr.)		
2815	Potts, John H.....	Sausage machine.....	17
2517	Pratt, Henry.....	Steam engine, rotary, propelled by steam, water, &c.	6
2530	Pratt, Joel, 3d.....	Bedstead sofa.....	17
2416	Quilliard, Claude S.....	Furnace, &c., reverberatory.....	2
2467	Ralston, Andrew.....	Threshing machine and winnowing grain.	1
2488	Read, Jonathan.....	Reaping machine.....	1
2679	Redheffer, William.....	Combs, slitting tortoise-shell for making.	21
2430	Reiley, Thomas W.....	Propelling boats by jets of water.....	7
2637	Remington, John R.....	Engine, pneumatic.....	11
2675	Remington, John R.....	Wind-wheels.....	11
2708	Rich, Reuben.....	Water wheel.....	11
	Richmond, Charles and Samuel Caswell, jr.	Spades & shovels.....	Discl'r.
2721	Rickey, John C.....	Sleighs or sleds, mode of locking.....	10
2713	Riddell, George W.....	Truss.....	20
	Ridgway, William, jr. (See John Stensbury.)		
2563	Ridgway, Jonathan.....	Cocks, stop.....	11
2722	Ridgway, Jonathan.....	Pipes—inserting branch pipes through the ground without excavating.	9
2767	Riley, Salmon C.....	Stove, cooking, utensils for.....	5
2473	Robinson, Enoch.....	Windlasses, or drums for raising weights..	12
2797	Robinson, Geo. W. and Ezra B.	Steering apparatus for vessels.....	7

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2452	Robinson, Geo. W. and Ezra B.	Window-sash, spring fastener	2
2873	Robinson, P.	Lamps, lard	5
2779	Rodgers, Henry	Pumps, liquor	11
2728	Roebbing, John A.	Boilers, steam, gauge, steam safety	6
2720	Roebbing, John A.	Ropes, wire, method of, and machinery for manufacturing	2
2526	Rogers, William A.	Cultivator, cotton	1
2431	Ronald, William A. and Henry Miller.	Composition for dressing leather, to render it water-proof	4
2849	Roper, E. H., and Wm. Ball ..	Padlocks	2
2707	Ross, James E.	Beehives	1
2885	Rowe, Bradford	Boot-crimps	16
2509	Rudd, Daniel	Propelling ships and other vessels	7
2766	Rugg, Micah	Bolts, trimming the heads of	2
2686	Sanford, Joseph H.	Boot-legs, turning	16
2456	Sands, Marcellus	Washboard, for washing clothes	17
2805	Sargent, Charles G.	Wool, combing, machine for	3
	Sawyer, Samuel. (See Enoch Hidden.)		
2499	Sayre, Thomas O.	Stoves, cooking, semi-circular	5
	Schomacher, John. (See Chas. Bossert.)		
	Seabury, Jacob. See (Jeremiah Clute.)		
2590	Seger, Hiram	Garments, measuring and cutting	21
2610	Sellers, George E. (See Miles Greenwood.)	Door-latch	2
2621	Sellers, George E. (See Miles Greenwood.)	Quadrant, bolt and lock	2
2587	Sexton, Samuel B.	Stoves, cooking	5
2865	Share, Philip T.	Steering wheel for vessels	7
2871	Sharp, Austin W., and William F. Horton.	Boilers, steam or generator	6
2893	Shaw, William F.	Lamps	5
2482	Shecut, William H.	Life-preservers, rendering chairs, &c., buoyant	7
2632	Sheetz, Isaac	Sawmill, sawing felloes and other circular stuff	14
2566	Sheffield, John	Sawing boards, setting logs for	14
2659	Shepard, Benjamin	Stoves, culinary and air-heating	5
2886	Sherwood, John P.	Lock, door	2
	Shimer, Michael. (See Abraham Keagy.)		
2527	Shugert, John	Gudgeons, &c., self-oiling box for	13
2631	Sickels, Frederick Elsworth ..	Valves, apparatus for lifting, tripping, and regulating the closing of the valves of steam engines	6
	Sloan, James A. (See Oliver Brooks.)		
2787	Sloan, Thomas James	Shears, tailors'	21
	Smith, John. (See John Taylor.)		
2510	Smith, John C.	Harness, bridles	16
2780	Smith, John C.	Harness, bridles	16
2534	Smith, John H.	Candles, separating stearine from elaine ..	4
2866	Smith, Nathan	Brakes, self-acting for inclined planes ..	10
2439	Smith, William W.	Printing press, construction of	18
2634	Snow, William W.	Furnace, tuyere irons	2
2552	Southwick, Joseph	Tanning by machinery	16
2703	Southworth, Frederick H.	Lamps, lard	5
2827	Southworth, Frederick H.	Lamps, lard	5
2664	Stanley, Henry	Ovens, elevated, valve for	5
2428	Stansbury, John and William Ridgaway, jr.	Oakum, picking, combination of machinery for	3

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2417	Steiger, William T.	Spikes, bolts, nails, and brads, cut and wrought	2
2899	Stellwagen, Henry S.	Sounding instruments	7
2522	Stevens, Benjamin R., and Lemuel Morse.	Daguerreotype impressions, mode of fixing	18
2524	Stevens, Edwin A.	Steam engine, supplying air to the furnaces of	6
2700	Stevens, John Hucks, assignee of C. E. Warner	Splints, match, cutting	14
2821	Stevens, Robert L.	Constructing steam ships, propelling and turning	7
2773	Stevens, Robert L.	Steam engine, locomotive, connecting the driving wheels of	6
2571	Stillman, Richard and Jesse Taylor	Clay, tempering, for bricks	15
2739	Stone, Chester, F. K. Collins, and Geo. S. Collins.	Press, cheese, self-acting	12
2747	Stone, Chester, F. K. Collins, and Geo. S. Collins	Press, cheese, self-acting	12
2823	Stoner, Martin. (See Henry Hoover.)	Cutting vegetables, &c.	17
2749	Stratton, Charles	Shave for getting out wooden hoops, &c. ..	14
2491	Talson, Joseph F.	Springs for railroad truck	10
2714	Tasker, Thomas T.	Hydrants	11
2717	Tate, George T., and William English.	Hemp, breaking and cleaning	3
2732	Taylor, Jesse	Water-wheel	11
	Taylor, Jesse. (See Richard Stillman.)		
2605	Taylor, John, and John Smith.	Napping cloth machine, called cross-napping machine	3
2651	Taylor, Samuel	Loom, brushes for dressing warps	3
2762	Tefft, Jairus S.	Plough	1
2438	Thayer, Augustus	Pumps	11
2774	Thomas, D. V.	Sawmill, setting the foot-block of, &c.	14
	Thompson, R. H. (See J. H. Bruner.)		
2628	Thompson, William S., and Alfred C. Hobbs.	Knobs, glass	2
2572	Timby, Theodore R.	Raising sunken vessels, &c.	7
2613	Timby, Theodore R.	Sleighs, connecting body with runner ..	10
2582	Timby, Theodore R.	Stone, dressing	15
	Titcomb, George. (See Stephen Bates.)		
2624	Tomlinson, Stephen	Carriages, spring-perch for	10
2855	Traband, Alfred	Oils, animal purifying	4
2598	Travor, Philip C.	Propelling boats, &c.	7
2539	Trumbull, Shadrach	Beehives	1
2841	Turner, Isaac W.	Axes, machine for making	2
2869	Tuttle, Robert M.	Lock, door, combination tumbler	2
2748	Valentine, Abram S.	Boilers, steam	6
2736	Valentine, Samuel L.	Water-wheel	11
2898	Valentine, Samuel L.	Water-wheel	11
2798	Van Hoesen, Levi	Loom, weaving fish nets	3
2445	Van Hoesen, William C.	Press, cotton	12
2706	Van Pelt, Abraham	Tanning hides	16
2558	Von Faber du Faur, Wilhelm. (See Christian, Edward Detmold.)		
2421	Waldo, George D.	Smut-machine	1
2695	Walker, Andrew, jr.	Stoves, cooking, heating, and illuminating ..	5
2729	Wallace, Webb, and Joseph Fleming.	Tanning hides by machinery	16
2453	Walter, Lorenzo D. and Jacob.	Screws, bolts, pins, and rivets, making ...	2

Alphabetical list of expired patents—Continued.

No.	Patentee.	Invention or discovery.	Class.
2584	Ward, Foster D.	Saddles	16
2573	Ward, Gilbert S.	Umbrellas	21
2733	Ware, Justin	Mill, grinding all kinds of grain	13
2700	Warner, Chauncey F. (See John Hicks Stevens.)	Splints, match, cutting	14
2803	Warren, Edmund	Straw-cutters	1
2548	Watt, George	Plough	1
2843	Webb, Aug. V. H.	Lamps for volatile materials	5
2697	Webb, Joseph W.	Straw-cutters	1
2547	Welchman, Edward	Resuscitation, apparatus for	20
	Weld, Edward D. (See Josiah N. Bird.)		
2501	Wendt, Hermann	Shears, tailors'	21
2738	West, Uel.	Pipes, conduit coupling	11
2596	West, Uel, and Geo. Dobbs	Cocks, stop	11
2754	Whipple, Cullen. (See Alexander Hodges.)	Screws, wood, cutting threads of	2
2528	White, Rollin	Loom, weaving bolting cloth, mounting and using the harness	3
2673	Whitehead, Jesse	Spinning, regulating the drag of the yarn in the operation of	3
64	Whitehead, Jesse	Spinning, regulating the drag of the yarn	Add'l imp'ts.
2593	Whitin, Nathaniel D.	Cocks, or gas stoppers	11
2436	Whitman, Samuel S.	Mop holders, manner of constructing	17
	Whitney, Abram. (See Josiah Beard.)		
2665	Whitney, Esau & Jacob, and Wm. F. Card	Water-wheel, reaction	11
2557	Wiard, Thomas	Plough	1
2583	Wideman, Samuel	Barrels, &c., chamfering, beveling, and howeling	14
2456	Wilbur, Jeremiah, assignee of Clinton G. Gilroy	Loom, weaving figured and other fabrics	
2414	Wilkinson, Garner	Window blinds	9
2498	Williams, Samuel	Composition, covering the bottoms of vessels	4
2447	Wilson, Ebenezer, and Milo Lee	Butter, working, machines for	1
2500	Wilson, James G., assignee of Thomas Hawkins	Shears, tailors'	21
2684	Wilson, John	Smut machine	1
2617	Wolfsberger, Frederick	Bee-hives	1
	Wood, Asa. (See Issachar Bates.)		
2813	Wood, James, sr., John Wood, and Wm. W. Wood	Iron, sheet, manufacturing	2
2622	Woodard, Abijah	Water-wheel	11
2658	Woodward, Joshua	Cisterns, preventing water from freezing	11
2874	Woodward, Thomas	Pens, metallic	18
2609	Woodward, Thomas	Shielded pins for securing shawls, &c.	2
	Woodworth, Wm. (See Wm. W. Woodworth.)		
	Woodworth, Wm. W.	Planing, tonguing, and grooving	Exten'n
2567	Woolley, Williams	Bedstead for the sick	17
2443	Worrall, Zebulon	Lamps, lard	5
2791	Wright, Charles D.	Saw-mill—tail blocks of, for setting the log	14
2648	Wright, George L.	Ruling paper	18
2638	Zahn, Godfried M.	Lock and key, door	2
2468	Ziegler, William B.	Stoves, cooking	5
2432	Zellers, Isaac	Thrashing machine, concaves employed in	1
2756	Zollickoffer, William	Bating hides	16

Alphabetical list of persons whose patents for designs have expired during the year 1856.

No.	Patentees.	Designs.
215	Baker, Isaac F., assignor to Cornelius & Co.	Furniture ornaments.
216	Baker, Isaac F., assignor to Cornelius & Co.	Furniture ornaments.
227	Barstow, A. C.	Stoves, cooking.
237	Burton, S. H.	Stoves.
235	Chambers, George W., assignor to A. Cox & Co.	Stoves.
236	Chambers, George W., assignor to A. Cox & Co.	Stoves.
249	Clark, Samuel, assignor to Johnson & Cox	Stoves.
250	Clark, Samuel, assignor to Johnson & Cox	Stoves.
251	Clark, Samuel, assignor to Johnson & Cox	Stoves.
210	Fay, Henry C.	Stoves.
241	Finch, Edward B.	Stoves.
234	Fulton, Calvin, assignor to John M. French	Stoves.
211	Gibbs, Samuel W., assignor to Jones & Finney	Stoves.
222	Gibbs, Samuel W., assignor to Augustus Quackenboss	Stoves.
226	Gibbs, Samuel W., assignor to North, Harrison & Co.	Stoves.
240	Gibbs, Samuel W., assignor to J. Cross & Son	Stoves.
252	Goodhue, D. F., and Charles Guild	Stoves.
219	Haney, Abram, assignor to J. & A. Morrison	Stoves.
221	Haney, Abram, assignor to Morrison & Tibbits	Stoves.
248	Haney, Abram, assignor to Morrison & Tibbits	Stoves.
253	Hill, Samuel, and William B. Cline	Stoves.
228	Hill, Samuel, and William B. Cline	Stoves.
244	Huntley, Hosea H.	Stoves.
257	Huntley, Hosea H., assignor to W. C. Davis	Stoves.
238	Jewett, Sherman S., and F. H. Root	Stoves.
229	Lamb, Joseph G., and Conrad Harris	Stoves.
254	Lamb, Joseph G., and Conrad Harris	Stoves.
212	Lawson, Peter	Carpets.
213	Lawson, Peter	Carpets.
214	Lawson, Peter	Carpets.
209	Peck, N. P.	Stoves.
243	Pond, Moses	Stove, air-tight.
220	Ransom, Samuel H.	Stoves.
224	Ransom, Samuel H.	Stoves.
225	Ransom, Samuel H.	Stoves.
245	Rathbone, John F.	Stoves.
246	Rathbone, John F.	Stoves.
247	Rathbone, John F.	Stoves.
231	Richmond, Apollos, assignor to A. C. Barstow & Co.	Grate, portable.
230	Sanderson, Wm. L., assignor to Pease, Keeney & Gage	Stoves.
355	Sanderson, Wm. L., assignor to Dunham, Collier & Sage	Stoves.
239	Savery, William	Stoves.
256	Shaw, William F.	Girandoles.
232	Wager, James	Stoves.
233	Wager, James	Stoves.
242	Wager, James	Stoves.
217	Waring, George E.	Stoves.
223	Warnich, Charles W.	Stoves.
218	Woolson, Charles J.	Stoves.

CLASSIFIED LIST OF PATENTS THAT HAVE EXPIRED DURING THE YEAR 1856.

CLASS I.—AGRICULTURE, including instruments and operations.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Beehives.....	Aaron Francis and Jonathan Carlile.....	Chandlerville, Ohio.....	Nov. 28, 1842.
Beehives.....	Daniel H. Farnam.....	Litchfield, Conn.....	May 20.
Beehives.....	Edwin Booth.....	Springfield, Mass.....	Nov. 28.
Beehives.....	Elijah Gruman.....	Norwalk, Conn.....	May 26.
Beehives.....	Frederick Wolfersberger.....	Plymouth, Ohio.....	May 12.
Beehives.....	Henry Hiser.....	Wooster, Ohio.....	June 27.
Beehives.....	James E. Ross.....	Mount Sidney, Va.....	July 8.
Beehives.....	James Jones.....	Galway, N. Y.....	May 12.
Beehives.....	Jesse W. Davidson.....	Rome, Ohio.....	Sept. 17.
Beehives.....	John Millholland and Benjamin Crane.....	Chandlerville, Ohio.....	April 29.
Beehives.....	Shadrach Turnbull.....	Suffield, Conn.....	April 6.
Beehives.....	Wm. Bryant.....	Nashville, Tenn.....	Dec. 21.
Beehives.....	Zachariah R. Hensch.....	Port Royal, Pa.....	Oct. 12.
Butter, working, machines for.....	Ebenezer Wilson and Milo Lee.....	Redding, Conn.....	Feb. 7.
Butter, working, machines for.....	Seth Bishop.....	Redding, Conn.....	Jan. 8.
Churn.....	Daniel F. Hitt.....	Galena, Ill.....	Oct. 7.
Churn.....	Lemuel Adams.....	Redding, Conn.....	April 16.
Churn.....	Noah H. Lindley.....	Redding, Conn.....	Aug. 25.
Churn.....	Roderick Goodwin.....	North Bergen, N. Y.....	May 4.
Corn-rows, &c., laying off.....	Peter Moseley.....	Benton, Miss.....	Dec. 12.
Corn-shellers.....	Cyrus B. Baldwin.....	Cincinnati, Ohio.....	July 16.
Cultivator.....	Isaac Bates, Asa Wood, and David Wells.....	Adams, N. Y.....	May 28.
Cultivator.....	Samuel Brady.....	Salona, Pa.....	April 6.
Cultivator, cotton.....	William A. Rogers.....	Sommerville, Ala.....	April 1.
Cultivator, for vines.....	John Mason.....	Union, N. J.....	May 28.
Mowing, cutting and cleaning grain.....	Charles Brown and Francis S. Crans.....	Barton, N. Y.....	April 6.
Mowing, scythes, fastening the ribs of.....	Samuel Garfield, sr., assignee of Thos. W. Harvey.....	Jamestown, N. Y.....	April 6.
Plough.....	Barnabas Langdon.....	New York.....	April 6.
		Troy, N. Y.....	June 22.

May 16, 1842.

Plough.....	Cornelius Berger.....	Brooklyn, N. Y.....	May 16, 1842.
Plough.....	George Watt.....	Gainesville, Ala.....	April 11.
Plough.....	Hiram L. Norton.....	Granville, N. Y.....	Sept. 23.
Plough.....	Jairus S. Tefft.....	Anherst, N. Y.....	Aug. 25.
Plough.....	Nathan Hull.....	De Kalb, Miss.....	May 12.
Plough.....	Samuel Myers.....	Marion, Ohio.....	July 11.
Plough.....	Thomas Ward.....	Avon, N. Y.....	April 16.
Plough beams.....	Joel Houghton.....	Ogden, N. Y.....	June 22.
Plough, combined.....	James Parsons, jr.....	Dublin, Ind.....	Dec. 12.
Plough, cultivating.....	Marshall J. Hunt.....	Cincinnati, Ohio.....	Sept. 30.
Plough, prairie land.....	Cromwell K. Bartlett.....	Geneseo, Ill.....	March 28.
Plough, revolving, coulter for.....	Howard Delono.....	Mottsville, N. Y.....	April 1.
Plough, shovel.....	William C. Pagett.....	Green county, Ohio.....	Oct. 17.
Reaping machine.....	Jonathan Read.....	New York.....	March 12.
Seeding, seed planters.....	Wells Kilburn.....	Lawrenceville, Pa.....	June 11.
Smut-machine.....	George D. Waldo.....	Lockport, N. Y.....	Jan. 17.
Smut-machine.....	John Wilson.....	Genterville, S. C.....	June 23.
Smut-machine, cleaning grain.....	Daniel Flickinger and Sebastian Krim.....	Hanover, Penn.....	May 28.
Smut-machine, cleaning grain.....	Josiah N. Bird and Edward D. Weld.....	Trenton, N. J.....	March 23.
Smut-machine, cleaning grain, &c.....	Peter Cook.....	Westfield, N. Y.....	Jan. 17.
Smut-machine, separating garlic from wheat.....	Edmund Warren.....	Boonaboro', Md.....	Oct. 26.
Straw-cutters.....	Joseph W. Webb.....	New York.....	Oct. 7.
Straw-cutters.....	Jesse Bowles.....	Mount Morris, N. Y.....	July 2.
Threshing machine.....	Andrew Kalaton.....	Louis, Va.....	July 11.
Threshing machine and winnowing grain.....	Isaac Zellers.....	Hopewell, Penn.....	Feb. 21.
Threshing machine, concaves employed in.....		Greenwich, N. J.....	Jan. 24.

CLASS II.—METALLURGY, and manufacture of metals, and instruments therefor.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Auger for boring earth.....	John M. Cooper.....	Newbern, Ala.....	Oct. 7, 1842.
Axes, machine for making.....	Isaac W. Turner.....	Baltimore, Md.....	Nov. 4.
Bolts, trimming the heads of.....	Micah Rugg.....	Southampton, Conn.....	Aug. 31.
Cutlery, cleaning and polishing.....	Martin N. Armstrong.....	Williamsburg, N. Y.....	Jan. 24.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Furnace, &c., heating.....	Christian Edward Detmold, assignee of Wilhelm Von Faber Du Faur.....	New York.....	April 16 1842, antedated Nov. 12, 1841.
Furnace, &c., reverberatory.....	Claude S. Quilliard.....	Wurtemberg.....	Jan. 8.
Furnace, improvement in.....	Jeremiah Clute and Jacob Seabury.....	Rondout, N. Y.....	Dec. 5.
Furnace, puddling and refining iron.....	Peter Cooper, assignee of John S. Gustin.....	New York.....	Aug. 2.
Furnace, refining iron.....	John C. McManaway.....	Portsmouth, Ohio.....	June 22.
Furnace, smelting, constructing.....	Frederick C. Kropff.....	Bedford, Penn.....	Jan. 17.
Furnace, smelting iron.....	Jacob Van Reed Hunter.....	Rockland, Penn.....	July 23.
Furnace, tuyeres.....	Richard Brewer.....	Plymouth, Ohio.....	Nov. 21.
Furnace, tuyere irons.....	William W. Snow.....	Oreonta, N. Y.....	May 20.
Gold, washing.....	Peter L. Dauvergne.....	Clarksville, Ga.....	Sept. 17.
Hinges, window-blinds and fastenings.....	William Baker.....	Utica, N. Y.....	Sept. 17.
Horse-shoes for the relief and cure of hoof-bound horses.....	Daniel Homer.....	Alton, Ill.....	April 16.
Iron, sheet, manufacturing.....	James Wood, sen., John Wood, and Wm. W. Wood.....	New Castle, Del.....	Oct. 12.
Iron, sheet, manufacturing.....	Simson Guilford.....	Lebanon, Penn.....	Oct. 24.
Knobs, glass.....	William S. Thompson and Alfred C. Hobbs.....	Cambridge, Mass.....	May 20.
Latch and lock, gravitating, combined, for doors.....	Miles Greenwood, assignee of George E. Sellers.....	Boston, Mass.....	May 12.
Latch, door, right and left.....	Miles Greenwood, assignee of George E. Sellers.....	Cincinnati, Ohio.....	May 7.
Latch, thumb, for doors.....	Edmund Parker.....	Meriden, Conn.....	March 25.
Lock, door.....	John P. Sherwood.....	Sandy Hill, N. Y.....	Dec. 17.
Lock, door, combination tumbler.....	Robert M. Tuttle.....	Newark, N. J.....	Dec. 5.
Lock and key, door.....	Godfried M. Zahn.....	Lancaster, Penn.....	May 26.
Lock and latch knobs, fastening to their spindles, &c.....	Andrew O. Downer.....	Utica, N. Y.....	Dec. 21.
Lock or latch, check bolt of.....	Albert Bingham.....	Boston, Mass.....	Oct. 17.
Metal, plates or sheets of, cutting.....	Mahlon Gregg.....	Wilmington, Del.....	April 1.
Metallic surfaces, particularly saw plates, grinding and polishing.....	Richard M. Hoe.....	New York.....	May 30.

Nails cutting, machinery for.....	Frederick J. Ayres.....	Roxbury, Mass.....	July 2, 1842.
Padlocks.....	E. H. Roper and Wm. Ball.....	Washington, D. C.....	Nov. 9.
Padlocks.....	William Ball.....	Washington, D. C.....	April 16.
Padlocks for mail bags, &c.....	H. C. Jones.....	Newark, N. J.....	April 1.
Punching machine for the manufacture of covered buttons.....	Alonzo C. Arnold.....	Norwalk, Conn.....	April 23.
Ropes wire, method of and machinery for manufacturing.....	John A. Rosbling.....	Saxonburg, Penn.....	July 16.
Screws, bolts, pins, and rivets, making.....	Lorenzo D. Walter and Jacob Walter.....	Fort Plain, N. Y.....	Feb. 7.
Screws, wood, cutting threads of.....	Alexander Hodges, agent of New England Screw Company, assignee of Cullen Whipple.....	Springfield, N. Y.....	Aug. 18.
Shielded pins for securing shawls, &c.....	Thomas Woodward.....	Brooklyn, N. Y.....	May 7.
Spikes, &c., clinching.....	William Emmons.....	New York.....	Sept. 3.
Spikes, bolts, nails, and brads, cut and wrought.....	William F. Steiger.....	Washington, D. C.....	Jan. 8.
Spikes, brads, and nails, clinching.....	James Buckalew.....	Spottawood, N. J.....	Sept. 3.
Spoons, casting, forming moulds for.....	Luther Boardman.....	Chester, Conn.....	Oct. 7.
Window-sash, spring fastener.....	George W. and Ezra B. Robinson.....	Boston, Mass.....	Feb. 7.

CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bonnets, &c., machinery for pressing.....	Richard Murdoch.....	Baltimore, Md.....	Oct. 12, 1842.
Carding and spinning machines.....	Moses Chase.....	Baltimore, Md.....	March 23.
Felting for coats, hats, &c.....	Marmaduke Osborne.....	New York.....	May 25.
Flax and hemp, breaking.....	John P. Fry.....	Pulaski, Tenn.....	Dec. 21.
Flax and hemp, breaking and cleaning.....	William McMillen.....	Ripley, Ohio.....	Sept. 30.
Flax and hemp, cleaning and dressing.....	J. C. G. W. and C. E. Geisenhorff.....	Cincinnati, Ohio.....	Nov. 25.
Flax and hemp, cleaning and beekling.....	Charles Learned.....	St. Louis, Mo.....	Oct. 22.
Furs, process of blowing and cleaning.....	John W. Cochran.....	New York.....	Nov. 4.
Gin, cotton, saw cylinder for.....	Alexander Jones.....	New York.....	Nov. 20.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Gin roller, for ginning long staple cotton.....	Eleazer Carver	Bridgewater, Mass.....	Jan. 17, 1842.
Gin saw, for ginning cotton.....	Theodorie I. James.....	Princeton, Mass.....	May 7.
Hats, cassimere	Oliver Brooks and James A. Sloan	Philadelphia, Penn	Nov. 9.
Hats, setting or ironing brims of	Francis Degen.....	New York.....	Aug. 31.
Hemp, breaking and cleaning.....	George T. Tate and William English	Frankford, Mo.....	July 11.
Knitting stockings, &c.....	Arasmus French.....	Springfield, Mass.....	March 18.
Loom, brushes for dressing warps.....	Samuel Taylor.....	Lowell, Mass.....	May 28.
Loom, power	Caleb Duxbury and James Nield.....	Taunton, Mass.....	April 21.
Loom, power, rotary temples for.....	George Draper	Saugus, Mass.....	Feb. 21.
Loom, power, weaving carpets, &c.....	Thomas Flint.....	Boston, Mass.....	June 27.
Loom, power, weaving counterpanes, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	July 28; antedated May 1.
Loom, power, weaving counterpanes, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	Aug. 2; antedated May 1.
Loom, securing the bobbin in shuttles for weaving.....	Daniel Leavitt.....	Cabotville, Mass.....	Aug. 18.
Loom, temples for	Josiah Beard and Abram Whitney	Waltham, Mass.....	April 6.
Loom, weavers' shuttles	Roswell Douglass, assignee of John H. Coburn.....	Lowell, Mass.....	March 12.
Loom weaving.....	Benj. W. and Horace Hendrick	Woonsocket Falls, R. I.....	May 12.
Loom, weaving bolting cloth, mounting and using the harness.....	Rollin White	Williamstown, Vt.....	April 1.
Loom, weaving carpets, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 16; antedated May 1.
Loom, weaving carpets, &c.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 26; antedated May 1.
Loom, weaving counterpanes, &c., manner of mounting, improvement on patent of April 24, 1840.....	Erastus B. Bigelow.....	Lancaster, Mass.....	May 30; antedated May 1.
Loom, weaving figured and other fabrics.....	Jeremiah Wilber, assignee of Clinton G. Gilroy	New York.....	March 12; antedated Nov. 12, 1839.
Loom, weaving fish-nets	Levi Van Hoesen	Great Britain.....	Oct. 7.
Napping cloth machine, called cross napping machine.....	John Taylor and John Smith.....	New Haven, Conn.....	May 4.
		New Lebanon, N. Y.....	

Oakum, picking, &c.....	Otis Allen.....	Tewksbury, Mass.....	July 16, 1842.
Oakum, picking, combination of machinery for.....	John Stansbury and William Ridgeway, jr.....	Baltimore, Md.....	Jan. 17.
Paper, &c., applying paste or sizing to sheets of, in process of making cards, &c.....	David H. Gilbert.....	Dorchester, Mass.....	April 11.
Paper, sizing	Lorenzo D. Brown.....	Lee, Mass.....	March 4; antedated Sept. 4, 1841.
Shearing satinets and other woollen cloths.....	James Pitts	Smithfield, R. I.....	Oct. 17.
Silk, reel for reeling	A. B. Jones, assignee of William H. Jones.....	Manchester, Conn.....	Feb. 12.
Spinning, cap-spinner, mode of driving bobbins in.....	Charles Danforth	Paterson, N. J.....	April 21.
Spinning, cap-spinner, oiling spindles and tubes of.....	Charles Danforth	Paterson, N. J.....	April 21.
Spinning, regulating the drag of the yarn in the operation of.....	Jesse Whitehead.....	Manchester, Va.....	June 18.
Spinning, twisting, and kinking hair	Hiram Burnham.....	New York.....	June 22.
Wool-combing, machine for	Charles G. Sargent.....	Lowell, Mass.....	Oct. 7.

CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including medicine, dyeing, color making, distilling, soap and candle making, mortars, cements, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Blacking for leather.....	Samuel Adams.....	Cleveland, Ohio.....	May 30, 1842.
Candle, manufacture of.....	Ebenezer Marsh.....	Alton, Ill.....	April 30.
Candles, separating stearine from elaine.....	John H. Smith.....	Brooklyn, N. Y.....	April 1.
Composition, covering the bottoms of vessels.....	Samuel Williams.....	New York, N. Y.....	March 18.
Composition for dressing leather to render it water proof.....	William A. Ronald and Henry Miller.....	Rowan county, N. C.....	Jan. 24.
Composition for preserving leather.....	T. P. Meriam.....	New Bedford, Mass.....	Nov. 4.
Composition for the hair.....	James Mackay.....	New York.....	April 6.
Composition, preparation for the hair.....	Vair Clirehugh.....	New York.....	April 11.
Composition, rendering cloth water proof.....	Nathaniel Hatch.....	Eastport, Maine.....	March 23.
Composition, water proof.....	Charles Lyon.....	New York.....	Sept. 23.
Gas metres.....	Christopher F. Brown.....	Baltimore, Md.....	June 22.
Glue, manufacture of.....	Herman G. C. Pauleen.....	New York.....	Feb. 28.
Ink, black, making.....	Peter Ferris.....	Greenwich, Conn.....	Dec. 5.
Matches, friction, ignitable compound.....	Stephen W. Blaisdell.....	Brunswick, Maine.....	March 18.
Matches, friction, improvement in.....	George W. Carleton.....	Bath, Maine.....	May 20.
Oils, animal, purifying.....	Alfred Trauband.....	New York.....	Nov. 21.
Paint, white, mode of preparing.....	Henry C. Otto.....	Philadelphia, Penn.....	Feb. 25.
Salt works, improvement in.....	Calvin Giteau.....	Geddes, N. Y.....	July 23.
Tallow, rendering.....	L. Montrop.....	Baltimore, Md.....	June 27.
Vinous fermentation.....	Charles C. Edday.....	Benton, Miss.....	April 1; antedated Mar. 4.

CLASS V.—CALORIFICS, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Chimney caps.....	Jordan L. Mott.....	New York.....	Dec. 17, 1842.
Chimney caps.....	Jordan L. Mott, assignee of Thomas Ewbank.....	New York.....	Dec. 17.
Chimney cowls.....	Stephen M. Allen.....	Boston, Mass.....	April 21.
Coal sifters.....	John J. Doane and William H. Denny.....	New York.....	Nov. 23.
Flue contractors, or chimney valves for fire-places and grates.....	Henry Batchelder.....	Beverly, Mass.....	Jan. 8.
Furnaces, cooking and air-heating.....	Otis Packard.....	Roxbury, Mass.....	May 26.
Grates, open.....	James Easterly.....	Troy, New York.....	May 16.
Heating buildings.....	Reuben Mitchell.....	Portland, Maine.....	April 11.
Heating buildings, apparatus for.....	Otis Packard.....	Roxbury, Mass.....	March 9.
Kiln for drying grain.....	Henry Y. and Abraham Haupt, jr.....	Bucks county, Penn.....	Dec. 5.
Lamps.....	Edwin B. Horn.....	Boston, Mass.....	Jan. 8.
Lamps.....	William F. Shaw.....	Boston, Mass.....	Dec. 31.
Lamps, argand, spirite of turpentine, &c, burning.....	Charles Carr.....	Philadelphia, Penn.....	March 28.
Lamps, argand, volatile materials, burning.....	Daniel Pettibone.....	Philadelphia, Penn.....	March 23.
Lamps, essential oils, burning.....	Michael B. Dyott.....	Philadelphia, Penn.....	May 30.
Lamps for volatile materials.....	A. V. H. Webb.....	New York.....	Nov. 4.
Lamps, glass, caps of.....	Francis Draper.....	East Cambridge, Mass.....	Jan. 17.
Lamps, hydro-pneumatic.....	Stephen S. Lee.....	Providence, R. I.....	April 21.
Lamps, lard.....	Archibald H. Baird.....	New York.....	May 26.
Lamps, lard.....	Benjamin H. Horn.....	Boston, Mass.....	May 26.
Lamps, lard.....	Ellis S. Archer.....	Philadelphia, Penn.....	June 18.
Lamps, lard.....	Frederick H. Southworth.....	Washington city, D. C.....	July 2.
Lamps, lard.....	Frederick H. Southworth.....	Washington, D. C.....	Oct. 22.
Lamps, lard.....	Jesse Neal, part inventor with and as- signed of—	Middlebury, Ohio.....	May 4.
Lamps, lard.....	Benjamin K. Maltby.....	Rootstown, Ohio.....	Aug. 25.
Lamps, lard.....	John Grannis.....	Oberlin, Ohio.....	Nov. 21.
Lamps, lard.....	John Lee.....	Wellsville, Ohio.....	Nov. 21.

Classified list of expired patents—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Lamps, lard.....	John T. Creighton.....	Alexandria, Va.....	Aug. 11, 1842.
Lamps, lard.....	P. Robinson.....	Chillicothe, Ohio.....	Dec. 5.
Lamps, lard.....	Zebulon Worral.....	Chesterhill, Ohio.....	Feb. 7.
Lamps, wick tubes for.....	Enoch W. Perry.....	Boston, Mass.....	Oct. 12.
Lamps and reflectors of light-houses, arranging, &c.....	Aaron Folger.....	Nantucket, Mass.....	March 28.
Ovens, elevated, valves for.....	Henry Stanley.....	West Poulney, Vt.....	June 11.
Ranges, cooking.....	John Brereton.....	New York.....	April 21.
Screening or sifting coals.....	Benjamin S. Hort.....	Kensington, Penn.....	Feb. 7.
Stoves.....	Abel Cornell and Niram R. Merchant.....	Guilford, N. Y.....	July 16.
Stoves.....	George Nelson.....	Boston, Mass.....	Sept. 17.
Stoves.....	Stedman W. Hanks.....	Lowell, Mass.....	Oct. 12.
Stoves.....	Philetus Phillips.....	Middletown Point, N. J.....	Nov. 12.
Stoves, air-heating.....	Salvin F. Kellogg.....	Norwalk, Ohio.....	April 16.
Stoves, air-tight.....	Stephen M. Allen.....	Boston, Mass.....	Jan. 17.
Stoves, air-tight.....	Zephaniah Bosworth.....	Marietta, Ohio.....	April 6.
Stoves, cooking.....	Anson Atwood.....	Troy, N. Y.....	May 4.
Stoves, cooking.....	Erastus Buck.....	Nunda, N. Y.....	Aug. 6.
Stoves, cooking.....	Samuel B. Sexton.....	Baltimore, Md.....	Aug. 29.
Stoves, cooking.....	William B. Beebe.....	New York.....	April 29.
Stoves, cooking, elevated ovens, with.....	Moses Bartholomew.....	Huntingdon, Penn.....	July 8.
Stoves, cooking, heating and illuminating.....	Andrew Walker, jr.....	Vershire, Vt.....	Feb. 21.
Stoves, cooking, semi-circular.....	Thomas O. Sayre.....	Unity, N. H.....	July 2.
Stoves, cooking, tubular, &c.....	Jordan L. Mott.....	Elizabethtown, N. J.....	June 27.
Stoves, cooking, utensils for.....	Salmon C. Riley.....	New York, N. Y.....	March 23.
Stoves, culinary and air-heating.....	Benjamin Shepard.....	New York.....	Aug. 31.
Stoves, Franklin, burning coal.....	David Petree.....	Boston, Mass.....	May 30.
Stoves, regulating the draft in.....	Elisha Foote, jr.....	Little Falls, N. Y.....	March 23.
Stoves, rotary-top.....	Ira French, assignee of Maynard French.....	Seneca Falls, N. Y.....	May 26.
		Cincinnati, Ohio.....	June 11.

CLASS VI.—STEAM AND GAS ENGINES, including boilers and furnaces therefor, and parts thereof.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Air condensing, apparatus for, &c.....	John Gregg.....	Rochester, N. Y.....	Jan. 24, 1842.
Boilers, steam.....	Abram S. Valentine.....	Bellefonte, Pa.....	August 6.
Boilers, steam.....	Charles Clinton.....	Goshen, N. Y.....	April 29.
Boilers, steam, applying a float to regulate the height of water in.....	Cadwalader Evans.....	Pittsburg, Pa.....	Sep. 30.
Boilers, steam, gauge, steam safety.....	John A. Roebing.....	Saxonsburg, Pa.....	July 16.
Boilers, steam, and generators.....	Lansing E. Hopkins.....	New York.....	June 12.
Boilers, steam, or generator.....	Austin W. Sharp and William F. Horton.....	Honooye Falls, N. Y.....	Dec. 5.
Explosion of boilers, preventing.....	Thomas S. Easton.....	Mobile, Ala.....	Feb. 12.
Explosion of boilers, preventing.....	Thomas S. Easton.....	Mobile, Ala.....	Nov. 9.
Gas metres.....	John Hemming.....	Great Britain.....	Nov. 4.
Spark arrestors.....	Abraham, Keagy, and Michael Shimer.....	Woodbury, Pa.....	April 29.
Spark arrestors.....	James Eckler.....	Catakill, N. Y.....	Oct. 7.
Spark arrestors.....	James Lewis.....	Saratoga, N. Y.....	Feb. 21.
Spark arrestors.....	John C. Johnston.....	Catakill, N. Y.....	Feb. 28.
Spark arrestors.....	John V. L. Hosgland.....	Jersey City, N. J.....	March 18.
Spark arrestors.....	Jonathan Hodges.....	Taunton, Mass.....	June 22.
Spark arrestors.....	Louis Chevrier.....	Brooklyn, N. Y.....	Feb. 21.
Spark arrestors.....	Samuel G. Brown.....	Henrietta, N. Y.....	Sep. 23.
Spark arrestors.....	William C. Grimes.....	York, Pa.....	Feb. 12.
Spark arrestors and consumers.....	Abraham Ayres.....	Hicksville, N. Y.....	Feb. 28.
Steam engine.....	Alexander Conison.....	Newark, N. J.....	Dec. 5.
Steam engine.....	Ralph Pomeroy.....	Belleville, N. J.....	Jan. 24.
Steam engine, changing reciprocating into rotary motion.....	William Kelly.....	Pittsburg, Pa.....	June 18.
Steam engine, conducting off the steam from the cylinder.....	Alexander M. Bouton and Andrew Perry.....	Newark, N. J.....	Aug. 18.
Steam engine, discharging water and air from condensers of.....	George W. and George Davis.....	Canal Fulton, Ohio.....	May 4.
Steam engine, locomotive, connecting the driving wheels of.....	Robert G. Ennison.....	New York.....	Sep. 23.
	Robert L. Stevens.....	New York.....	Sep. 3.

Classified list of expired patents—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Steam engines, locomotive, constructing by which they adapt themselves to the curves and undulations of the road.	Matthias W. Baldwin.	Philadelphia, Pa.	Aug. 25, 1842.
Steam-engine, marine.	Joseph Maudslay and Joshua Field.	Lambeth, England	June 11; antedated May 7, 1839.
Steam-engine, marine.	William A. Lightall.	Albany, N. Y.	April 11.
Steam-engine, reacting, &c.	Louis Brunier.	France.	Oct. 25.
Steam-engine, rotary.	Joseph J. Parker.	Plymouth, Ohio.	March 18.
Steam-engine, rotary.	Joshua Taylor Beale and Benjamin Beale.	East Greenwich, England	June 11; antedated July 13, 1841.
Steam-engine, rotary.	Solomon M. Eby and.	Wayne county, Ohio.	Aug. 26.
Steam-engine, rotary.	David N. Phelps.	Richland county, Ohio.	Dec. 31.
Steam-engine, rotary, propelled by steam, water, &c.	William Jones and Roswell Farnum.	Bradford, Vt.	March 28.
Steam-engine, rotary, propelled by steam.	Henry Pratt.	Great Britain.	March 9.
Steam engine, rotary, propelled by water or steam.	Peckham H. Green and Harry H. Evans.	Mount Morris, N. Y.	March 9.
Steam-engine, supplying air to the furnaces of.	Edwin A. Stevens.	Bordentown, N. J.	April 1.
Steam-generator, improvement in.	Isaac N. Leach, Silas W. Leach, Jacob Deardoff, and Zachariah Beeson.	Wayne county, Ind.	June 27.
Valves, apparatus for lifting, tripping, and regulating the closing of the valves of steam-engines.	Frederick Elsworth Sickels.	New York.	May 20.
Valves, cut off for steam-engines.	Horatio Allen.	New York.	April 30.
Valves, cut off for steam-engines.	Stephen Parks, jr.	Brooklyn, N. Y.	June 11.

CLASS VII.—NAVIGATION AND MARITIME IMPLEMENTS, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving-dresses, life-preservers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
69 Anchors.	John J. Osborne, assignee of William H. Porter.	New York.	March 18; antedated August 15, 1839.
Capstans or windlasses, ships', and cable-stoppers.	John Grylls.	Portsea, England.	Dec. 12; antedated December 31, 1840.
Constructing paddle-wheels, and combining the same with steam-vessels.	Alexander Connison.	Newark, N. J.	June 18, 1842.
Constructing ships, boats, &c., to be propelled by steam or other power.	Elisha F. Aldrich.	New York.	July 8.
Constructing steam-ships, propelling and turning.	Robert L. Stevens.	New York.	Oct. 17.
Life-preservers, rendering chairs, &c., buoyant.	William H. Shecut.	New York.	March 9.
Navigating and propelling vessels by wind and waves.	John A. Etzler.	Philadelphia, Pa.	April 1; antedated November 20, 1841.
Navigation, steam, by which the submerged propeller is made to operate as an air-pump and condenser.	William W. Hunter.	Gosport, Va.	March 12, 1842.
Propelling and steering boats, &c.	Thomas L. Jones.	New York.	July 16.
Propelling boats, &c.	Philip C. Traver.	Rhinebeck, N. Y.	April 30.
Propelling ships and other vessels.	John Laing.	Ellicott's Mills, Md.	Oct. 22.
Propelling boats and extinguishing fire.	Stephen Bates and George Titeomb.	Boston, Mass.	March 4; antedated September 4, 1841.
Propelling boats by endless chains of paddles.	Appleton Bragg.	New York.	Jan. 24, 1842.
Propelling boats by jets of water.	Thomas W. Rely.	McMinn county, Tenn.	Jan. 24.
Propelling paddle-buckets, &c.	A. Ralston Chase.	Cincinnati, Ohio.	Nov. 9.
Propelling ships and other vessels.	Daniel Rudd.	Bozrah, Conn.	March 23.
Propelling steamboats and other vessels.	Truman Cook.	New York.	May 12.
Raising sunken vessels, &c.	Theodore R. Timby.	Auburn, N. Y.	April 21.
Sails, measuring, instrument for.	John Dominies.	Now residing in the Sandwich Islands.	Sept. 30.
Sounding instruments.	Henry S. Stellwagen.	U. S. Navy.	Dec. 31.
Steering apparatus for vessels.	George W. and Ezra B. Robinson.	Boston, Mass.	Sept. 30.
Steering-wheel for vessels.	Philip T. Share.	Baltimore, Md.	Nov. 28.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Vessels' lining, constructed of sheet iron.....	James Kerr, William Grant, and John Potter	Pittsburg, Pa.....	May 7, 1912.
Windlass ships'	William Carr.....	Bath, Mo.....	Feb. 7.
Windlass and capstan, method of working ships'	William Holmes.....	Baltimore, Md.....	Mar. 23.

CLASS VIII.—MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS, including clocks, chronometers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Clocks, self-winding.....	Evans, Casselberry.....	St. Louis, Mo.....	Aug. 2, 1842.
Escapement of watches.....	John H. Mulford.....	Albany, N. Y.....	Feb. 21.
Galvanic battery, &c.....	Patrick Coad.....	Philadelphia, Pa.....	Mar. 28.
Geography and astrophysics, apparatus for teaching	Robert Piggot.....	Elk Ridge Landing, Md.....	Jan. 17.
Surveying instruments.....	Benjamin H. Benton.....	Middleburg, Va.....	Dec. 12.
Surveys, instruments for plotting.....	William J. Card.....	Lancaster, Ohio.....	April 16.
Telegraphs.....	Samuel Frew.....	Elizabeth, Penn.....	July 2.

CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bridge, manner of crossing rivers, &c., by means of a moving platform suspended to a.....	Harvey Leach.....	Philadelphia, Pa.....	Mar. 4, 1842.
Dock, floating dry.....	John S. Gilbert.....	New York.....	July 28.
Excavating ditches.....	Selah Hill.....	Jersey City, N. J.....	Feb. 1.
Excavating, ditching, and embanking earth.....	Herrick Aiken.....	Franklin, N. H.....	Feb. 1.
Excavating, ditching, and embanking, scraper for	Horace Cleveland.....	Fort Wayne, Ind.....	Dec. 31.
Excavating, ditching, embanking, and draining	John Branson, jr.....	Sangamon county, Ill.....	Mar. 18.
Excavating, ditching, embanking, and draining	Cromwell K. Bartlett.....	Geneseo, Ill.....	Mar. 23.
Pipes, inserting branch-pipes through the ground without excavating.....	Jonathan Ridgway.....	New York.....	July 16.
Roofing, cast-iron.....	William Beach.....	Philadelphia, Pa.....	April 23.
Roofs, metallic, rendering, water-tight.....	John U. Boreach.....	Charleston, S. C.....	Nov. 12.
Window-blinds.....	Garner Wilkinson.....	White Creek, N. Y.....	Jan. 8.
Window-shutters or guards.....	Arthur L. Johnson.....	Baltimore, Md.....	April 11.

CLASS X.—LAND CONVEYANCE, comprising carriages, cars, and other vehicles used on roads, and parts thereof.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brake or lock for arresting the motion of spring () carriages.....	Samuel, Gusa, assignees of.....	West Chester, Penn.....	June 18, 1842.
Brakes of railroad cars, machinery for operating	William Clayton.....	Marshallton, Penn.....	Aug. 25.
Brakes, self-acting, for inclined planes.....	John R. Grout.....	Utica, N. Y.....	Nov. 23.
Carriages, disengaging horses from.....	Nathan Smith.....	Waterloo, N. J.....	Nov. 4.
	Jacob Harlacher.....	Lancaster, Penn.....	Nov. 4.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Carriages, releasing horses from.....	George Kintz.....	Exeter, Penn.....	May 4, 1842.
Carriages, spring perch for.....	Stephen Tomlinson.....	Bridgeport, Conn.....	May 16.
Sleighs, connecting body with runner.....	Theodore R. Timby.....	Auburn, N. Y.....	May 7.
Sleighs or sleds, mode of locking.....	John C. Rickey.....	New Cumberland, Ohio.....	July 16.
Springs for carriages.....	Jonathan Bacon.....	Bedford, Mass.....	March 9.
Springs for railroad truck.....	Joseph F. Talson.....	Jersey City, N. J.....	March 18.
Tires, putting on wheels of railroad cars.....	Thomas Banks.....	Manchester, England.....	Aug. 25.
Wheels, felloes of carriage, machinery for shaping the inner side of.....	Robert H. Henry.....	Barre, Mass.....	Nov. 21.

CLASS XI.—HYDRAULICS AND PNEUMATICS, including water-wheels, wind-mills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boring and tapping water and other pipes while under hydrostatic pressure.....	H. Ariel Norris.....	New York.....	June 22, 1842.
Boring, tapping, and reaming water pipes under hydrostatic pressure.....	H. Ariel Norris.....	New York.....	Sept. 30.
Cisterns, preventing water from freezing.....	Joshua Woodward.....	Haverhill, N. H.....	Nov. 21.
Cocks or gas stoppers.....	Charles A. Cressoy.....	Philadelphia, Penn.....	April 29.
Cocks, stop.....	Nathaniel D. Whittin.....	New York.....	April 29.
Cocks, stop.....	Jonathan Ridgway.....	New York.....	April 16.
Cocks, stop.....	Uel West and George Dobbs.....	New York.....	April 30.
Cocks, stop, for hydrants.....	Levi Magers, Frederick Davis, and Wm. Dukehart.....	Baltimore, Md.....	June 22.
Engine, fire.....	Joseph Briggs, Jr.....	St. Louis, Mo.....	Sept. 3.

Engine, pneumatic.....	John R. Remington.....	Aberfoil, Ala.....	May 26, 1842.
Filters.....	Thomas Bishop.....	Dobbs' Ferry, N. Y.....	Dec. 31.
Gate, self-acting waste.....	Edwin Eastlack and Joseph A. Miller.....	Greenwich, N. J.....	April 21.
Hydrants.....	John Lee Chapman.....	Baltimore, Md.....	Oct. 12.
Hydraulic machines.....	Thomas T. Tasker.....	Philadelphia, Penn.....	July 11.
Pipes conduit, coupling.....	Louis Bruhier.....	France, (now in city of New York)	July 8.
Pumps.....	Uel West.....	New York.....	July 23.
Pumps.....	Augustus Thayer.....	Chatham, N. Y.....	Feb. 1.
Pumps.....	William and Benjamin Douglas.....	Middletown, Conn.....	Dec. 31.
Pumps and fire engines.....	William L. Jacobs.....	Lancaster, Penn.....	Sept. 23.
Pumps, liquor.....	Benjamin T. Babbitt.....	Little Falls, N. Y.....	Oct. 7.
Water-wheel.....	Shuler C. Higbee and Peter W. Plantz.....	Oppenheim, N. Y.....	September 17.
Water-wheel.....	Henry Rodgers.....	Moravia, N. Y.....	May 12.
Water-wheel.....	Abijah Woodward.....	Swansey, N. H.....	July 2.
Water-wheel.....	Amasa B. Beckwith.....	Bath, N. Y.....	July 16.
Water-wheel.....	Eli B. Lansing.....	Wheeling, Ind.....	July 20.
Water-wheel.....	Jesse Taylor.....	Auburn, N. Y.....	August 25.
Water-wheel.....	Joseph Durkee.....	Binghampton, N. Y.....	April 21.
Water-wheel.....	Lemuel W. Blake and George W. Blake.....	Pepperell, Mass.....	July 8.
Water-wheel.....	Reuben Rich.....	Albion, N. Y.....	April 30.
Water-wheel.....	Samuel B. Howd.....	Arcadia, N. Y.....	May 4.
Water-wheel.....	Samuel Diehl.....	Manallen, Penn.....	July 23; antedated March 28.
Water-wheel.....	Samuel L. Valentine.....	Bangor, Me.....	December 31.
Water-wheel.....	Samuel L. Valentine.....	Bangor, Me.....	April 11.
Water-wheel, &c., adjustable boxes, &c.....	William Lamb.....	Whitestown, N. Y.....	February 7.
Water-wheel, current.....	Charles Joly.....	New York.....	October 26.
Water-wheel, inclined.....	William Miles.....	Boonsboro', Md.....	December 31.
Water-wheel, reaction.....	John T. Gilmore.....	Fayetteville, N. C.....	June 11.
Wind-mills.....	Ezau Whitney, Jacob Whitney, and Wm. F. Card.....	Burns, N. Y.....	August 2.
Wind-wheels.....	Alexander McGrew.....	Cincinnati, Ohio.....	June 18.
Wind-wheels.....	John R. Remington.....	Aberfoil, Ala.....	

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, as applied to pressing, weighing, raising, and moving weights.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Press, cheese.....	Sylvanus Bartlett.....	Hocking county, Ohio.....	February 28, 1842.
Press, cheese, self-acting.....	Chester Stone.....	Rootstown, Ohio.....	July 28.
Press, cheese, self-acting.....	Fitch K. Collins and George S. Collins.....	Ravenna, Ohio.....	August 6.
Press, cotton.....	Chester Stone.....	Rootstown, Ohio.....	August 11.
Press, cotton.....	Fitch K. Collins and George S. Collins.....	Ravenna, Ohio.....	February 1.
Press, cotton, hay, &c.....	Parry W. Porter.....	Columbia, Tenn.....	May 7.
Press, cotton, hay, &c.....	William C. Van Hoesen.....	Catskill, N. Y.....	May 30.
Press, cotton, hay, &c.....	Samuel Fry.....	New York.....	April 16.
Press, cotton, hay, &c.....	Calab Martine.....	Greensburgh, N. Y.....	March 23.
Press, cotton, hay, &c.....	P. G. Gardiner.....	New York.....	September 3.
Press, cotton, hay, &c, toggle joint.....	S. W. Bullock.....	Catskill, N. Y.....	February 28.
Windlasses, or drums, for raising weights.....	Robert Harding.....	South Berwick, Me.....	
	Enoch Robinson.....	Boston, Mass.....	

CLASS XIII.—GRINDING MILLS AND MILL-GEARING, including grain mills, mechanical movements, and horse powers.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Corn and corn cobs, breaking and grinding.....	James and William Murray.....	Baltimore, Md.....	Feb. 12, 1842.
Flour, bolting and dressing.....	John Hearn.....	Annapolis, Pa.....	Feb. 28.
Flouring mills, combining a smut-machine with the scouring stones.....	James Durling.....	Sparta, N. J.....	April 21.
Gudgeons, &c., self oiling box for.....	John Shugert.....	Elizabeth, Pa.....	April 1.
Horse power, endless chain.....	Albert W. Gray.....	Middletown, Vt.....	Oct. 26.
Horse power, endless chain.....	Isaac R. Lawrence.....	Chatham, N. Y.....	Oct. 7.
Horse power, endless chain.....	John Kelly.....	Lewistown, Pa.....	March 4.
Mill bark, grain, &c., grinding.....	Valentine Birely.....	Frederick, Md.....	July 11.
Mill, grinding all kinds of grain.....	Justin Ware.....	Farmington, Ohio.....	July 20.
Millstones.....	Joseph H. Burrows.....	Cincinnati, Ohio.....	April 23.

CLASS XIV.—LUMBER, including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stove, carpenters' and coopers' implements.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Barrels, &c., chamfering, beveling, and howeling.....	Samuel Wideman.....	Elysville, Md.....	April 23, 1842.
Barrels and other coopers' ware, machine to be used in combination with improved iron hoops in the manufacture of.....	J. H. Bruner and R. H. Thompson.....	Ohio.....	Nov. 12.
Clapboards, laths, staves, &c., cutting.....	Ebenezer Day.....	Grand Detour, Ill.....	June 13.
Fence pickets, &c., turning.....	Elisha Briggs.....	Perry, N. Y.....	July 20.
Mortising and tenoning machine.....	Warner L. Peters.....	Frankfort, Pa.....	Dec. 12.
Mortising timber.....	Jerub A. Fay.....	Keene, N. H.....	Jan. 17.
Pegs, shoe, machine for cutting.....	Stephen K. Baldwin.....	Gilford, N. H.....	July 16.
Sawing boards into oars for rowing boats.....	John Benson, and Ezekiel Page and Richardson T. Hough.....	Boston, Mass.....	May 26.
Sawing boards, setting logs for.....	John Sheffield.....	West Leyden, N. Y.....	April 16.
Saw-mill.....	Lemuel Hedge and Edwin F. Johnson.....	Williamson, N. Y.....	June 18.
Saw-mill, arranging the saw-gate and fender-posts of.....	Samuel Darling, 2d.....	Groton, Vt.....	May 7.
Saw-mill dog, self-setting.....	George Henning.....	Ithaca, N. Y.....	April 1.
Saw-mill gates, for curvilinear sawing.....	James Hamilton.....	New York.....	July 2.
Saw-mill, portable.....	Pearson Crosby.....	Fredonia, N. Y.....	Oct. 7.
Saw-mill saw, mode of straining.....	Ransom Cook and Sylvester E. Burnham.....	Saratoga, N. Y.....	Feb. 1.
Saw-mill, setting the face-block of, &c.....	Isaac Sheetz.....	Taneytown, Md.....	May 20.
Saw-mill, setting the face-block of, &c.....	D. V. Thomas.....	Richfield, N. Y.....	Sept. 17.
Saw-mill, rail-blocks of, for setting the log.....	Charles D. Wright.....	Colchester, Conn.....	Sept. 30.
Shave for getting out wooden hoops, &c.....	Charles Stratton.....	Brattleboro', Vt.....	Aug. 6.
Shingles, cutting.....	Alexander H. Hart.....	Chagrin Falls, Ohio.....	Sept. 17.
Shingles, cutting.....	Avery Kinney.....	Haver, N. Y.....	Feb. 12.
Shingles, cutting.....	Daniel M. Cummings.....	East Lebanon, N. H.....	May 7.
Shingles, cutting.....	Hiram H. Herrick.....	Boston, Mass.....	March 9.
Shingles, cutting.....	Sylvester Munson.....	Dillon, Ill.....	Oct. 7.
Shingles, cutting.....	William Foster.....	Detroit, Mich.....	Nov. 21.
Splints, match, cutting.....	John Hicks Stevens, assignee of Chauncey E. Warner.....	New York.....	July 2.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Staves, dressing, for barrels, casks, &c.	Samuel Learned	Ridgway, N. Y.	May 30, 1842; antedated Nov. 30, 1841.
Tenons, cutting	William H. Ham	Chambersburg, Penn.	Oct. 26.
Veneering curved surfaces	William Iba, assignee of Casper Kittinger.	East Greenville, Ohio.	Nov. 21.
Veneers, &c., cutting from the circumference of a log.	John Humphrey	Harrington, N. J.	Oct. 26.
Wood, manufacturing, to be used as a substitute for curled hair in stuffing beds.	William Baker	Utica, N. Y.	May 30.

CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brick-press	A. K. Fahnestock	Harrisburg, Penn.	April 16, 1842.
Brick-press	Alfred Hall	Cleveland, Ohio	Sept. 3.
Brick-press	Antoine Carbonel	Philadelphia, Pa.	May 12.
Clay, tempering for bricks	Richard Sillman and Jesse Taylor	Kensington, Pa.	April 21.
Glass, window, flattening and tempering	John J. Adams	Spring Garden, Pa.	Oct. 17.
Moulds, sugar, making	Antoine Carbonel	Winslow, N. J.	April 29.
Stone, dressing	Theodore R. Timby	Philadelphia, Pa.	April 23.
		Auburn, N. Y.	

CLASS XVI.—LEATHER, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bating hides	William Zollickofer	Middlebury, Md.	Aug. 18, 1842.
Boot crimps	Bradford Rowe	Maryland, N. Y.	Dec. 17.
Boot legs, turning	Joseph H. Sanford	Hopewell, N. Y.	June 22.
Boots and shoes	John Dick	Philadelphia, Penn.	Nov. 4; antedated Oct. 15.
Boots and shoes	Joshua S. Bowler	Lynn, Mass.	Nov. 21.
Buttons, forming, worked on the heads, handles, &c., of whips.	Robert S. Brown	Philadelphia, Penn.	Feb. 21.
Cutting leather into soles	Elias T. Ingalls	Haverhill, Mass.	April 11.
Harness, bridles	John C. Smith	Brookhaven, N. Y.	March 23.
Harness, bridles	John C. Smith	Brookhaven, N. Y.	Sept. 17.
Saddles	David Irvin	Madison, Wis. Ter	April 11.
Saddles	Foster D. Ward	Bellbrook, Ohio	April 23.
Saddles, spring	Abraham Freed	Marietta, Penn.	June 11.
Sewing or stitching all kinds of straight seams	J. James Greenough	Washington city, D. C.	June 21.
Shoes, over	Daniel Hodgman	New York, N. Y.	March 23.
Tanning by machinery	David H. Mason	Dahlonega, Ga.	Dec. 5.
Tanning by machinery	Joseph Southwick	Boston, Mass.	April 11.
Tanning hides	Abraham Van Pelt	Bedminster, N. J.	July 8.
Tanning hides by machinery	Webb Wallace and Joseph Fleming	Lehman Township, Penn.	July 20.
		Sandston Township, N. J.	

CLASS XVII.—HOUSEHOLD FURNITURE, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather-dressing, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead	Charles W. Curtiss	New Haven, Conn.	Dec. 12.
Bedstead fastening	Daniel Ball	Sandy Hill, N. Y.	April 16.

Classified list of patents expired—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead fastening.....	James Knipe.....	New York.....	Jan. 8, 1842.
Bedstead fastening.....	John Fowler.....	Pittsburg, Pa.....	July 11.
Bedstead for the sick.....	Williams Woolley.....	New York.....	April 16.
Bedstead, sofa.....	Joel Pratt, 3d.....	Hartford, Conn.....	April 1.
Bread, raising.....	Abel Conant.....	Lowell, Mass.....	Oct. 12.
Brushes, manufacturing.....	John J. Adams.....	Boston, Mass.....	March 12.
Chair, rocking.....	Charles L. Bauder.....	Utica, N. Y.....	April 6.
Cutting meat and other substances.....	John Morris.....	Derby, Conn.....	Feb. 28.
Cutting vegetables, &c.....	Henry Hoover, assignee of Martin Stoner.....	Waynesboro', Pa.....	Oct. 22.
Drawers, improvement in.....	Oliver Jenkins.....	Boston, Mass.....	June 22.
Mop-holders, manner of constructing.....	Samuel S. Whitman.....	Little Falls, N. Y.....	Jan. 24.
Safer for preserving meats, &c.....	David B. Dickinson.....	Baltimore, Md.....	Jan. 16.
Sausage machine.....	John H. Putte.....	Fayette, Mo.....	July 12.
Washboard for washing clothes.....	Marcellus Sands.....	Franklin, N. Y.....	Feb. 12; antedated Feb 7.
Washing machine.....	Frederick Fentriss.....	Greensboro', N. C.....	Dec. 12.

CLASS XVIII.—ARTS, POLITE, FINE, AND ORNAMENTAL, including music, painting, sculpture, engraving, books, paper, printing, binding, jewelry, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Copying machine.....	Luman Carpenter.....	Oswego, N. Y.....	Dec. 31, 1842.
Daguerreotype impressions, mode of fixing.....	Benjamin R. Stevens and Lemuel Morse.....	Lowell, Mass.....	March 28.
Daguerre-type pictures, coloring.....	John Plumbie, jr., assignee of Daniel Davis, jr.....	Boston, Mass.....	Oct. 22.
Inkstands, manufacture of.....	David J. Mandell.....	Springfield, Mass.....	Feb. 21.
Pens, metallic.....	Thomas Woodward.....	Brooklyn, N. Y.....	Dec. 1.
Pens, metallic.....	Timothy Alden.....	Barre, Mass.....	Dec. 12.
Piano-forte.....	Charles Bossert and John Schomacher.....	Philadelphia, Pa.....	April 29.

Piano-forte, shifting movement for square or horizontal.....	Thomas Loud.....	Philadelphia, Pa.....	April 1, 1842.
Printing-press.....	Joel G. Northrup.....	Cortlandville, N. Y.....	Sept. 30.
Printing-press, construction of.....	William W. Smith.....	New York.....	Feb. 1.
Printing-press, double cylinder.....	Richard M. Hoe.....	New York.....	May 20.
Ruling paper.....	George L. Wright.....	Springfield, Mass.....	May 28.
Sculptors' apparatus for, &c.....	Henry Dexter.....	Boston, Mass.....	Mar. 28.
Seraphines, improvement in.....	James A. Babin.....	Canton, Mass.....	June 22.
Statues, casting, method of.....	Lawrence Myers.....	Philadelphia, Pa.....	Jan. 8.

CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Barrels of guns and fire-arms, manner of combining.....	Jesse Griswold.....	Chambers county, Ala.....	Feb. 1, 1842.
Bomb, subterranean or mine.....	James MacGregor, jr.....	Wilton, N. Y.....	Mar. 23.
Cannon locks.....	Enoch Hidden, inventor in part with and assignee of Samuel Sawyer.....	New York.....	April 29.
Cannon, wrought-iron and steel.....	Ransom Cook.....	Saratoga, N. Y.....	Feb. 1.

CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Baths, medicated vapor.....	Lucien E. Hicks and Thomas Miner.....	Middletown, Conn.....	Sept. 17, 1842.
Resuscitation, apparatus for.....	Edward Welchman.....	Cold Spring, N. Y.....	April 11.
Strabismus, goggles for.....	Andrew Lake.....	Flatbush, N. Y.....	Nov. 4.
Supporters, umbilical, combined with corsets.....	Maria P. Dibble.....	New York.....	May 20.
Teeth, improvement in setting.....	Matthew S. Foster.....	Trenton, N. J.....	Nov. 12.
Truss.....	Edmund Landis.....	Lancaster, Pa.....	Oct. 22.
Truss.....	George W. Kiddell.....	Knightstown, Ind.....	July 11.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Buttons, &c. forming collars, washers, &c.	Moses Ferre	Williamburg, Massachusetts	July 22, 1842.
Clasps for pantalon straps, &c.	William H. Miller	New York	July 8.
Cumbs, elitting tortoise shell for making	William Redheffer	Penn Township, Pa.	June 12.
Garments, measuring and cutting.	Hiram Seger	Marion, Georgia	April 29.
Garments, measuring instruments	Henry C. Brundage	Middletown, N. Y.	Feb. 7.
Garments, measuring instruments	Joseph Knowland & Jacob F. Knowland	Brownsville, Kentucky	July 20.
Garments, measuring instruments	Peter F. L'Veret	Warrenton, Georgia	May 26.
Shears, tailors'	Hermann Wendt	New York, N. Y.	March 23.
Shears, tailors'	James G. Wilson, assignee of Thos. Hawkins	New York, N. Y.	Sept. 23.
Shears, tailors'	Thomas James Sloan	New York	April 21.
Umbrellas	Gilbert S. Ward	Newark, New Jersey	Sept. 17.
Wigs	F. Devillo	Baltimore, Maryland	Dec. 12.
Wigs	William Dowell	Philadelphia, Pennsylvania	

CLASS XXII.—MISCELLANEOUS.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cigars, making.	Jonathan Ball	Buffalo, New York	Oct. 12, 1842.
Tents, portable.	James Harrison Dakin	New Orleans, Louisiana	May 30.
Traps for rats, &c.	Ebenezer Oliver	Philadelphia, Pennsylvania	Oct. 22.

CLASSIFIED LIST OF PATENTS FOR DESIGNS THAT HAVE EXPIRED DURING THE YEAR 1856.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Carpets	Peter Lawson	Lowell, Mass.	April 3, 1842
Carpets	Peter Lawson	Lowell, Mass.	April 3.
Carpets	Peter Lawson	Lowell, Mass.	April 3.
Furniture ornaments	Isaac F. Baker, assignor to Cornelius & Co.	Philadelphia, Penn	April 10.
Furniture ornaments	Isaac F. Baker, assignor to Cornelius & Co.	Philadelphia, Penn	April 10.
Grandoles	William F. Shaw	Suffolk county, Mass	Dec. 18.
Grate, portable.	Apollon Richmond, assignor to A. C. Barstow & Co.	Providence, R. I.	Sept. 11.
Stoves	Joseph G. Lamb and Conrad Harris	Cincinnati, Ohio	Dec. 11.
Stoves	Samuel Hill and William B. Cline	Philadelphia, Penn	Dec. 4.
Stoves	D. F. Goodhue and Charles Guild	Cincinnati, Ohio	Dec. 4.
Stoves	Samuel Clark, assignor to Johnson & Cox	Troy, N. Y.	Nov. 13.
Stoves	Samuel Clark, assignor to Johnson & Cox	Troy, N. Y.	Nov. 13.
Stoves	Samuel H. Ransom	Albany, N. Y.	June 26.
Stoves	Samuel H. Ransom	Albany, N. Y.	June 26.
Stoves	Charles W. Warnitch	Philadelphia, Penn	June 26.
Stoves	Samuel W. Gibbs, assignor to Augustus Quackenbush	Albany, N. Y.	June 26.
Stoves	Henry C. Fay	Troy, N. Y.	March 10; antedated Dec. 2, 1848.
Stoves	N. P. Peck	Springfield, Mass.	Jan. 23.
Stoves	Samuel W. Gibbs, assignor to Jones & Finney	Albany, N. Y.	March 20.
Stoves	George E. Waring	Patonsburg, Va.	
Stoves	Charles J. Woolson	Stamford, Conn.	April 10.
Stoves	Abram Haney, assignor to J. & A. Morrison	Cleveland, Ohio	April 10.
Stoves	Samuel H. Ransom	Troy, N. Y.	April 17.
Stoves	Abram Haney, assignor to Morrison & Tibbits	Albany, N. Y.	April 24.
Stoves		Troy, N. Y.	May 8.

Classified list of expired patents for designs—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Stoves.....	S. W. Gibbs, assignor to North, Harrison & Co.	Albany, N. Y.	July 10, 1849.
Stoves.....	Samuel Hill and William B. Cline.	Philadelphia, Penn.	July 17.
Stoves.....	Hosea H. Huntley, assignor to William C. Davis.	Philadelphia, Penn.	Dec. 25.
Stoves.....	William L. Sanderson, assignor to Dunham, Collier & Sage.	Cincinnati, Ohio	Dec. 18.
Stoves.....	Joseph G. Lamb and Conrad Harris.	Troy, N. Y.	Aug. 7.
Stoves.....	William L. Sanderson, assignor to Pease, Keeney & Gage.	Troy, N. Y.	Aug. 21.
Stoves.....	James Wager.	Troy, N. Y.	Sept. 25.
Stoves.....	James Wager.	Troy, N. Y.	Sept. 25.
Stoves.....	Calvin Fulton, assignor to John M. French.	Rochester, N. Y.	Sept. 25.
Stoves.....	Geo. W. Chambers, assignor to A. Cox & Co.	Troy, N. Y.	Sept. 9.
Stoves.....	Geo. W. Chambers, assignor to A. Cox & Co.	Troy, N. Y.	Oct. 9.
Stoves.....	S. H. Burton.	Cincinnati, Ohio	Oct. 9.
Stoves.....	Sherman S. Jewett and F. H. Root.	Buffalo, N. Y.	Oct. 9.
Stoves.....	William Savery.	New York, N. Y.	Oct. 9.
Stoves.....	Samuel W. Gibbs, assignor to J. Cross & Son.	Albany, N. Y.	Oct. 9.
Stoves.....	Edward B. Finch.	Peekskill, N. Y.	Oct. 16.
Stoves.....	James Wager.	Troy, N. Y.	Oct. 23.
Stoves.....	Hosea H. Huntley.	Cincinnati, Ohio	Oct. 23.
Stoves.....	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.....	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.....	John F. Rathbone.	Albany, N. Y.	Oct. 23.
Stoves.....	Abram Haney, assignor to Morrison & Tibbits.	Troy, N. Y.	Nov. 6.
Stoves.....	Samuel Clark, assignor to Johnson & Cox.	Troy, N. Y.	Nov. 13.
Stove, air-tight.	Moses Pond.	Boston, Mass.	Oct. 23.
Stoves, cooking.	A. C. Barstow.	Providence, R. I.	July 10.

ALPHABETICAL LIST OF PATENTEES FOR THE YEAR 1856.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16261	Abbott, Harry.	Mill, cider.	Dec. 23, 1856.	XIII.
15502	Abbott, J. G., and A. Lawrence. (See Smith, G., H. Brown, and J. A. Read, assignors.)	Corn-sheller.	Aug. 12, 1856.	I.
15681	Adams, Calvin. (See Sherwood, John P., assignor.)	Saddles, ladies' riding.	Sept. 9, 1856.	XVI.
15548	Adams, Henry W.	Glass fountain lamps, mould for pressing.	Aug. 19, 1856.	XV.
15797	Adams, Isaac.	Printing-press, power, additional improvement in the.	Aug. 19, 1856.	Extension.
16260	Adams, Joseph.	Printing-press, power, printing machine called the.	Aug. 26, 1856.	Extension.
14943	Adams, Jonathan.	Fire-arms.	Sept. 30, 1856.	XIX.
14218	Adams, Lucius B.	Ploughs.	Dec. 23, 1856.	I.
15638	Adams, William.	Saw-mills, head blocks of, method of operating.	May 25, 1856.	XIV.
16310	Adkins, Homer.	Paper, sand, machinery for cutting.	Feb. 12, 1856.	III.
15314	Adler, Elkan.	Harvesters.	Sept. 2, 1856.	I.
14849	Aiken, J. B. and W., assignors to H. and J. B. Aiken.	Bed-bottoms, spring.	Dec. 23, 1856.	XVII.
16107	Albaugh & Wilt. (See Wilt & Albaugh.)	Knitting machines.	July 8, 1856.	III.
14340	Albright, Joseph.	Locks.	May 13, 1856.	II.
14341	Allen, Timothy.	Collars, horse, machines for stuffing.	Nov. 25, 1856.	XVI.
14457	Alexander, Thomas J.	Cooking with quick-line, apparatus for.	Mar. 4, 1856.	V.
15503	Allard, Daniel N.	Streets, sweeping, machine for.	Mar. 4, 1856.	IX.
16222	Allcutt, Mark.	Vessels, propelling.	Mar. 25, 1856.	VII.
14644	Allen, Andrew.	Sawing-machine.	April 29, 1856.	XIV.
14645	Allen, Edwin.	Washing machine.	Aug. 12, 1856.	XVII.
15637	Allen, Edwin.	Cant-hook, adjustable, for moving logs, &c.	Dec. 16, 1856.	XII.
15454	Allen, Ethan.	Looms, power.	April 15, 1856.	III.
		Clocks, calendar.	April 15, 1856.	VIII.
		Projectiles, hollow, moulds for.	Sept. 2, 1856.	XIX.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16137	Allen, Frederic.....	Mop-heads.....	Dec. 2, 1856.....	XVII.
14991	Allen, John F., assignor to N. L. Cole.....	Valves, slide, for steam-engines, operating.....	May 27, 1856.....	VI.
807	Allen, John F., assignor to Strutton & Massey.....	Stoves, cooking.....	June 17, 1856.....	Design.
15109	Allen, Lucien H., assignor to L. H. Allen and E. M. Ivens.....	Wheels, car, casting.....	June 10, 1856.....	X.
14219	Allen, Z. (See Dawley, B. G., assignor.).....	Scissors.....	Feb. 12, 1856.....	XVII.
14993	Alender, John.....	Uterine supporters.....	June 3, 1856.....	XX.
15504	Allen & Hager. (See Hager, Abraham, and Youngs Allyn.).....	Supporters, invalid.....	Aug. 12, 1856.....	XX.
14342	Alston, James T. (See Lewis & Alston.).....	Marble in taper form, machines for sawing.....	Mar. 4, 1856.....	XV.
16000	Amazeen, Christopher.....	Ship's windlass, the pawl cases of a, machinery for operating.....	Nov. 4, 1856.....	VII.
14548	Ames, Nathan.....	Stamp, self-inking.....	April 1, 1856.....	XVIII.
16167	Ames, Nathan, assignor to Boston Hand Stamp Co.....	Stamp, hand.....	Dec. 2, 1856.....	XVIII.
816	Ames, Winslow.....	Stove, box, plate.....	July 15, 1856.....	Design.
15873	American Railroad Chair Manufacturing Company. (See Carson, Samuel.).....	Bridge, canal.....	Oct. 14, 1856.....	IX.
14435	Anderson, B. G.....	Steel, welding.....	Mar. 18, 1856.....	II.
16108	Anderson, J., J. McLaren, and J. Bryant.....	Lathe for cutting fluted mouldings.....	Nov. 25, 1856.....	XIV.
16001	Anderson, Robert, and Aaron H. Vancleve.....	Metals, cutting.....	Nov. 4, 1856.....	II.
16223	Anderson, Shroder & Russell. (See Shroder, Richard, assignor.).....	Saws, grinding, machine for.....	Dec. 18, 1856.....	XIV.
14994	Andrews, Emanuel.....	Lamps, gas-burning.....	June 3, 1856.....	V.

15270	Andrews, Solomon.....	Locks, pad.....	July 8, 1856.....	II.
16224	Andrews, Solomon.....	Locks, pad, case for.....	Dec. 16, 1856.....	II.
353	Apperly, William.....	Cars, &c., railroad, ticket register for.....	Feb. 19, 1856.....	Reissue.
14588	Appleby, Stephen N.....	Drying wet grain, &c., machine for.....	April 8, 1856.....	V.
14758	Applegate, Enoch.....	Chain-cable hooks.....	April 29, 1856.....	VII.
15597	Arial, Charles J. P.....	Water, method of applying one stream of, to assist in raising another.....	Aug. 26, 1856.....	XI.
15271	Armitage, Robert G.....	Fires, method of extinguishing.....	July 8, 1856.....	V.
16042	Armstrong, Francis.....	Brakes, bumper, for railroad cars.....	Nov. 11, 1856.....	X.
16262	Armstrong, John.....	Boilers, steam.....	Dec. 23, 1856.....	VI.
14981	Arnett, William D.....	Cars, railroad, replaceable axle box for.....	May 27, 1856.....	X.
14589	Arnold, Aaron.....	Propeller-shafts in keels, enclosing.....	April 8, 1856.....	VII.
15163	Arnold, Asa.....	Saw for sawing machines, self-setting or self-raking.....	June 24, 1856.....	XIV.
362	Arnold, John, deceased, legal representatives of, assignors to Union Manufacturing Company.....	Web for cloth of wool, hair, or other substance, machine for forming the, without spinning or weaving.....	Mar. 18, 1856.....	Reissue.
15464	Arnold, Samuel.....	Trap, fly.....	Aug. 5, 1856.....	XXII.
15722	Arnold, S.....	Trap, fly.....	Sept. 23, 1856.....	XXII.
403	Arthur, Robert.....	Cans, preserve, self-sealing.....	Oct. 14, 1856.....	Reissue.
370	Arthur, Robert.....	Preserve-cans, self-sealing.....	June 10, 1856.....	Reissue.
15214	Ashe, William A.....	Tire on wheels, mode of securing.....	July 1, 1856.....	X.
14995	Ashenfelder, Josiah.....	Marble sawing machines.....	June 3, 1856.....	XV.
14436	Ashley, Lewis C.....	Planes, bench.....	Mar. 18, 1856.....	XIV.
14897	Ashman, George, and Chas. Phelps. (See Hayes, Augustus A., assignor.).....	Rolling file-blanks.....	May 13, 1856.....	II.
15114	Aspinwall, Jas. N., assignor to himself and Henry E. Staff.....	Planters, corn, hand.....	June 17, 1856.....	I.
15680	Atkins, George.....	Mill, metallic, hemispherical grinding, dress of.....	Sept. 9, 1856.....	XIII.
15871	Atwood, Chas., deceased, Lydia Atwood, and C. O. Crosby, administrators of.....	Pins in paper, sticking.....	Oct. 14, 1856.....	II.
15874	Atwood, Chas., deceased, Lydia Atwood, and C. O. Crosby, administrators of.....	Pins, papering.....	Oct. 14, 1856.....	II.
16199	Atwood, Chas., deceased, Lydia Atwood & C. O. Crosby, administrators of.....	Pins, machines for sticking.....	Dec. 9, 1856.....	II.
15506	Atwood, L. & W.....	Oil from bitumens, preparing oil from.....	Aug. 12, 1856.....	IV.
15505	Atwood, L. & W.....	Oil from cannel coal, production of.....	Aug. 12, 1856.....	IV.
15456	Atterbury, Thomas B., and William Warwick, assignors to Warwick, Atterbury & Co.....	Locks, face-plate for.....	July 29, 1856.....	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Atterbury, Warwick, & Co. (See Knauer, Christian, assignor.)			
14045	Aubin, N.	Gas, illuminating, making.	Jan. 8, 1856.	IV.
14986	Aubin, N.	Gas-retorts, feeding apparatus for.	June 3, 1856.	IV.
14847	Auld, O. G., and J. S. Whiting.	Gold-washing, riffle for.	May 13, 1856.	II.
15160	Aultman, Cornelius, and Lewis Miller, assignors to Ball, Aultman, & Co.	Mowing-machines.	June 17, 1856.	I.
15549	Averill, Levi.	Kilns, lime.	Aug. 19, 1856.	XV.
14044	Avery, B. F.	Ploughs.	Jan. 8, 1856.	I.
14130	Avery, Benjamin F.	Plough-handles, &c., machine for bending.	Jan. 22, 1856.	XIV.
15115	Avery, Cyrus.	Marble-sawing machine.	June 17, 1856.	XV.
15872	Avery, Otis.	Button-holes, guides for working.	Oct. 14, 1856.	III.
15679	Avery, Wyllys.	Saw-set.	Sept. 9, 1856.	XIV.
14131	Ayres, J. A.	Gates, farm, method of opening and closing.	Jan. 24, 1856.	IX.
14644	Ayres, J. A.	Water, mechanism by which cattle raise, for themselves.	April 15, 1856.	XI.
	Babbitt, B. T., S. C. Higbee, and P. W. Plantz.	Pumps and fire-engines.	Oct. 7, 1856.	Extension.
16263	Babcock, G. H.	Printing presses.	Dec. 23, 1856.	XVIII.
15639	Babson, David.	Printing presses, feeding sheets of paper to, machine for.	Sept. 2, 1856.	XVIII.
15406	Bailey, Alfred.	Pegging-jacks.	July 29, 1856.	XVI.
16109	Bailey, F. L.	Printing presses.	Nov. 25, 1856.	XVIII.
14686	Bailey, Gilbert L.	Door-springs.	April 15, 1856.	II.
14532	Bailey, John A. (See Speed & Bailey.)	Marble in obelisk form, machine for sawing.	Mar. 25, 1856.	XV.
15466	Bailey, John A., assignor to John Warrin.	Fishing-rods, reel for.	Aug. 5, 1856.	XXII.
	Bailey, Mitchell, & Co. (See Vance, S. B. H., assignor.)			
	Bailey, Mitchell, & Co. (See Vance, Samuel B. H., assignor.)			
	Bailey, Mitchell, & Co. (See Vance, Samuel B. H., assignor.)			

14799	Bailey, Stephen A., and Russell Wheeler. (See Wheeler & Bailey.)	Shoemakers head-blocks, pegging-jacks, or	May 6, 1856.	XVI.
15467	Bailey, Stephen A., and Russell Wheeler. (See Wheeler & Bailey.)	Mortising machine.	Aug. 5, 1856.	XIV.
15632	Bailey, Thomas D.	Brace.	Aug. 26, 1856.	XIV.
14592	Baird, Daniel N., assignor to Nathaniel Potter.	Hydrants, waste attachment for.	April 8, 1856.	XI.
14549	Baker, Edward J.	Lubricator.	April 1, 1856.	IV.
14759	Baker, Henry N.	Telegraphs, printing, electro magnetic.	April 29, 1856.	VIII.
	Baker, William.	Window-blind hinges and fastenings.	Sept. 9, 1856.	Extension.
	Baker, William S., and L. John Mallard. (See Mallard & Baker.)			
16162	Balcom, V. O., and C. H. Hill.	Paper stock, engine for grinding.	Dec. 2, 1856.	III.
	Baldwin, Mathias W.	Engines, locomotive, steam, manner of constructing, by which they adapt themselves to the curves and the undulations of the road.	Aug. 19, 1856.	Extension.
16168	Baldwin, David.	Printing presses, feeding paper to, machine for.	Dec. 9, 1856.	XVIII.
16117	Baldwin, Stephen K.	Wheel, tourneyron turbine.	Nov. 25, 1856.	XI.
409	Baldwin, Stephen K.	Shoe pegs, machine for cutting.	Nov. 4, 1856.	Reissue.
	Ball, Aultman, & Co. (See Aultman & Miller, assignors.)	Shoe-pegs, machine for cutting.	July 8, 1856.	Extension.
14550	Ball, Benjamin G.	Vice-bench.	April 1, 1856.	II.
15507	Ball, Charles G. (See Plant & Ball.)	Mowing machines.	Aug. 12, 1856.	I.
15753	Ball, G. W., & Co. (See Gibbs, S. W., assignor.)	Ovens.	Sept. 23, 1856.	V.
14182	Ball, H.	Ore washer.	Feb. 5, 1856.	II.
14944	Ball, William.	Steam-stamps, operating.	May 27, 1856.	VI.
14543	Ball, Thomas C., assignor to Nathaniel Lamson.	Seythe fastening.	Mar. 25, 1856.	I.
146	Ballard, William.	Vessels, war, projecting bulwarks for.	July 1, 1856.	Add'l imp't.
	Banker, Taggart & Grover. (See Taggart & Grover, assignors.)			
15465	Bannon, Abraham. (See Rodgers & Bannon.)	Doors, weather strip for.	Aug. 5, 1856.	IX.
14760	Banta, Jas. H.	Pen and pencil case.	April 29, 1856.	XVIII.
15923	Baptie, Edward.	Fug-bell, electro-magnetic.	July 15, 1856.	VII.
14280	Barbair, Arthur, & B. F. Simms.	Tonguing and grooving tapering boards, method of.	Feb. 12, 1856.	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15273	Barber, H. B.	Wells, water from, method of drawing	July 8, 1856.	XI.
14385	Barden, John S., assignor to himself and Aaron W. Rockwood.	Hydraulic metre.	Feb. 26, 1856.	XI.
14761	Barlow, Milton.	Harvesters, cradling.	April 29, 1856.	I.
15315	Barnes, Charles E., assignor to C. E. Barnes and M. W. Oliver.	Cannon, automatic.	July 8, 1856.	XIX.
15508	Barnes, E. R., and Jas. B. Blaklee.	Hat-bodies, felting.	Aug. 12, 1856.	III.
15876	Barnes, J. W.	Manure distributor.	Oct. 14, 1856.	I.
15917	Barnes, John.	Threshing, grain, and separating machines.	Oct. 21, 1856.	I.
14046	Barnes, Lebbeus.	Harvesters.	Jan. 8, 1856.	I.
15878	Barnes, W. T. and J.	Pump.	Oct. 14, 1856.	XI.
14325	Barnes, V.	Brake, R. R. car.	Mar. 11, 1856.	X.
14647	Barnhart, Andrew J.	Lasts, securing and releasing blocks of.	April 15, 1856.	XIV.
15407	Barnitz, C. D.	Tables, portable, folding.	July 29, 1856.	XVII.
14898	Barrett, Jonathan F., assignor to Abram B. and Jonathan R. Barrett.	Mowing machines.	May 13, 1856.	I.
15972	Barringer, Henry.	Tire, upsetting, machine for.	July 8, 1856.	X.
16043	Barstow, Ephraim R., and B. Wardwell. (See Wardwell & Barstow.)	Faucet, anti-frost.	Nov. 11, 1856.	XI.
14708	Bartholomew, Frederick H.	Fertilizers, sowing machine for.	April 22, 1856.	I.
16390	Bartle, Warren S.	Straw-cutter.	July 15, 1856.	I.
14973	Bartlett, Hayward & Co. (See Smith, Brown & Read, assignors.)	Cisterns, construction of.	Mar. 25, 1856.	IX.
15321	Bartlett, William D.	Ploughs.	July 15, 1856.	I.
14583	Barton, Alvin.	Door-springs.	April 1, 1856.	II.
14593	Barton, assignor to himself, A. R. Morgan, and J. M. Parsons.	Bells, pressure.	April 8, 1856.	XVII.
15591	Barton, Wm. M., assignor to Wm. M. and Robert M. Barton.	Stoue, drilling and dressing, machines for.	Aug. 19, 1856.	XV.

ANNUAL REPORT OF THE

COMMISSIONER OF PATENTS.

15596	Barton, Wm. M., assignor to Wm. M. and Robert M. Barton.	Drills, rock.	Aug. 19, 1856.	XV.
15877	Bartram, Walker B.	Pins in paper, sticking.	Oct. 14, 1856.	II.
14793	Bascom, A., and C. B. Wheeler. (See Wheeler & Bascom.)	Wheels, turbine, guides or chutes for, construction of.	May 6, 1856.	XI.
15215	Batchelder, Hazin J.	Forceps, dental.	July 1, 1856.	XX.
15965	Batchelder, Hazin J.	Tooth extractor.	Oct. 28, 1856.	XX.
15955	Batchelder, William W.	Pegging machines, hand.	June 10, 1856.	XVI.
15942	Bate, John J.	Lard rendering kettles.	Oct. 21, 1856.	IV.
15755	Bate, Robert. (See Dickinson & Bate.)	Planters, corn.	Sept. 23, 1856.	I.
15409	Bates, Malender.	Harvesters, corn and cane, cutting apparatus for.	July 29, 1856.	I.
15408	Batson, John W., assignor to himself and Martin H. Batson.	Harvesters, corn and cane, raking apparatus for.	July 29, 1856.	I.
14997	Batley, Jesse.	Windmills, method of regulating.	June 3, 1856.	XI.
14794	Baughman, J. T.	Wagon tongue.	May 6, 1856.	X.
15943	Baum, Charles.	Table and bedsteads combined.	Oct. 21, 1856.	XVII.
14921	Baxendale, James. (See Standing, John, assignor.)	Wrench.	Feb. 12, 1856.	II.
15056	Baxter, William.	Engine, hydro-steam.	June 10, 1856.	VI.
15374	Bazin, James A.	Pumps, rotary.	July 8, 1856.	XI.
16323	Bazin, James A. (assignor to A. B. Ely.)	Counting.	Dec. 23, 1856.	VIII.
15164	Beach, A. Ely.	Printing instruments for the blind.	June 24, 1856.	XVIII.
16139	Beach, Moses S.	Printing presses, feeding paper to.	Dec. 2, 1856.	XVIII.
16311	Beach, Moses S.	Printing presses, feeding paper to, machine for.	Dec. 23, 1856.	XVIII.
412	Beach, William.	Currycombs.	Dec. 9, 1856.	XVIII.
16286	Beach, William.	Pans, bake.	Dec. 16, 1856.	XVII.
15167	Beala, Fordyce.	Firearms.	June 24, 1856.	XIX.
14081	Beattie, John.	Propellers, stern, means for supporting the propeller shaft, and receiving the rudder of.	Jan. 15, 1856.	VI.
15032	Beaugrand, C. E. A., and Theodore Gomme. (See Gomme & Beaugrand.)	Firearms.	June 3, 1856.	XIX.
14531	Beaumont, Frederick B. E.	Trap, rat, self-setting.	Mar. 25, 1856.	XXII.
14998	Beck, Jacob M. (See Low, Samuel W., assignor.)	Plasticorte action.	June 3, 1856.	XVIII.

Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15324	Bee, Benjamin F.....	Boilers, steam, means for controlling feed-water apparatus of.....	July 15, 1856.....	VI.
16171	Reebe, Alfred S.....	Valve gear for steam-engines.....	Dec. 9, 1856.....	VI.
14313	Reebe, James W.....	Hats, manufacturing.....	Mar. 4, 1856.....	III.
15610	Beecher, D. J.....	Planters, cotton-seed.....	Sept. 2, 1856.....	I.
15509	Beers, Smith.....	Odometers.....	Aug. 12, 1856.....	VIII.
783	Beeley, Jacob, assignor to Cresson, Stuart, & Peterson.....	Furnace, summer.....	April 15, 1856.....	Design.
841	Beeley, J., and E. J. Delany, (assignors to Cresson, Stuart & Peterson.).....	Stoves, parlor.....	Oct. 7, 1856.....	Design.
14903	Beetle, James.....	Boat-framer.....	May 20, 1856.....	VII.
14945	Beetle, James.....	Car-window.....	May 27, 1856.....	X.
15410	Behrens, Henry J.....	Slope, machines for sawing in taper form.....	July 29, 1856.....	XV.
15116	Belchambers, Alfred.....	Thrashing and winnowing grain.....	June 17, 1856.....	I.
15468	Belknap, Moody.....	Spike machines.....	Aug. 6, 1856.....	II.
14301	Bell, William.....	Cellars, coal in, machine for depositing.....	Feb. 26, 1856.....	IX.
	Bellamy, W., and C. Dickinson. (See Dickinson & Bellamy.).....			
	Bellows, E. H., and G. J. Washburn. (See Washburn & Bellows.).....			
15918	Belt, Charles R.....	Planters, cotton-seed.....	Oct. 21, 1856.....	I.
15552	Belter, John H.....	Bedsteads.....	Aug. 19, 1856.....	XVII.
15322	Bemis, Moses.....	Planters, corn.....	July 15, 1856.....	I.
	Bender, Charles, et al. (See Huygens, G. W. O., assignor.).....			
15097	Benedict, Reuben W.....	Carriages.....	June 10, 1856.....	X.
14595	Benham, Nathan.....	Door-knobs, fastening.....	April 8, 1856.....	II.
	Bennett, D. K., and Alonzo Webster. (See Webster and Bennett.).....			
16139	Bennett, Edwin.....	Vessels, earthen, for hermetical sealing purposes.....	Dec. 2, 1856.....	XV.
14530	Bennett, James H.....	Butter-worker.....	Mar. 25, 1856.....	I.

15799	Bennett, P., J. Kendrick, and L. A. Cook. (See Glines, H. M., assignor.).....	Gridiron.....	Sept. 30, 1856.....	XVII.
14217	Bennett, William.....	Writing desks.....	Feb. 6, 1856.....	XVII.
14181	Bergmann, Charles H.....	Dryers, corn.....	Feb. 5, 1856.....	V.
14274	Bertheisel, Solomon.....	Sowing seed broadcast, machines for.....	Feb. 19, 1856.....	I.
16205	Berry, Edward F.....	Leather stamping, machines for, combined with a rolling machine.....	Dec. 9, 1856.....	XVI.
15365	Berry, Lewis M.....	Planing machine, cutter heads for.....	July 22, 1856.....	XIV.
	Berry, Thomas L. (See Goodyear and Berry, assignors.).....			
15159	Bertram, William, assignor to John W. Cochran.....	Iron plates, welding.....	June 17, 1856.....	II.
16082	Bessemer, Henry.....	Iron and steel, manufacture of.....	Nov. 11, 1856.....	II.
16083	Bessemer, Henry.....	Iron ore, smelting.....	Nov. 18, 1856.....	II.
15034	Bever, John T.....	Washing machines.....	June 3, 1856.....	XVII.
14792	Beverly, C. F.....	Shingle machine, rotary.....	May 6, 1856.....	XIV.
15366	Bevin, Abner G.....	Sleigh-bells, mode of attaching to straps.....	July 22, 1856.....	XXII.
14639	Bevin, Julius, assignor to himself and Samuel N. Stillman.....	Axles, boxes for.....	April 8, 1856.....	X.
	Bickel, William, et al. (See Harman, Isaac, assignor.).....			
16111	Bickell, Charles.....	Process of treating feldspar as a manure.....	Nov. 25, 1856.....	IV.
	Bicknell, I. W. (See Stover, H. D., and I. W. Bicknell.).....			
	Bicknell, I. W., and H. D. Stover. (See Stover and Bicknell.).....			
15724	Bidwell, Salmon.....	Lamps, for burning fluids.....	Sept. 9, 1856.....	V.
14590	Bigelow, E. B.....	Looms.....	April 8, 1856.....	III.
14222	Bigelow, Erastus B.....	Looms, power.....	Feb. 12, 1856.....	III.
15837	Bigelow, H., and M. Camp.....	Ships' and boats' tackle, ringbolt for.....	Oct. 7, 1856.....	VII.
	Bigelow, Lawson R. (See Cass and Bigelow.).....			
12275	Billings, Horace.....	Cements, roofing.....	July 8, 1856.....	IV.
15919	Billa, Edmund C., jr.....	Ploughs, coulters for, apparatus for cleaning.....	Oct. 21, 1856.....	I.
14648	Bingham, S. H. F. (See Simpson A., assignor.).....	Stoves, coal.....	April 15, 1856.....	V.
14150	Binny, William W.....	Valve, throttle, of steam engines, means for operating the.....	Jan. 29, 1856.....	VI.
	Bisbee, Albert.....			
14946	Bisbee, A., and T. D.....	Photographic pictures on glass.....	May 27, 1856.....	XVIII.
15033	Bishop, Solon.....	Washing machines.....	June 3, 1856.....	XVII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14796	Bishop, G. W.	Smoothing irons, self-heating	May 6, 1856.	XVII.
15682	Bishop, G. W.	Ordnance, breech-loading	Sept. 9, 1856.	XIX.
14707	Bitler, George I.	Seeding machines	April 22, 1856.	I.
15920	Black, William.	Corn-shellers	Oct. 21, 1856.	I.
14438	Blackwell, Samuel.	Saddle-tree, dumb jockey, the cross or horns, &c., being made of gutta percha.	March 18, 1856.	XVI.
14386	Blair, Lafayette.	Blast, hot, apparatus	March 11, 1856.	V.
14437	Blake, James B.	Gas, roasting and broiling by, apparatus for	March 18, 1856.	V.
820	Blake, L. W. and G. W.	Water-wheels	April 22, 1856.	Extension.
16173	Blake, P. and E. W. and J. A.	Drawer-pulls	Aug. 5, 1856.	Design.
15961	Blake, William S.	Boilers, steam, floats for	Dec. 9, 1856.	VI.
14302	Blakelock, E. C., E. Platt, and E. Jordan.	Kettle, brass, machine for making	Oct. 28, 1856.	II.
	Blakelock, James B., and E. R. Barnes. (See Barnes & Blakelock.)	Pitman	Feb. 26, 1856.	XIV.
15098	Blanchard, George.	Bottles, apparatus for cutting the strings that secure corks in.	June 10, 1856.	XXII.
15325	Blanchard, George.	Graters, nutmeg	July 15, 1856.	XVII.
15944	Blanchard, Thomas	Wood, bending, method of.	Oct. 21, 1856.	XIV.
15367	Bliss, Jeremy W.	Door-knobs	July 22, 1856.	II.
14488	Blittkowski, G. A., and F. W. Hoffman.	Guns, needle	March 25, 1856.	XIX.
14710	Blittkowski, Gustav, administrator of Frederick William Hoffman.	Firearms, revolving	April 22, 1856.	XIX.
14275	Blodgett, Sherburne C.	Forks	Feb. 19, 1856.	XVII.
15469	Blodgett, Sherburne C.	Sewing machine	Aug. 5, 1856.	III.
14489	Blunt, S. F., deceased, Charles H. Key, adm'r of	Boats, detaching from their tackle	March 25, 1856.	VII.
399	Boardman, Luther	Buff for polishing spoons, and other articles	Oct. 7, 1856.	Release.
14801	Bocklen, Reinhold.	Planters, corn	May 6, 1856.	I.
16312	Bogert, Horatio. (See Bradford, Ezekiah, ass'r.)	Horse-fastening	Dec. 23, 1856.	XXII.
15470	Bolton, James	Sewing machines	Aug. 5, 1856.	III.

16169	Bonney, H. M.	Salt banks	Dec. 9, 1856.	VII.
14344	Bonwill, William M.	Harvesters, corn	March 4, 1856.	I.
15117	Bonzano, M. F.	Counting coin, machines for	June 17, 1856.	VIII.
14802	Book, S. & W. H.	Felloes, machine for sawing	May 6, 1856.	X.
	Bookout, Edward, and W. Filmer. (See Filmer & Bookout.)			
14902	Bookout, E., and C. H. Hewlett.	Closets, water	May 20, 1856.	IX.
15326	Boone, Thomas G.	Rope machines	July 15, 1856.	III.
15278	Booth, William M., and James H. Mills	Dies for stamping or pressing sheet metal	July 8, 1856.	II.
15553	Borden, Gail, jr.	Milk, concentration of	Aug. 19, 1856.	IV.
15754	Boss, Isaac.	Sails, top, reefing	Sept. 23, 1856.	VII.
	Boston Faucet Company. (See Goodridge, Joseph, assignor.)			
798	Boston Faucet Company. (See Goodridge, Joseph, assignor.)	Piano-forte legs	May 27, 1856.	Design.
	Bosworth, Albert, assignor to Albert Bosworth and Timothy H. Loomis.	Stoves, heating, construction of	March 31, 1856.	Extension.
375	Bosworth, Zephaniah.	Watches, securing pinions, &c., of, in lathes	July 8, 1856.	Release.
15575	Bottum, James M.	Excavators	Oct. 14, 1856.	I.
15216	Bourbin, James	Sawing felloes, machine for	July 1, 1856.	XIV.
15166	Bowen, David	Hemp-breaker	June 24, 1856.	III.
15402	Boyes, Burritt C., assignor to B. C. Boyes and H. Dereum.	Sewing machines, folding guides for	July 22, 1856.	III.
	Boynton, Cox, & Richardson. (See Hathaway, David, assignor)			
15279	Boynton, Edward S.	Hitching horses, clothes lines, &c., apparatus for	July 8, 1856.	XXII.
15471	Boynton, John	Brick press	Aug. 5, 1856.	XV.
15838	Boynton, J. F.	Soda fountains	Oct. 7, 1856.	IV.
15411	Boynton, John F.	Salt evaporation, solar apparatus for	July 29, 1856.	IV.
15165	Boynton, Leander W.	Smoothing irons	June 24, 1856.	XVII.
	Boynton, Richardson & Cox. (See Vedder, N. S., assignor.)			
	Boynton, Richardson & Cox. (See Vedder & Ripley, assignors.)			
	Boynton, Richardson & Cox. (See Hathaway, David, assignor)			
15550	Braby, John L.	Furniture polish	Aug. 19, 1856.	XVII.
15798	Brad, Henry.	Brick machines	Sept. 30, 1856.	XV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15057	Bradford, Charles K.	Harness trace couplings.	June 10, 1856.	XVI.
15544	Bradford, Hezekiah, assignor to Horatio Bogert.	Ore washer.	Aug. 12, 1856.	II.
16044	Bradley, George.	Drag, steam.	Nov. 11, 1856.	X.
15949	Bradley, R. P.	Valve, puppet.	Oct. 23, 1856.	XI.
15543	Bradley, Robert P., assignor to Joel Wiener.	Clothes, wringing.	Aug. 12, 1856.	XVII.
14049	Brady, Reuben.	Metal sheet, bending, machine for.	Jan. 8, 1856.	II.
15276	Braun, E., & R. Peterson.	Black machines.	July 8, 1856.	XV.
14687	Bramble, W. H.	Weighing machines, grain.	April 15, 1856.	XII.
392	Brand, C. C.	Bomb-lance for killing whales.	Aug. 26, 1856.	Reissue. II.
15118	Brand, Nathan.	Forks, hay machine for bending.	June 17, 1856.	XX.
15986	Branch, Isaac B.	Teeth, applying freezing mixtures to the.	Oct. 23, 1856.	XVII.
14439	Branwhite, Charles.	Cans, preserve, hermetically sealing.	Mar. 18, 1856.	
	Bray, Mellen. (See Wells, William, & Mellen Bray.)			
	Brayshaw, Wm. (See Melville, John G., & Wm. Brayshaw.)			
14797	Breser, Abel.	Lubricator.	May 6, 1856.	IV.
14901	Brecht, Gustavus V.	Meat, cutting, machines for.	May 20, 1856.	XVII.
15590	Breckenridge, A. C., assignor to Julius Pratt & Co.	Bleaching ivory, frames for.	Aug. 19, 1856.	IV.
15217	Breed, D. Franklin.	Brake for wagons.	July 1, 1856.	X.
837	Bridge, Hudson E.	Stoves, cooking.	Oct. 7, 1856.	Design.
843	Bridge, Hudson E.	Saves.	Oct. 14, 1856.	Design.
15921	Briggs, J. C.	Musical instruments, reed for.	Oct. 21, 1856.	XVIII.
15356	Briggs, John C.	Pendulum for time-keepers, conical, mode of regulating.	July 15, 1856.	VIII.
	Brinkerhoff, Alexander W. (See Perdew & Brinkerhoff.)			
14440	Brutles, John.	Trusses, hernial.	Mar. 18, 1856.	XX.
15473	Brook, John M.	Boats, means for attaching and detaching to and from their tackle.	Aug. 5, 1856.	VII.

14688	Brooks, Lebblins.	Marble obellaks, sawing, adjusting the angle in machines for.	April 15, 1856.	XV.
15119	Brooks, Lebblins.	Saw-act.	June 17, 1856.	XIV.
14551	Brooks, Wm. F.	Metal tubes, seamless, making.	April 1, 1856.	II.
350	Broughton, Albert.	Polishing stone, metals, &c.	Feb. 12, 1856.	Reissue. XI.
15059	Broughton, John.	Pumps, rotary.	June 10, 1856.	XIV.
15303	Broughton, John.	Saws, circular, method of driving.	July 22, 1856.	II.
15555	Broughton, John.	Door spring.	Aug. 19, 1856.	XIV.
15728	Broughton, John.	Shingle machines, feed motion for.	Sept. 16, 1856.	Reissue. XI.
397	Broughton, John.	Pumps, rotary.	Sept. 30, 1856.	
15716	Brower, Robert F., assignor to S. A. & J. L. Brower.	Gases, waste, steam, &c., method of drawing from manufacturing inclosures.	Sept. 9, 1856.	
14490	Brown, Adolph & Felix.	Sugar, loaf, machines for cutting.	Mar. 25, 1856.	XXII.
14787	Brown, Albert H., assignor to Tagley & Veile.	Lathe.	April 29, 1856.	XIV.
14047	Brown, Charles E.	Doors, double, mode of hanging.	Jan. 8, 1856.	IX.
14125	Brown, Charles H., and Charles Burleigh, assignors to the Putnam Machine Company.	Valves, steam, as cut-offs, means for regulating and working.	Jan. 15, 1856.	VI.
349	Brown, Charles W.	Tonguing and grooving machine.	Feb. 5, 1856.	Reissue. XIV.
16225	Brown, Clark H.	Hoops, wooden, method of planing and tapering.	Dec. 16, 1856.	IV.
14791	Brown, Clayton, et.	Lubricating grist-mill spindles, apparatus for.	May 6, 1856.	
	Brown, Edward, and James R. Case. (See Liblong, John, assignor.)			
14223	Brown, F. & A.	Boring and turning wood, machine for.	Feb. 12, 1856.	XIV.
	Brown, George, and Wm. Wright. (See Wright & Brown.)			
15472	Brown, Henry and William.	Boats, ice breaking.	Aug. 5, 1856.	VII.
14276	Brown, Henry A., and James Wiley.	Pens, fountain.	Feb. 19, 1856.	XVIII.
	Brown, Henry, and Garretson Smith. (See Smith, G., and H. Brown.)			
	Brown, H., and G. Smith. (See Smith & Brown.)			
	Brown, H., G. Smith, and Jos. A. Read. (See Smith, Brown, & Read.)			
	Brown, H., G. Smith, and J. A. Read. (See Smith, Brown, & Read.)			
	Brown, H., G. Smith, and J. A. Read. (See Smith, Brown, & Read.)			

Alphabetical List of Patentees—Continued.

No	Name of patentee.	Invention or discovery.	Date.	Class.
15277	Brown, H., G. Smith, and J. A. Read, assignors to Hayward, Bartlett, & Co. (See Smith, Brown, & Read, assignors.)	Vice.....	July 8, 1856.....	II.
15284	Brown, H., G. Smith, and J. A. Read, assignors to Cox, Hagar, & Cox. (See Smith, Brown, & Read, assignors.)	Washing machine.....	Sept. 9, 1856.....	XVII.
14126	Brown, Hiram C.....	Lath machine.....	Jan. 15, 1856.....	XIV.
15475	Brown, J. S., assignor to Joseph Kent.....	Bee hives.....	July 29, 1856.....	I.
14552	Brown, John W.....	Bolting railway bars.....	April 1, 1856.....	II.
14083	Brown, Joseph S.....	Car, railroad, extension.....	Jan. 15, 1856.....	X.
14008	Brown, Philo.....	Furnace for soldering.....	Jan. 1, 1856.....	V.
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
	Brown, Read, & Smith. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
16172	Brown, Read, & Smith, assignors to Leibbrand, McDowell, & Co. (See Smith, Brown, and Read.)	Fences, portable, yielding joint for.....	Dec. 9, 1856.....	IX.
14148	Brown, Robert J.....	Ships and other vessels, constructing the bottoms of.....	Jan. 1, 1856.....	IX.
15058	Brown, Samuel W.....	Steam-pressure gauges.....	June 10, 1856.....	VI.
16170	Brown, Samuel W.....	Composition, alloy.....	Dec. 9, 1856.....	IV.
364	Brown, Thomas.....	Chain cables, arrangement of means for working and stoppering.....	Mar. 25, 1856.....	Reissue.
	Brown, Vernon, and John Taggart. (See Taggart, John, assignor.)			
14082	Brown, Win. H.....	Engines, variable dial for dividing.....	Jan. 15, 1856.....	VI.
	Browne & Huffman. (See Huffman, Sam'l, assignor.)			

No	Name of patentee.	Invention or discovery.	Date.	Class.
14800	Brown, John D.....	Apples, paring machines for.....	May 6, 1856.....	XVII.
15683	Browne, John D.....	Apple parers.....	Sept. 9, 1856.....	XVII.
15726	Brownell, W.....	Chimney cap.....	Sept. 16, 1856.....	V.
15554	Brownfield, Thomas.....	Wheels for carriages.....	Aug. 19, 1856.....	X.
851	Bruce, George.....	Printing types.....	Dec. 2, 1856.....	Design.
14798	Bruff, Charles S.....	Shutters, double panel.....	May 6, 1856.....	IX.
15537	Bruff, Charles S.....	Sash supporter.....	Aug. 19, 1856.....	IX.
14303	Brunner, Henry I.....	Paper, wall, machine for edging.....	Feb. 26, 1856.....	XVIII.
16264	Bryan, William W.....	Snath of a grain-cradle, mode of securing braces in the.....	Dec. 23, 1856.....	I.
15556	Bryant, Joel.....	Gauges, carpenters'.....	Aug. 19, 1856.....	XIV.
	Bryant, McLaren, & Anderson. (See Anderson, McLaren, & Bryant.)			
16904	Bryson, Robert.....	Husking corn, machines for.....	Dec. 9, 1856.....	I.
14709	Buchanan, Alexander.....	Valve, balanced slide for steam engines.....	April 22, 1856.....	VI.
15551	Bucholtz, Lewis.....	Compound, plastic.....	Aug. 19, 1856.....	IV.
15833	Buck, Jacob, assignor to Joab Buck, H. S. Buck, I. W. Kimball, and D. H. Thompson.....	Cars, railroad, disconnecting and applying brakes.....	Sept. 30, 1856.....	X.
14917	Buck, Martin, Jas. H. Buck, & Francis A. Cushman.....	Brick machines.....	May 27, 1856.....	XV.
16174	Buck, M. and James H., and F. A. Cushman.....	Brick, hollow, or building blocks, machines for pressing.....	Dec. 9, 1856.....	XV.
14597	Buckel, George, and E. Dorach.....	Guns, shot.....	April 8, 1856.....	XIX.
15369	Buckel, George, and Edward Dorach.....	Cartridges, fixed.....	July 22, 1856.....	XIX.
14706	Buel, Julio T.....	Fishing tackle.....	April 22, 1856.....	XXII.
14377	Bull, Wallis and George.....	Marble, machines for sawing.....	Feb. 19, 1856.....	XV.
16079	Bullock, Alvin.....	Harvesters.....	Nov. 11, 1856.....	I.
15727	Bullock, W. M.....	Felloes, dressing, machine for.....	Sept. 16, 1856.....	XIV.
	Bullock, S. W.....	Presses for pressing hay, cotton, &c., method of constructing.....	Mar. 21, 1856.....	Extension.
14304	Bundy, Benj. B.....	Wagons.....	Feb. 26, 1856.....	X.
15060	Burdge, Jonathan.....	Mill, flour, cutting.....	June 10, 1856.....	XIII.
15316	Burditt, Riley, assignor to Jacob Estey and Hart-see P. Green.....	Melodeons, &c., base damper for.....	July 8, 1856.....	XVIII.
14999	Burdon, William.....	Valves, slide, relieving from the pressure of steam.....	June 3, 1856.....	VI.
16085	Burgess, Phineas.....	Glass, polishing, machines for.....	Nov. 14, 1856.....	XV.
14751	Burk, T. D., assignor to James Garrett.....	Wire fences, contraction and expansion in, device to allow for.....	April 22, 1856.....	II.
14750	Burk, Thomas D., assignor to J. C. Miller and C. A. Fowler.....	Horse powers, link gearing for.....	April 22, 1856.....	XIII.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14345	Burke, John M.	Axle arms, skein for.	Mar. 4, 1856.	X.
14372	Burleigh, Charles. (See Brown, Charles H., &c.) Burleigh, Charles assignor to Putnam Machine Company	Planing machines, feed rollers of, gearing for.	Feb. 12, 1856.	XIV.
15061	Burling, George W.	Metal, sheet, machine for bending	Oct. 28, 1856.	II.
1428	Burnham, Abner.	Stoves, cooking	Feb. 19, 1856.	V.
765	Burnham, Sanford, assignor to Cox, Warren, Morrison & Co.	Stove plates.	Feb. 12, 1856.	Design.
16265	Burnett, W. B.	Fence, field, portable	Dec. 23, 1856.	IX.
15412	Burnham, Wm. H., and B. Hibbard.	Churns.	July 29, 1856.	I.
14491	Burstable, A. E.	Fire-arms, breech loading	Mar. 25, 1856.	XIX.
14441	Burr, St. John, Wright, and Riblet. (See Wells, Henry A., assignor.) Henry A., assignor.	Harvesters, grain and grass	Mar. 18, 1856.	I.
16258	Burrall, Thomas D.	Reaping and mowing machines	Dec. 16, 1856.	I.
16084	Burrows, George S.	Vessels, attaching centre boards to	Nov. 18, 1856.	VII.
14596	Burt, George E.	Corn, broom, machine for combing seed off	April 8, 1856.	I.
16002	Burt, William A.	Sextant, equatorial, instrument called an	Nov. 4, 1856.	VIII.
14180	Bush, Chas. H.	Trap, stench, bell.	Feb. 5, 1856.	IX.
14795	Bushnell, William. (See Van Anden, William, assignor.)	Vice	May 6, 1856.	II.
16287	Buss, Charles	Valve motions for steam-engines	Dec. 16, 1856.	VI.
15962	Butler, John	Locks	Oct. 23, 1856.	II.
14387	Butler, William	Gates, lock, valves for	Mar. 11, 1856.	IX.
14442	Butler, William	Castings, chilled, making	Mar. 18, 1856.	II.

14850	Butler, W. H., and R. G. Holmes. (See Holmes & Butler)	Cartridge opener.	May 13, 1856.	XIX.
14346	Butterfield, Jesse S., and Simeon Marshall.	Ploughs	Mar. 4, 1856.	I.
14762	Cady, Asa W.	Excavating and moving earth, machine for	April 29, 1856.	IX.
15327	Cahill, John H. (See Read, Jas. A., assignor.) Caldwell, J. C., and Alex'r Hall. (See Alex'r Hall, assignor.)	Forms, ornamental, method of turning	July 15, 1856.	XIV.
16175	Camp, M., and H. Bigelow. (See Bigelow & Camp.)	Elliptographs.	Dec. 9, 1856.	VIII.
14049	Campbell, James W.	Valves, cut-off, of steam-engines, arrangement of means for operating.	April 15, 1856.	VI.
14151	Capewell, Joseph T.	Shot punches	Jan. 29, 1856.	XIX.
15061	Carbath, Jeremiah	Melodeons, reed boards for, machine for manufacturing.	June 10, 1856.	XVIII.
372	Carbath, Jeremiah	Musical instruments, bellows for	June 24, 1856.	Reissue.
15218	Carbath, Jeremiah	Melodeons	July 1, 1856.	XVIII.
15062	Carlisle, John M.	Saw mills, head blocks of, method of operating	June 10, 1856.	XIV.
14152	Carlton, Thos. I., and Stephen Post	Fences, field	Jan. 29, 1856.	IX.
15641	Caruichael, P. D. M.	Engines, steam, rotary	Sept. 2, 1856.	VI.
14598	Carpenter, Calvin, jr.	Magneto-electric machines.	April 8, 1856.	VIII.
15601	Carpenter, Chas. P.	Rakes, hay	Aug. 26, 1856.	I.
16313	Carpenter, Joseph	Harvesting-machines	Dec. 23, 1856.	I.
14552	Carpenter, Nelson R.	Horse shoe	May 13, 1856.	XI.
15173	Carpenter, Stephen D.	Pump, rotary	June 24, 1856.	V.
15656	Carpenter, W. B.	Lamps, fluid, extinguisher for	Sept. 9, 1856.	XXII.
15994	Carpenter, Wm. B.	Billiard table cushions	Oct. 22, 1856.	XXII.
16045	Carr, Adam (See McNab, Jas., and Adam Carr.)	Ships' steering apparatus	Nov. 11, 1856.	VII.
15474	Carr, Thomas	Water closets	Aug. 5, 1856.	IX.
16220	Carr, William S.	Locomotive method of charging the receiver of a, with compressed air, from fixed stations.	Dec. 16, 1856.	VI.
16003	Carron, Samuel, assignor to American Railway Manufacturing Company.	Odometers	Nov. 4, 1856.	VIII.
385	Carter, Albert	Apple parers	Aug. 12, 1856.	Reissue.
15603	Carter, Charles P.	Apple parers	Aug. 26, 1856.	XVIII.
16104	Carter, C. P., assignor to Leonard Harrington.	Apples, paring, machines for	Nov. 18, 1856.	XVII.
15325	Carter, Ira	Marble sawing machine.	July 15, 1856.	XV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14388	Carter, W. B., and H. L. Mooney. (See Mooney & Carter.)	Ore-washer.....	Mar. 11, 1856.....	II.
14183	Carlton, John. (See Stuber, John, assignor.) Caryl, A. H. Case, Jas. R., and Edward Brown. (See Liblong, John, assignor.)	Harvesters, raking attachment to.....	Feb. 5, 1856.....	I
16317	Case, John, and Isaac Soules	Furnaces, smoke consuming.....	Dec. 23, 1856.....	V.
15741	Casey, Abraham.....	Saw-set.....	Sept. 16, 1856.....	XIV.
15000	Casey, John.....	Window frames.....	June 3, 1856.....	IX.
14282	Case, Marcus M., and Lawson R. Bigelow	Grapple for raising stone.....	Feb. 19, 1856.....	XII.
15657	Cawood, Joseph D.....	Bars, railroad, repairing.....	Sept. 9, 1856.....	II.
15170	Chaffee, Horace B.....	Vice.....	June 24, 1856.....	II.
14803	Chamberlin, Melvin C.....	Collars, horse, mould press for.....	May 6, 1856.....	XVI.
16122	Chamberlin, M. C., and W. Filkins	Root-legs, machine for turning.....	Nov. 25, 1856.....	XVI.
15542	Chambers, Cyrus, Jr.....	Paper, folding, machine for.....	Oct. 7, 1856.....	XVIII.
15599	Chambers, William C., and Thos. S. Hargraves	Wind-wheel.....	Aug. 26, 1856.....	XI.
16135	Chandler, Thomas A., assignor to H. Herrick and T. A. Chandler.	Planters, hand corn.....	Nov. 25, 1856.....	I
15219	Chapin, Henry A.....	Gas-fittings, reaming and tapping, machine for.....	July 1, 1856.....	V.
419	Chapin, Henry A.....	Gas-fittings, machine for reaming and tapping.....	Dec. 23, 1856.....	Reissue.
14253	Chapin, Seth P.....	Sewing guides.....	Feb. 19, 1856.....	III.
14904	Chapman, Henry E.....	Fill machines.....	May 20, 1856.....	XXII.
14154	Chapman, Levi.....	Photographic plate vice.....	Feb. 5, 1856.....	XVIII.
14069	Chapman, Nathan.....	Press, power, chain for.....	Jan. 1, 1856.....	XII.
338	Chapman, Nathan.....	Press, cotton.....	Jan. 8, 1856.....	Reissue.
14084	Chapman, Samuel I.....	Printing presses, machine for feeding sheets of paper to.....	Jan. 15, 1856.....	XVIII.
15645	Chase, Hezekiah.....	Chimneys, apparatus for arresting carbon in.....	Sept. 2, 1856.....	V.
14060	Chase, Ira, Jr.....	Scuttle, coal, covers.....	Jan. 8, 1856.....	IX.
	Chase, North, and North. (See Vedder and Sanderson, assignors.)			

15870	Chase, North, and North. (See Gibbs, S. W., assignor.)	Bollers, steam, arrangement of means for regulating the draught in.....	Oct. 14, 1856.....	VI.
15916	Chattfield, T. W.....	Chimney cowl.....	Oct. 14, 1856.....	V.
15063	Chattaway, James.....	Percussion caps, water proof.....	Oct. 14, 1856.....	XIX.
15370	Chattaway, James.....	Percussion tape priming.....	June 10, 1856.....	XIX.
14085	Cheever, Joseph.....	Genital organs, apparatus for curing varicocele, sterility, impotency, and other diseases of the.....	July 22, 1856.....	XX.
15642	Cheever, Joseph.....	Belting or banding, India rubber, manufacture of.....	Jan. 15, 1856.....	XII.
15642	Cherry, Cummings.....	Oil obtained from mineral coal, purifying apparatus for.....	Mar. 11, 1856.....	IV.
15643	Cherry, Cummings.....	Oil, crude, distilling from mineral coal, apparatus for.....	Sept. 2, 1856.....	IV.
15644	Cherry, Cummings.....	Oil, drying, preparation of from oils extracted from bituminous minerals.....	Sept. 2, 1856.....	IV.
15970	Chealey, Plumer.....	Wheel, current.....	Oct. 28, 1856.....	XI.
	Chester, Charles T. (See Robinson, Charles, and C. T. Chester.)			
15840	Childs, George W.....	Vegetable cutters.....	Oct. 7, 1856.....	XVII.
15908	Childs, William C.....	Candle mould machine.....	Oct. 24, 1856.....	IV.
14443	Chope, Thomas.....	Carriage coupling.....	Mar. 18, 1856.....	X.
14390	Church, Harvey. (See Dutcher, William R.)	Bench clamp.....	Mar. 11, 1856.....	XIV.
15220	Clapp, Clinton W.....	Saws, wood, method of framing and straining.....	July 1, 1856.....	XIV.
	Clark, Edward, and J. M. Singer. (See Greenough, J. J., assignor.)			
14444	Clark, Hiram.....	Threshing-machines.....	Mar. 18, 1856.....	I.
14086	Clark, H. M.....	Bolts, heading, machines for.....	Jan. 15, 1856.....	II.
14224	Clark, John, and G. W. N. Yost.....	Ploughs.....	Feb. 12, 1856.....	I.
	Clark, Walter. (See Blakie J. Clark.)			
	Clark, W. A., George Trott, and R. H. Coles. (See Trott, Coles, and Clark.)			
14948	Clark, William.....	Piano legs, attachments for.....	May 27, 1856.....	XVIII.
15685	Clark, William A.....	Engines, steam.....	Sept. 9, 1856.....	VI.
14043	Clarke, G. A., assignor to Wm. Clarke	Harvester, raking apparatus.....	Jan. 1, 1856.....	I.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14051	Clarke, George H.	Bee-hives.....	Jan. 8, 1856	I.
14004	Clarke, William	Paper from straw, process for making.....	May 6, 1856	III.
14391	Clement, Edwin B., and Silas G. Willie	Washing machines.....	Mar. 11, 1856	XVII.
14949	Clement, Nathan S.	Fire-arms, breech-loading.....	May 27, 1856	XIX.
14950	Clemson, William	Saws, circular, grinding.....	May 27, 1856	XIV.
15413	Cleveland, E. C.	Metal planers.....	July 29, 1856	II.
15172	Cleveland, Samuel E. and H. B.	Lamps, locomotive.....	June 24, 1856	V.
14347	Clifford, Ranam	Shingle machine.....	Mar. 4, 1856	XIV.
16112	Clinton, Thomas G.	Cooking apparatus, alcohol.....	Nov. 25, 1856	V.
14853	Clough, John, and Daniel M. Cummings	Splut, surgical.....	May 13, 1856	XX.
15222	Clough, Wm. T.	A. id, sulphuric, concentrating apparatus for.....	July 1, 1856	IV.
15122	Clow, Charles N.	Engines, marine and other, differential governors for.....	June 17, 1856	VI.
15221	Clow, Charles N.	Pumps, rotary.....	July 1, 1856	XI.
15280	Clow, Charles N.	Pumps, rotary.....	July 8, 1856	XI.
14492	Coates, Abraham	Lamps, carcel, regulating the flow of oil to the wick in.....	Mar. 25, 1856	V.
15720	Coates, John G.	Forceps, dentists.....	Sept. 16, 1856	XX.
14855	Coates, William B.	Corn, green, from the cobs, machine for cutting.....	May 13, 1856	XVIII.
15475	Coates, William B.	Envelope.....	Aug. 5, 1856	XVIII.
16177	Coates, William B.	Corn, standing, machine for cutting the stalks of.....	Dec. 9, 1856	I.
14010	Cochran, John W. (See Bertram, William, assignor.)	Valves, slide, method of operating and lubricating.....	Jan. 1, 1856	VI.
15646	Cody, J. A., et al. (See Marsh, David.)	Filter.....	Sept. 2, 1856	IX.
15282	Coffin, N. B., jr.	Books, rounding and backing, machine for.....	July 8, 1856	XVIII.
14305	Coffin, Nathan T.	Saws, mill.....	Feb. 26, 1856	XIV.
767	Coggehall, Wm. T.	Stoves, parlor.....	Feb. 19, 1856	Design.
14650	Cohen, Jacob	Chimneys, grates and dampers for arrangement of.....	April 15, 1856	V.
14906	Colburn, Richard, and L. W. Hanson	Valves, supplemental, arrangement of, for high-pressure engines.....	May 20, 1856	VI.
15415	Cole, Algernon L.	Weaving seamless bags, harness for.....	July 29, 1856	III.
14851	Cole, Charles N.	Gate, farm.....	May 13, 1856	IX.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16046	Cole, John, and A. Little O. Wall	Draining machines.....	Nov. 11, 1856	IX.
14011	Cole, N. L. (See Allen, John F., assignor.)	Nut box.....	Jan. 1, 1856	II.
15001	Cole, Richard H.	Nut machine.....	June 3, 1856	II.
15003	Cole, Richard H.	Nuts, making.....	June 3, 1856	II.
15004	Cole, R. H. & J. C.	Nuts, metallic, machine for polishing.....	June 3, 1856	II.
14711	Coleman, Andrew	Telegraph, receiving magnets for.....	April 22, 1856	VIII.
15729	Coleman, E. & P.	Bolt, heading.....	Sept. 16, 1856	II.
15863	Coleman, W. P.	Mill stone dress.....	Oct. 7, 1856	XIII.
14012	Coles, R. H. George Trott, and William A. Clark. (See Trott, Coles & Clark.)	Brick presses.....	Jan. 1, 1856	XV.
14068	Cullen, John B.	Spikes, heading.....	Jan. 15, 1856	II.
16257	Collier, E. H.	Eg beaters, rotary.....	Dec. 23, 1856	XVII.
15064	Collins, Hiram	Shutter operator.....	June 10, 1856	II.
15281	Coleman, J. M., and T. Turton	Engines, steam, rotary.....	July 8, 1856	VI.
14905	Colt, Samuel	Fire arms.....	May 20, 1856	XIX.
14445	Culton, Howell, and La Baw. (See La Baw, George W., assignor.)	Mowing machines.....	Mar. 18, 1856	I.
14553	Comfort, Samuel, jr.	Harvesters, apparatus for removing grain from.....	April 1, 1856	I.
16307	Comfort, Samuel, jr.	Harvesters, automatic rakes for.....	Dec. 23, 1856	I.
14153	Conduck, George R., assignor to E. S. Renwick	Furnace grates, locomotive.....	Jan. 29, 1856	V.
14654	Conant, Hezekiah	Fire arms, breech loading.....	April 1, 1856	XIX.
15163	Cone, Julius	Lock, alarm.....	June 24, 1856	II.
16229	Coney, Jabez	Pumps.....	Dec. 16, 1856	XI.
14052	Conkling, Edgar	Bricks, building, form of.....	Jan. 8, 1856	XV.
10053	Conner, I., and S. C. Mendenhall. (See Mendenhall & Conner)	Disinfecting fecal matter.....	Jan. 8, 1856	IV.
15717	Cook, James C., assignor to Hotchkiss & Merriam Manufacturing Company.	Looms, Jacquard.....	Sept. 9, 1856	III.
14185	Cook, John	Shingles, cast-iron, lugs for.....	Feb. 5, 1856	IX.
16268	Cook, L. A., Reonet and Kendrick. (See Glines, H. M., assignor)	Stoves and furnaces.....	Dec. 23, 1856	V.
16047	Cook, Theodore	Door knob splashes, fastening.....	Nov. 11, 1856	II.
16047	Cooley, Almon	Door knob splashes, fastening.....	Nov. 11, 1856	II.

Alphabetical List of Patentees—Continued.

ANNUAL REPORT OF THE

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14013	Cooper, George E., & John C. F. Salomon. (See Salomon & Cooper.)	Ploughs.....	Jan. 1, 1856.....	I.
14907	Cooper, George W.	Printing machine.....	May 20, 1856.....	XVIII.
15414	Cooper, John H.	Sawing machinery.....	July 29, 1856.....	XIV.
14225	Copeland, A. S. T.	Valves and exhaust passages of steam engines.....	Feb. 12, 1856.....	VI.
16228	Copeland, Charles W.	Bolt, spring.....	Dec. 16, 1856.....	II.
15800	Copeland, William E.	Locks.....	Sept. 30, 1856.....	XVIII.
15969	Copperrnoll, G. W.	Jewelry, method of fastening.....	Oct. 28, 1856.....	II.
14290	Coppinger, John B.	Forging thimbles.....	Feb. 19, 1856.....	II.
14279	Corlies, George H., and Elisha Harris.	Metal, rolling.....	Mar. 25, 1856.....	XII.
14493	Corlies, George H., and Elisha Harris.	Presses for punching.....	Oct. 7, 1856.....	XIII.
15841	Cormack, Joel W.	Mills, smut.....	Oct. 14, 1856.....	XIII.
15879	Cormack, Joel W., and F. C. Walker.	Grain separators.....	June 17, 1856.....	VI.
15120	Cornelius, R.	Valves, safety.....	Mar. 4, 1856.....	V.
14348	Cornelius, Robert.	Heating of buildings, regulating the, arrangement of steam tubing for.....	Dec. 9, 1856.....	V.
16176	Cornell, Job, and Barrett McDougal.	Burners, gas.....	Feb. 10, 1856.....	IX.
14281	Cornell, John B.	Vault covers.....	May 13, 1856.....	IX.
14854	Cottman, Thomas, and C. Garrett. (See Garrett & Cottman.)	Lathing surface, continuous sheet metal.....	April 8, 1856.....	XVIII.
14635	Cotton, Wm. W.	Envelopes, machine for making.....	Sept. 9, 1856.....	V.
15688	Courtney, Robert	Fuel, artificial.....	Oct. 21, 1856.....	XI.
15922	Covell, W. (See Turner, J., jr., assignor.)	Pumps.....	Jan. 15, 1856.....	XI.
14089	Cowing, John P.	Engines, fire, method of operating.....	Aug. 19, 1856.....	X.
15358	Cowles, John P., Philo and George	Fire, clamping and upsetting.....	Jan. 15, 1856.....	XI.
14090	Cowles, O. L., and A. L. Denning.	Hydrant.....	May 6, 1856.....	XI.
14905	Cowperthwaite, C. J.	Hydrant.....	May 6, 1856.....	XI.

COMMISSIONER OF PATENTS.

15169	Cox, Hager & Cox. (See Horton & Currie, assignors.)	Axles, mode of screwing shafts to.....	June 24, 1856.....	X.
14226	Cox, Hager & Cox. (See Smith, Brown, & Read, assignors.)	Vessels, signals for.....	Feb. 12, 1856.....	VII.
15317	Cox, John. (See Roberts & Cox.)	Dams, mode of constructing.....	July 8, 1856.....	IX.
15756	Cox, Richardson, & Boynton. (See N. S. Vedder, assignor.)	Shingles, feeding and sawing, method of.....	Sept. 23, 1856.....	XIV.
15602	Cox, Richardson, & Boynton. (See Vedder, N. S., and Ezra Ripley, assignors.)	Measuring distances from a single station, instrument for.....	Aug. 26, 1856.....	VII.
14990	Cox, Richardson, & Boynton. (See Hathaway, assignor.)	Corn-shellers.....	May 27, 1856.....	I.
14132	Cox, Warren, Morrison, & Co. (See Pierce & Duley, assignors.)	Mills, flouring.....	Jan. 22, 1856.....	XIII.
14599	Cox, Warren, Morrison, & Co. (See Pierce & Burnam, assignors.)	Pumps, rotary.....	April 8, 1856.....	XI.
16114	Cox, Warren, Morrison, & Co. (See Pierce & Sandford, assignor.)	Leather and morocco, polishing machines for.....	Nov. 25, 1856.....	XVI.
15005	Cox, William.....	Brick-machines, rotary.....	June 3, 1856.....	XV.
151	Crangle, George.....	Brick-machines, rotary.....	Sept. 9, 1856.....	Add'l imp't.
154	Crangle, George.....	Brick, unburnt, machine for striking.....	Nov. 26, 1856.....	Add'l imp't.
15329	Crapo, Marcus P.	Lettering, index, tool for.....	July 15, 1856.....	XV.
15283	Crawford, S. (See Terrel, Charles C., assignor.)	Pen, metallic.....	July 8, 1856.....	XVIII.
15223	Crawley, Edwin.....	Break, railroad car.....	July 1, 1856.....	X.
16004	Cratley, Alphonso.....	Stump extractor.....	Nov. 4, 1856.....	IX.
14651	Creamer, William G.		April 15, 1856.....	
14651	Creighton, J. B.			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15416	Creighton, James R.	Shutter operator.	July 29, 1856.	II.
14533	Crenshaw, Mosejah.	Plough, cultivating.	March 25, 1856.	I.
15915	Cresson, Stuart & Peterson. (See Beasley & Delany, assignors.)	Picture cases, hinge for.	Oct. 14, 1856.	XVIII.
15171	Croasdale, William.	Spreaders, lime and guano.	June 24, 1856.	I.
14014	Crocker, John G.	Cars, railroad, safety guard for.	Jan. 1, 1856.	X.
15121	Crockett, Charles F.	Leather, sheets of, making from curriers' shavings and "buffings."	June 17, 1855.	XVI.
15600	Crofoot, Legrand.	Rafters, laying-out, instrument for.	Aug. 26, 1856.	XIV.
16018	Crofoot, Legrand.	Door fastener.	Nov. 11, 1856.	II.
14652	Crowwell, Levi.	Omni-bus registers.	April 15, 1856.	X.
14000	Crooke, John J.	Sash fastener.	April 8, 1856.	II.
15967	Crocker, Matthew A.	Paddle-wheels, buckets of, arrangement of.	Oct. 26, 1856.	VII.
16266	Crosby, C. O., administrator. (See Atwood, Charles.)	Paper, folding, machinery for.	Dec. 23, 1856.	XVIII.
14306	Cross, Richard.	Knife and pencil case combined.	Feb. 26, 1856.	XVIII.
14087	Croft, Ezekiah.	Lanterns, glasses of, removable flanch-bars for securing the.	Jan. 15, 1856.	X.
15757	Crozler, H. A.	Stave jointer.	Sept. 23, 1856.	XIV.
14712	Culver, John.	Hydrants, waste device for.	April 22, 1856.	XI.
14092	Cummings, Dewitt C.	Locks, canal, valve-gates, for.	Jan. 15, 1856.	IX.
16113	Cunning, David.	Axles, boxes, and journals, &c.	Nov. 25, 1856.	X.
14091	Cummings & Clough. (See Clough & Cummings.)	Gas-burners.	Jan. 15, 1856.	V.
15801	Cummings, William D.	Smoothing irons, self-heating.	Sept. 30, 1856.	XVII.
14094	Cunningham, Charles. (See Davis, Ari, Asahel Davis, and Cunningham, assignors.)	Sails, reefing.	Jan. 15, 1856.	VII.
14093	Cunliffe, H. D. P.	Tables, extension.	Jan. 15, 1856.	XVII.
14093	Curley, E. A.			

14752	Currie & Horton. (See Horton, James, and John Currie.)	Augers.	April 22, 1856.	XIV.
15066	Curtis, Kelsey, assignor to Winsted Auger Co.	Painted cloth, machine for rubbing and polishing.	June 10, 1856.	XVIII.
15065	Cushing, Daniel.	Paint, machine for coating cloth with.	June 10, 1856.	XVIII.
15945	Cushman, Francis A., et al. (See Buck, Buck & Cushman.)	Washing machines.	Oct. 21, 1856.	XVII.
15476	Dailey, Albert A.	Sash supporter.	Aug. 5, 1856.	IX.
15477	Dana, Charles H.	Printing press.	Aug. 5, 1856.	XVIII.
14227	Danforth, William H.	Mills, &c., feed gates for, method of regulating.	Feb. 12, 1856.	XIII.
15371	Dare, Clement.	Engines, steam, vibratory.	July 22, 1856.	VI.
15224	Darker, William, jr.	Apples, cutting and coring, machines for.	July 1, 1856.	XVII.
16049	Darling, Cook.	Meter, diaphragm, fluid.	Nov. 11, 1856.	XI.
14392	Darlington, J. H. and W. Piper.	Heating buildings by steam, apparatus for.	Mar. 11, 1856.	V.
14269	Davenport, Charles.	India rubber thread, machines for cutting.	Dec. 23, 1856.	IX.
14393	Davenport, Henry.	Sewing machines.	Mar. 11, 1856.	III.
14393	David, Henry R.	Paving, street, machines.	Jan. 8, 1856.	IX.
14054	Davidson, Thomas, jr.	Vapor, hydro-carbon, apparatus.	Jan. 15, 1856.	IV.
14129	Davis, Ari, Asahel Davis, and Charles Cunningham, assignors to A. W. Adams, J. B. Richardson, George W. Pettes, and S. T. Sanborn.	Dovetailing machine.	Feb. 26, 1856.	XIV.
14307	Davis, Ari and Asahel.	Driers, fruit or grain.	Mar. 25, 1856.	V.
14494	Davis, Charles W.	Railroad chairs, elastic bearings for.	June 3, 1856.	X.
15036	Davis, D. L.	Railroad station indicator.	Nov. 4, 1856.	X.
16005	Davis, Edwin A.			
14394	Davis, George N., et al. (See Kenney, George, assignor.)	Hinges for shutters.	Mar. 4, 1856.	II.
14349	Davis, Isaac.	Lamps, lamp.	May 6, 1856.	V.
14806	Davis, Samuel.	Water wheel.	June 24, 1856.	XI.
15175	Davis, Wilbur M.	Hemp and flax, preparing, machinery for.	Mar. 11, 1856.	III.
14394	Davy, Edward, Nancy Davy, administratrix of.	Stoves, cooking.	Dec. 23, 1856.	Design.
856	Davy, John T.	Grates, parlor.	Dec. 23, 1856.	Design.
857	Davy, John T.	Looms.	Dec. 23, 1856.	III.
855	Dawley, B. G., assignor to Z. Allen.	Sawing-mills, self-feeding saw blocks for.	July 15, 1856.	XIV.
16306	Dawson, Joel.			
15330				

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14763	Dawson, William.....	Cigar machines.....	April 29, 1856.....	XXII.
15067	Day, Austin G.....	India rubber, cleaning.....	June 10, 1856.....	IV.
15117	Day, Austin G.....	Pen, fountain.....	July 29, 1856.....	XVIII.
14856	Day, Benjamin I.....	Bridle bits.....	May 13, 1856.....	XVI.
14807	Day, Charles. (See Grimes, Andrew.)			
14095	Day, Joseph C.....	Wood, splitting, machine for.....	May 6, 1856.....	XIV.
14764	Dearborn, John M.....	Fire-arms.....	Jan. 15, 1856.....	XIX.
14154	Day, T., and A. Bisbee. (See Bisbee & Day.)	Scaffolding.....	April 29, 1856.....	IX.
14446	Degraw, H. N.....	Bars, railroad, machine for replacing.....	Jan. 29, 1856.....	X.
782	Degraw, H. N.....	Bottles, corking, machine for.....	Mar. 18, 1856.....	XXII.
	Delany, Edward J., assignor to Cresson, Stuart & Petersen	Oven, gas.....	April 15, 1856.....	Design.
14155	Delany, E. J., and J. Beesley, assignor to Cresson, Stuart, & Peterson. (See Beesley & Delany, assignors.)	Brick machine.....	Jan. 29, 1856.....	XV.
14637	Delassize, L. T.....	Moulding pipe, core bar for.....	April 8, 1856.....	II.
15284	Denig, A. L., and O. L. Cowles. (See Cowles and Denig.)	Smut-machines.....	July 8, 1856.....	XIII.
14228	Dempsey, R. M.....	Planer, rotary, for felloes.....	Feb. 12, 1856.....	XIV.
15478	Denison, C. H.....	Carpet-fastener.....	Aug. 5, 1856.....	XVII.
15035	Denison, S. R. C.....	Planters, hand corn.....	June 3, 1856.....	I.
15604	Denney, Samuel L.....	Engines, steam, condensers for.....	Aug. 26, 1856.....	VI.
394	Denniston, John T.....	Saddles, harness.....	Sept. 9, 1856.....	Re-issue.
15285	Derby, J. K.....	Stave-joints.....	July 8, 1856.....	XIV.
16050	Derby, John P.....	Sleeve-fastener.....	Nov. 11, 1856.....	XXI.
16140	Derby, John P.....	Wristband-fastener.....	Dec. 2, 1856.....	XXI.

15959	Derby, J. P., assignor to Salisbury Manufacturing Co. Dereum, H., and B. C. Boyes. (See Boyes, B. C., assignor.)	Dyeing.....	Oct. 21, 1856.....	IV.
14713	Devlan, P. S.....	Brick machines.....	April 22, 1856.....	XV.
14857	Dexter, Elisha.....	Measure, self-counting.....	May 13, 1856.....	VIII.
15605	De Zieg, Henry L.....	Fog-bell, self-adjusting.....	Aug. 26, 1856.....	VII.
14186	Dickerson, Edward N., and Elisha K. Root.....	Pumps.....	Feb. 5, 1856.....	XI.
15296	Dickinson, C., and W. Bellamy.....	Metal, cast, securing pearl ornaments in handles of.....	July 8, 1856.....	II.
15068	Dickinson, Charles W. (See Lyon & Dickinson.)	Pocket-book.....	June 10, 1856.....	XVIII.
15689	Dikes, C., and G. S.....	Sawing-mills, method of feeding.....	Sept. 9, 1856.....	XIV.
801	Diller, Isaac.....	Stoves.....	June 17, 1856.....	Design.
14858	Dimock, Lucius, and Ira.....	Thread, trebling single, machinery for.....	May 13, 1856.....	III.
14355	Dimpfel, F. P.....	Boilers, steam.....	April 1, 1856.....	VI.
14176	Dod, Daniel, assignor to himself and H. F. Read.....	Soldering iron.....	Jan. 29, 1856.....	II.
14447	Dodge, Calvin.....	Fire-places.....	Mar. 18, 1856.....	V.
15054	Dodge, Daniel.....	Nail-machines.....	June 3, 1856.....	II.
15357	Dodge, Josiah.....	Cannon, mode of charging.....	July 15, 1856.....	XIX.
15069	Dole, Henry C.....	Metal, sheet, shears for.....	June 10, 1856.....	II.
15718	Dole, L. A., assignor to Dole, Silver, and Felch.....	Saw-gumner.....	Sept. 9, 1856.....	XIV.
	Dorsch, E. (See Buckel & Dorsch.)			
14350	Dorsch, Edward, and George Buckel. (See Buckel & Dorsch.)	Harvester rakes.....	March 4, 1856.....	I.
15174	Dorsey, Owen.....	Reapers.....	June 24, 1856.....	I.
15971	Doubler, J. W. H.....	Stoves, cooking.....	Oct. 28, 1856.....	V.
15690	Dougherty, Geo. W., and Thos. G. McLaughlin.....	Lubricating throttle spindles.....	Sept. 9, 1856.....	IV.
	Doughlas, C. (See Cummings, C. A., and C. Doughlas.)			
	Douman, Heath, and Rely. (See Rely, John, assignor.)			

Alphabetical List of Patentees—Continued.

No	Name of patentee.	Invention or discovery.	Date.	Class.
15418	Downer, Samuel, and Joshua Merrill.	Oils, lubricating, pyrogenous.	July 29, 1856.	IV.
14629	Downing, I. Francis.	Gates, farm, method of hanging and elevating or depressing.	April 15, 1856.	IX.
15372	Drake, John S.	Hands and arms, artificial.	July 22, 1856.	XX.
14859	Draper, S. W. and R. M.	Mill-stones, machines for dressing.	May 13, 1856.	XIII.
15647	Driggs, John F.	Street sprinkler.	Sept. 2, 1856.	IX.
15543	Drippa, Wm.	Harvesters.	Oct. 7, 1856.	I.
15510	Drummond, John W.	Steering apparatus.	Aug. 12, 1856.	VII.
	Drummond, Malenzo J. (See W. and W. H. Lewis, assignors.)			
	Dulley, J. J. (See Pierce and Dulley, assignors.)			
	Dulley, J. J., and Samuel Pierce, assignors. (See Pierce and Dulley, assignors to Fuller, Warren, and Morrison.)			
	Dulley, J. J., and Samuel Pierce, assignors. (See Pierce and Dulley, assignors to Fuller, Warren, and Morrison.)			
848	Dulley, James J., assignor to Fuller, Warren, and Morrison.	Stoves.	Nov. 4, 1856.	Design.
14351	Dunbar, Elon.	Gates, farm, self-acting.	Mar. 4, 1856.	IX.
1-176	Dunham, Isaac A.	Shoemakers' edge planes.	June 24, 1856.	XVI.
14938	Dutcher, Wm. R., assignor by intermediate assignment to Harvey Church.	Rope and cordage, machinery for making.	May 24, 1856.	III.
15914	Dutton, Thomas, assignor to I. R. Elvans.	Carriage springs, brace for.	Oct. 14, 1856.	X.
14395	Dwyer, Robert D.	Carriages, apparatus for preventing horses in, from falling.	Mar. 11, 1856.	X.
796	Dyott, Michael B.	Lamps.	May 12, 1856.	Disclaimer.
	Dyott, Michael B.	Match safes, paper weights, and pin-cushions, combined.	May 27, 1856.	Design.
	Dyott, Michael B.	Lamps for essential oils, &c.	May 28, 1856.	Extension.
14908	Eagleton, J. Joseph.	Furnace, annealing.	May 20, 1856.	V.
373	Eagleton, J. Joseph.	Furnace, annealing.	June 24, 1856.	Reissue.

14951	Eames, Charles T.	Boat-trees.	May 27, 1856.	XVI.
14187	Ebbert, Peter S.	Locomotives, heating feed-water of apparatus for.	Feb. 5, 1856.	VI.
15225	Ebbert, Peter S.	Locomotive smoke-stacks, base piece of.	July 1, 1856.	VI.
16006	Eberhard, Martin.	Chairs, rocking.	Nov. 4, 1856.	XVII.
144-5	Echols, Josephus.	Stone-drilling machines.	Mar. 25, 1856.	XV.
15331	Echols, Samuel M.	Fire-backs for fire-places.	July 15, 1856.	V.
	Eddy G. W. (See Vedder & Sanderson, assignors.)			
	Edgerton, H., and G. W. Walton. (See Walton & Edgerton.)			
14308	Edson, Orbnuel W.	Collars, shirt, machinery for making.	Feb. 26, 1856.	XXI.
15287	Edwards, Charles R.	Shutter operator.	July 8, 1856.	II.
15178	Ehram, George C.	Trees, felling, method of, by saws.	June 24, 1856.	XIV.
14306	Eickemeyer, R.	Rulers, parallel.	Mar. 11, 1856.	VIII.
15559	Eickemeyer, R.	Sawing-mills, method of operating velocity of feed for.	Aug. 19, 1856.	XIV.
15844	Eliaon, Elias A.	Tan vats, construction of hide frames in.	Oct. 7, 1856.	XVI.
14556	Elliott, Augustus.	Harvesters, grain.	April 1, 1856.	I.
15406	Ellis, Rufus.	Knitting-machines, needle for.	June 3, 1856.	III.
15845	Ellis, Wm. M.	Buoys.	Oct. 7, 1856.	VII.
15479	Ellithorp, Solomon B.	Pavement metal.	Aug. 5, 1856.	IX.
	Ells, Edgar S., and Sidney W. Parker. (See Parker & Ellis.)			
16178	Ellsworth, Erastus W.	Siphon rams, arrangement of valves, &c., in.	Dec. 9, 1856.	XI.
16206	Ellsworth, Erastus W.	Boilers, steam, feed water pumps for.	Dec. 9, 1856.	VI.
15332	Elvans, J. R. (See Dutton, Thomas, assignor.)	Door knobs.	July 15, 1856.	II.
	Elwell, Henry H.			
	Ely, A. B. (See Whipple, M. D., assignor.)			
	Emerson, Charles. (See Marquis & Emerson.)			
15123	Emerson, James.	Ships' capstans and windlasses.	June 17, 1856.	VII.
	Emery, Charles W. (See Neal, James, and Chas. W. Emery.)			
	Emlen, Samuel. (See Morgan, Chas., assignor.)			
369	Emmons, Phineas, assignor to Albert Spencer and Alce E. Laing.	Hat bodies, planing machines for.	May 27, 1856.	Reissue.
788	Engel, Isaac.	Piano-forte legs.	May 13, 1856.	Design.
15458	Engelbrecht, Theodore F., assignor to T. F. Engelbrecht and Thomas C. Nye.	Chimney dampers.	July 29, 1856.	V.
15758	English, B. E.	Window-blinds, the slats of, mode of adjusting.	Sept. 23, 1856.	IX.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15179	English, Francis M.	Vehicles, mode of detaching horses from.	June 21, 1856.	X.
14557	English, Henry	Hydrant.	April 1, 1856.	XI.
14229	Enos, Levi S.	Oil cans.	Feb. 12, 1856.	V.
14714	Erb, John B.	Locks, door.	April 22, 1856.	II.
15124	Erb, M., and F. C. Goffin	Locks.	June 17, 1856.	II.
14955	Erdle, Jacob.	Saws, filing.	Jan. 8, 1856.	XIV.
14890	Ericsson, John.	Engines, air.	April 15, 1856.	XI.
14188	Ernst, John G.	Saw-sets.	Feb. 5, 1856.	XIV.
15177	Espenchado, F.	Fluids, cooling and drawing from casks.	June 24, 1856.	XI.
15802	Espy, Mills B.	Bottles, hermetically sealing.	Sept. 30, 1856.	XXII.
	Espy, M. B., and A. Walsh. (See Walsh, Henry, assignor.)			
15880	Estep, D. P.	Axe-poles, making.	Oct. 14, 1856.	II.
141	Esterly, George.	Harvesters, grass.	April 22, 1856.	Add'l Imp't.
14715	Esterly, George.	Cultivators.	April 22, 1856.	I.
155	Esterly, George.	Harvesting machines.	Nov. 25, 1856.	Add'l Imp't.
	Esterly, Jacob, and Harsteel P. Green. (See Burditt, Riley, assignor.)			
15002	Ettlack, Thomas.	Buildings, device in the walls of, for preventing damage in case of fires.	June 3, 1856.	IX.
16115	Evans, Evan L.	Combs, curry.	Nov. 25, 1856.	II.
15037	Evans, James W.	Amalgamator.	June 3, 1856.	II.
16007	Evans, Ormrod C.	Spading machine.	Nov. 4, 1856.	I.
14640	Evans, R. M., assignor to R. M. Evans and Chas. S. Gale.	Brake, railroad car.	April 8, 1856.	X.
769	Evans, Theodore.	Forks and spoons, handles of.	Mar. 4, 1856.	Design.
16270	Evens, Platt, jr.	Printing press, hand.	Dec. 23, 1856.	XVIII.
14352	Everett, W. E.	Lubricator.	Mar. 4, 1856.	IV.
14280	Everett, Wm. E., and M. Minthorne Thompson.	Boilers, incrustations of, devices for removing.	Feb. 12, 1856.	VI.
16270	Evins, John B.	Shingle machine.	April 29, 1856.	XIV.
15511	Faas, Anthony.	Accordeons.	Aug. 12, 1856.	XVIII.

15051	Fahrney, Samuel, assignor to Abraham Huffer and Benjamin Fahrney.	Vice.	June 3, 1856.	II.
15545	Fairbanks, Thaddeus, assignor to John C. Schooley.	Refrigerators.	Aug. 12, 1856.	XVII.
14056	Falkenaw, Morris, Morris Pollak, and Solomon Wiener.	Watch key.	Jan. 8, 1856.	XVIII.
14157	Farmer, Moses G.	Telegraphic repeaters.	Jan. 29, 1856.	VIII.
15373	Farmer, Moses G.	Telegraphs, electric, self-acting.	July 22, 1856.	VIII.
	Farmers' and Mechanics' Manufacturing Company. (See Ingersoll, Simon, assignor.)			
	Farrand, W. P., and J. S. Sanson. (See Sanson & Farrand.)			
15226	Fay, Samuel B.	Labels, metallic hook for.	July 1, 1856.	XXII.
15125	Fayette, J. B., and D. Wheeler.	Tackle-blocks, strapping.	June 17, 1856.	VII.
15733	Feix, John.	Metals, granulating.	Sept. 16, 1856.	II.
	Felch, Isaac N., et al. (See Roberts, Milton, assignor.)			
	Felch, Isaac N., et al. (See Roberts, Milton, assignor.)			
	Felch, Dole, & Silver. (See Dole, L. A., assignor.)			
14601	Fellows, Robert B.	Furnace, tempering.	April 8, 1856.	V.
15560	Felters, George, and J. S. McClintock.	Coupling pipes.	Aug. 19, 1856.	II.
347	Felton, Amory.	Mills, grinding.	Jan. 29, 1856.	Reissue.
135	Felton, Amory.	Mills, grinding.	Feb. 26, 1856.	Add'l imp't.
14015	Fenn, Benjamin.	Wind-mill.	Jan. 1, 1856.	XI.
15881	Fenn, Dennis, E.	Gates, farm, method of opening and closing.	Oct. 14, 1856.	IX.
15405	Fernald, James.	Chairs.	July 22, 1856.	XVII.
	Ferry, Aretas, and D. W. Green. (See D. W. Green, assignor.)			
15846	Ferry, L. M., assignor to James T. Ames.	Hose coupling.	Oct. 7, 1856.	XI.
15804	Fidler, John.	Alloys, journal box.	Sept. 30, 1856.	IV.
14808	Field, A. G.	Wind mill, self-regulating.	May 6, 1856.	XI.
15847	Field, Benjamin F.	Mortar, mixing, machines for.	Oct. 7, 1856.	XV.
	Field, S. (See Kinaman & Field.)			
14309	Fiefter, John U.	Churns.	Feb. 26, 1856.	I.
15126	Fiefter, John U.	Carriage springs.	June 17, 1856.	X.
	Filkins, W. (See Chamberlin & Filkins.)			
16141	Filley, G. F. (See N. S. Vedder, assignor.)	Electrotype plates, mode of backing.	Dec. 2, 1856.	XVIII.
16051	Filmer, William, and Edward Bookout.	Sugar draining apparatus.	Nov. 11, 1856.	IV.
	Finkin, Gustavus.			

No.	Name of Patentee.	Invention or discovery.	Date.	Class.
14191	Firth, Thomas.	Boilers, steam, feed water, apparatus to.	Feb. 5, 1856.	VI.
14199	Fisher, Lewis S.	Marble, sawing, machines for.	July 29, 1856.	XV.
14354	Fisher, Luther B.	Shears, sheep.	Mar. 4, 1856.	IX.
14169	Fisher, Major H., assignor to Joseph A. Hyde.	Files, cutting.	Feb. 5, 1856.	II.
	Fitch, Enoch P., and I. Scott. (See Kern, James M., assignor.)			
	Fitch, E. P., and Isaac Scott. (See Kern, James M., assignor.)			
14716	Fitts, Abraham.	Peat, digging, machine for.	April 22, 1856.	IX.
14355	Fitzgerald, Daniel.	Houses, portable.	Mar. 4, 1856.	IX.
14352	Fitzgerald.	Houses, portable, mode of constructing.	May 27, 1856.	IX.
15099	Flagg, Charles E.	Platform supporters.	June 10, 1856.	X.
16230	Flauders, Charles.	Coupling, railroad car.	Dec. 16, 1856.	X.
14231	Flauders, David N.	Carriage seat, adjustable.	Feb. 12, 1856.	X.
14002	Flauders, George W.	Gates, flood.	April 8, 1856.	XI.
14497	Fletcher, Calvin.	Paddle-wheels.	Mar. 25, 1856.	VII.
15227	Fletcher, Robert H.	Pumps, steam, method of operating valves of.	July 1, 1856.	XI.
14603	Flourey, Orlando V.	Vice.	April 8, 1856.	II.
15288	Flowers, Francis J.	Vehicles, mode of attaching shafts to.	July 8, 1856.	X.
16161	Floyd, Thomas, assignor to Thomas Floyd and George H. Merklin.	Vault covers.	Dec. 2, 1856.	IX.
14356	Foering, B. F.	Stoves, furnaces, &c., supplementary grating for.	Mar. 4, 1856.	V.
14558	Folom, George F.	Printing press.	April 1, 1856.	XVIII.
15209	Forte, Alvah, assignor to himself, Ira Russell, A. B. R. Sprague, and Henry Phelps.	Bedsteads, spring-bottoms for.	June 24, 1856.	XVII.
139	Forte, George F.	Cars, railroad, ventilating.	April 8, 1856.	Additional improvement.
16052	Footo, George F.	Harvesting grain, machines for.	Nov. 11, 1856.	I.
14231	Forbes John E.	Skate-runners.	Dec. 16, 1856.	XXII.
14448	Forbush, Eliakim B.	Harvesters, grain and grass.	Mar. 18, 1856.	I.
376	Forbush, Eliakim B.	Harvesters, grain and grass.	July 8, 1856.	Reissue.

14357	Ford, F. R.	Rifle-boxes.	Mar. 4, 1856.	II.
15691	Fordyce, John.	Planters, seed.	Sept. 9, 1856.	I.
14861	Foreman, Hugh.	Harvesters, self-raking attachments to.	May 13, 1856.	I.
393	Forrester, I. N.	Saws, reciprocating, method of hanging and straining.	Sept. 10, 1856.	Reissue.
15634	Fosket, William, and Benjamin S. Stedman, assignors to Julius Pratt & Co. Lincoln. (See Lincoln, Albert L., assignor.)	Comb-blanks, machine for sizing.	Aug. 26, 1856.	XXI.
15161	Foss, Ephraim D.	Fence, farm, for rolling ground.	Aug. 19, 1856.	IX.
15333	Foss, Cotton.	Straw-cutter.	July 15, 1856.	I.
15374	Foster, Ambrose and George M.	Building blocks from clay, &c., machine for.	July 22, 1856.	XV.
14156	Foster, Charles.	Scaffolds.	Jan. 29, 1856.	IX.
15732	Foster, Joseph S.	Ships, sails, reefing, upon extra yards.	Sept. 16, 1856.	VII.
15480	Foster, Newton. (See Jones, John M., assignor.)	Railroad signals, compressed air, mechanism for.	Aug. 5, 1856.	X.
	Fowler, C. A., and J. C. Miller. (See Burk, Thomas D.)			
15903	Fowler, David H.	Boilers, steam.	Sept. 30, 1856.	VI.
14234	Fowler, Thaddeus.	Pins, in paper, sticking.	Feb. 12, 1856.	II.
14604	Fox, A. W.	Planing fellows, machine for.	April 8, 1856.	XIV.
14982	Fox, J. W.	Fluids, method of drawing from bottles.	May 27, 1856.	XI.
16232	Fox, George H., and Henry J. Siller.	Faucet, filtering.	Dec. 16, 1856.	XI.
15210	Fravel, Abraham, assignor to himself and Thomas D. Lemmon.	Drills, grain.	June 24, 1856.	I.
	Frear, A. J. Rowe, and W. Van Anden. (See Van Anden, assignor to Bushnell, assignor to others, &c., &c.)			
15923	Freeman, Daniel.	Carriages.	Oct. 21, 1856.	X.
15288	French, A., and C. Frost.	Paper, pulp, making boxes of.	July 1, 1856.	XVIII.
	French, A. J., and W. H. Kimball, assignors to themselves and A. H. Noyes. (See Kimball & French, assignors.)			
15809	French, Cathos.	Cars, railroad, coiled springs for.	Oct. 7, 1856.	X.
14190	French, Eli-ha S.	Vehicles, three-wheel.	Feb. 5, 1856.	X.
14860	French, Samuel F.	Violins, bow for.	May 13, 1856.	XVIII.
14449	Fri-k, Jacob.	Boilers, steam, feed and blow-off apparatus for.	Mar. 18, 1856.	VI.
15815	Friber, Marcus.	Win mill.	Nov. 6, 1856.	XI.
15289	Frost, Charles, and A. W. Webster.	Stone quarrying and cutting, machine for.	July 8, 1856.	XV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
143	Frost & French. (See A. French and C. Frost.) Frost, Henry A.	Blinds, window, means for holding.	May 6, 1856.	Additional improvement. X.
15038	Frost, Mahlon S.	Brakes, railroad car.	June 3, 1856.	III.
14562	Fuller, A. C.	Hat-felting machines.	May 13, 1856.	III.
16164	Fuller, A. L.	Thread, covering with wool.	Dec. 2, 1856.	III.
16271	Fuller, A. L.	Looms.	Dec. 23, 1856.	III.
15759	Fuller, S. B.	Wheels, carriage, machine for painting.	Sept. 23, 1856.	X.
	Fuller, Warren & Morrison. (See Pierce & Duley, assignors.)			
	Fuller, Warren & Morrison. (See Pierce & Duley, assignors.)			
	Fuller, Warren & Morrison. (See Pierce & Duley, assignors.)			
14559	Fuzzard, William	Hat bodies and other articles, cloth for felting.	April 1, 1856.	III.
15290	Fuzzard, William	Hat bodies, machinery for felting.	July 8, 1856.	III.
15735	Gage, William	Harvesters.	Sept. 16, 1856.	I.
14560	Gage, William B.	Axles, railroad, journal box for.	April 1, 1856.	X.
14605	Gale, Charles S. (See Evans, R. M.)	Valves, piston, for steam-boiler regulators.	April 8, 1856.	VI.
15229	Gale, William S.	Steam-pressure regulators.	July 1, 1856.	VI.
16273	Galentine, C. B. and Samuel, and Andrew J. Russell.	Hoof expander.	Dec. 23, 1856.	II.
789	Gallagher, Anthony J.	Stoves, cooking.	May 13, 1856.	Design.
14233	Gallagher, John S., jr.	Gas and steam cooking apparatus.	Feb. 12, 1856.	V.
	Gallagher, John S., jr. (See Wood, Wm. P., assignor.)			
	Gallagher, John S., jr. (See Wood, Wm. P., assignor to W. P. Wood and J. S. Gallagher, jr., and J. S. Gallagher, assignor to W. P. Wood.)			
14498	Gallagher, John S., jr.	Water coolers and filterers.	Mar. 25, 1856.	XVII.
16086	Gallagher, William D.	Marble, sawing, machines for.	Nov. 18, 1856.	XV.

16053	Galludet, William L.	Blinds, slat, spring holder for.	Nov. 11, 1856.	IX.
14606	Gamble, William P.	Leather, polishing, machines for.	April 8, 1856.	XVI.
15606	Ganse, Hervey D.	Cultivator.	Aug. 26, 1856.	I.
14397	Garcin, Francois.	Candles, making, preparation of tallow for.	Mar. 11, 1856.	IV.
14232	Gardiner, P. G.	Axle, railroad car.	Feb. 12, 1856.	X.
14909	Gardner, Bela	Saw-mill blocks, method of operating.	May 20, 1856.	XIV.
15695	Gardner, Charles R.	Sewing-machines.	Sept. 9, 1856.	III.
15512	Gardner, Charles R.	Dies for screw blanks.	Aug. 12, 1856.	II.
16272	Garlick, John T.	Hinge, spring.	Dec. 23, 1856.	II.
14310	Garratt, Alfred C.	Hubs, carriage, box for.	Feb. 26, 1856.	X.
15039	Garrett, Cyrus, and Thomas Cottman.	Plows, subsoil.	June 3, 1856.	I.
14311	Garrett, James. (See Burk, T. D., assignor.) Garrison, S. A., and D. C. Morey.	Coupling for the joints of fellos.	Feb. 26, 1856.	X.
	Garrison, Wm. F., and William A. Guild. (See Guild & Garrison.)			
15806	Gattman, Isaac	Compound wherewith to manufacture paint.	Sept. 30, 1856.	IV.
14983	Gaty, Samuel	Ships' capstans.	May 27, 1856.	VII.
15972	Gausardie, I. Anthony	Preserving dead bodies, method of.	Oct. 28, 1856.	IV.
408	Gazlay, A. H., assignor to O. B. North & Co.	Saddles, harness.	Oct. 28, 1856.	Reissue.
14235	Gebby, R. and W. L.	Planters, seed.	Feb. 12, 1856.	I.
14236	Gee, William	Lubricator.	Feb. 12, 1856.	II.
16078	Geiss, Jacob, and Jacob Brosius	Vegetables, machines for cutting.	Nov. 11, 1856.	XVII.
351	George, A. M.	Spike machines.	Feb. 12, 1856.	XV.
15335	George, A. M.	Stone-dressing machine.	July 15, 1856.	XIX.
15760	George, A. M.	Shells, explosive.	Sept. 23, 1856.	XIX.
15318	George, Henry S., assignor to Henry S. George and George Gratton.	Stoves, cooking.	July 8, 1856.	
14910	George, William O.	Oracular wheel or centre table.	May 20, 1856.	XXII.
15839	George, William O.	Cars, railroad, uncoupling arrangement for.	Oct. 7, 1856.	X.
14911	Gerau, Francis.	Compounds, artificial, decoloring.	May 20, 1856.	IV.
14450	German, John, and C. B. Hoyt	Seeding machines.	Feb. 12, 1856.	I.
16008	Gerrish, Harlan P.	Husking corn, machines for.	Nov. 4, 1856.	I.
15883	Giambastiani, Domenico	Ladders, firemen's.	Oct. 14, 1856.	XXII.
15608	Gibbs, George and John	Dynamometers.	Aug. 26, 1856.	VIII.
16234	Gibbs, James E. A.	Sewing-machines.	Dec. 16, 1856.	III.
14057	Gibbs, L. H.	Fire-arms, breech loading.	Jan. 8, 1856.	XIX.
852	Gibbs, Samuel W., assignor to A. H. McArthur & Co.	Stoves, cooking.	Dec. 9, 1856.	Design.
853	Gibbs, Samuel W., assignor to G. W. Ball & Co.	Stoves, cooking.	Dec. 23, 1856.	Design.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
808	Gibbs, Samuel W., assignor to North, Chase, & North.	Stoves	June 24, 1856.	Design.
840	Gibbs, Samuel W., assignor to North, Chase, & North.	Stoves	Oct. 7, 1856.	Design.
806	Gibbs, Samuel W., assignor to Treadwell, Perry, & Norton.	Stoves	June 17, 1856.	Design.
770	Gibbs, Samuel W., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves, elevated oven.	Mar. 18, 1856.	Design.
793	Gibbs, Samuel W., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves	May 20, 1856.	Design.
850	Gibbs, Samuel W., assignor to Wood, Roberts, & Co.	Stoves, kitchen.	Nov. 25, 1856.	Design.
14653	Gibson, A. J.	Vehicles, attaching thills and poles to.	April 15, 1856.	X.
144	Gibson, Abram J.	Carriages, coupling for.	May 27, 1856.	Add'l imp't.
15483	Giffing, Isaac H.	Ice, breaking, instrument for.	Aug. 5, 1856.	XXII.
15848	Gilbert, George.	Trap, fly.	Oct. 7, 1856.	XXII.
14499	Gilman, Jesse.	Lath machine.	Mar. 25, 1856.	XIV.
15482	Gilman, Lorenzo D.	Wrench.	Aug. 5, 1856.	II.
15421	Gilman, L. D., and G. H. Starbuck. (See Starbuck & Gilman.)	Sugar evaporators.	July 29, 1856.	IV.
14717	Gilman, Samuel H.	Sugar evaporators.	April 22, 1856.	IV.
15481	Gilman, Samuel H.	Furnaces, bagasse.	Aug. 5, 1856.	V.
383	Gilman, Samuel H.	Furnaces, bagasse.	Aug. 5, 1856.	Release.
15694	Gilman, Samuel H.	Sugar, evaporating, pans for.	Sept. 9, 1856.	IV.
15007	Gilpatrick, Benjamin.	Saw-set.	June 3, 1856.	XIV.
14192	Giesinger, Samuel.	Vice, bench.	Feb. 5, 1856.	II.
16303	Giesinger, Samuel, and John W. Kelberg, assignor to D. A. Morris.	Motion, rotary, converting reelpreating into.	Dec. 23, 1856.	XIII.
15946	Gleason, Edward.	Casters, bottle.	Oct. 21, 1856.	XVII.
15127	Gleason, R., jr.	Baskets, cake and fruit, silver plate.	June 17, 1856.	XVII.
14451	Gleason, R., jr.	Infstand.	Mar. 18, 1856.	XVIII.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
763	Gleason, R., jr., assignor to R. Gleason & Sons.	Bottle casters and egg-cup stands.	Feb. 12, 1856.	Design.
378	Glines, H. M., assignor to John M. and Simon F. Stanton, assignors to P. Bennet, J. Kendrick, and L. A. Cook.	Sewing needles, machinery for filling.	July 15, 1856.	Reissue.
831	Glominski, A., assignor to D., A. E., & N. B. Powers.	Floor cloths.	Sept. 16, 1856.	Design.
832	Glominski, A., assignor to D., A. E., & N. B. Powers.	Floor cloths.	Sept. 16, 1856.	Design.
859	Glominski, Antoine, assignor to D., A. E., & N. B. Powers.	Floor cloths.	Dec. 23, 1856.	Design.
15334	Glover, Carlos W.	Harvesters, cutting device for.	July 15, 1856.	I.
15882	Glover, Charles W.	Harvesters.	Oct. 14, 1856.	I.
14953	Goddard, Kingston.	Axles, carriage, securing nuts to.	May 27, 1856.	X.
15607	Goddard, William.	Hosiery, seamless, manufacturing.	Aug. 26, 1856.	III.
14954	Godfrey, Wm. B.	Engine governor, for side-wheel ocean steamers.	May 27, 1856.	VI.
15337	Godman, Thomas J.	Hogs, slaughtering, apparatus for.	July 15, 1856.	XXII.
15484	Goffe, Augustus J. and Demus.	Knitting machines.	Aug. 5, 1856.	III.
14158	Goffin, F. C., and M. Erb. (See Erb & Goffin.)	Heating buildings by steam, apparatus for.	Jan. 29, 1856.	V.
14312	Gold, Stephen J.	Steam heating apparatus, air-cock for.	Feb. 26, 1856.	V.
14500	Gold, Stephen J.	Steam radiator cocks.	Mar. 25, 1856.	VI.
15513	Gomme, Theo., and C. E. A. Beaugrand.	Metal ware, sheet, manufacture of.	Aug. 12, 1856.	II.
15485	Gooch, J. H.	Straw-cutters.	Aug. 5, 1856.	I.
16308	Goodell, A. W., and H. R. Howlett. (See Howlett H. R., assignor.)	Veneers, machine for cutting from the log.	Dec. 23, 1856.	XIV.
15849	Goodell, Joseph H.	Seythes, attaching to snaths.	Oct. 7, 1856.	I.
15128	Goodnow, David A.	Pitchers, molasses.	June 17, 1856.	XVII.
14865	Goodrich, Horace N.	Winnowing mills.	May 13, 1856.	I.
15459	Goodridge, Joseph, assignor to Boston Faucet Company.	Faucet.	Aug. 1, 1856.	XI.
15719	Goodridge, Joseph, assignor to Boston Faucet Company.	Faucet.	Sept. 9, 1856.	XI.
15720	Goodsell, L. A., assignor to L. A. Goodsell and D. H. Holt.	Shingling bracket.	Sept. 9, 1856.	XIV.
16116	Goodwin, Edwin O.	Backgammon and checker boards.	Nov. 25, 1856.	XXII.
14626	Goodwin, Jacob W., and Moses C. Hawkins.	Pumps, method of regulating by wind wheels.	April 8, 1856.	XI.
145	Goodwin, Jacob W., and Moses C. Hawkins.	Pumps, method of regulating by wind wheels.	July 15, 1856.	Add'l Imp't.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14336	Goodyear, John, jr., and Thomas I. Berry, assignors to John Goodyear, jr., Thomas I. Berry, and Wm. M. Porter.	Trap, roach.....	Feb. 26, 1856.....	XXII.
15761	Gordon, Alexander.....	Straw-cutters, feed-rolls of.....	Sept. 23, 1856.....	I.
14016	Gordon, George P.....	Printing-press.....	Jan. 1, 1856.....	XVIII.
366	Gordon, George P.....	Printing-presses.....	April 8, 1856.....	Reissue.
16146	Gore, Mastin, and John P.....	Drilling rock, machine.....	Dec. 2, 1856.....	XV.
14863	Gorham, Jackson.....	Saw, hand.....	May 13, 1856.....	XIV.
15070	Gorauoh, R. B.....	Pumps, double-acting steam, method of effecting uniform pressure upon the pumping piston of.....	June 10, 1856.....	XI.
14284	Gorauoh, Stephen.....	Seeding machines.....	Feb. 19, 1856.....	I.
838	Gott, John.....	Busta of J. C. Fremont.....	Oct. 7, 1856.....	Design.
15648	Gould, C. H.....	Bedsteads.....	Sept. 2, 1856.....	XVII.
14608	Gould, Charles M., and Charles B. Lamb.....	Lanterns, submarine.....	April 8, 1856.....	V.
14864	Gould, J. H.....	Husking thimble.....	May 13, 1856.....	I.
15071	Gould, John H.....	Carriages, three-wheeled, for children.....	June 10, 1856.....	X.
14399	Gould, R.....	Tanning.....	Mar. 11, 1856.....	XVI.
15291	Goulding, John.....	Looms, Jacquard.....	July 8, 1856.....	III.
	Graf, Reisinger & Graf. (See Vedder, N. S., assignor.)			
15734	Graham, E. H.....	Fire-arms.....	Sept. 16, 1856.....	XIX.
780	Granger, Albert.....	Pen, steel.....	April 15, 1856.....	Design.
15230	Grayson, John.....	Sawing stone, machine for.....	July 1, 1856.....	XV.
	Graton, George, and Henry S. George. (See George, Henry S., assignor.)			
15693	Gray, A. W.....	Horse powers, links of.....	Sept. 9, 1856.....	XIII.
15692	Gray, Edward A. (See White and Gray.)	Vehicles, mode of attaching horses to.....	Sept. 9, 1856.....	X.
16233	Gray, George H.....	Jack, lifting.....	Dec. 16, 1856.....	XII.
15008	Gray, Sylvester H.....	Hat bodies, machines for felting.....	June 3, 1856.....	III.
16305	Gray, S. H., assignor to Ives & Gray.....	Hat bodies, sizing, machinery for.....	Dec. 23, 1856.....	III.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14342	Green, Denison W., assignor to himself and Aretas Ferry.	Scythe fastenings.....	May 6, 1856.....	I.
14766	Green, Edwin J., and Moses H. Wheeler.	Buggies, joint-bodied.....	April 29, 1856.....	X.
15009	Green, Jacob.....	Furnaces, gas-consuming.....	June 3, 1856.....	V.
15101	Green, P. B., and E. A. Kennedy.	Planters, seed.....	June 10, 1856.....	I.
784	Green, William H.....	Casters.....	April 22, 1856.....	Design.
14534	Green, Samuel.....	Morocco, tools for figuring.....	Mar. 25, 1856.....	XVI.
14096	Greene, Allen.....	Axles, mode of attaching thills to.....	Jan. 15, 1856.....	X.
14358	Greenhalgh, J., sen.....	Looms, power.....	Mar. 4, 1856.....	III.
15807	Greenleaf, John.....	Leather, softening, machines for.....	Sept. 30, 1856.....	XVI.
14607	Greenleaf, William.....	Carriage coupling.....	April 8, 1856.....	X.
352	Greenough, J. J., assignor to J. M. Singer and Edward Clark.	Sewing or stitching straight seams, machines for.....	Feb. 12, 1856.....	Reissue.
	Gregory, Ira W. (See Watson, William C., assignor.)			
	Grennell, Abel H. (See Houghton, Hiram L., assignor.)			
14654	Grennell, Abel H.....	Vines, mode of protecting.....	April 15, 1856.....	I.
14452	Griffiths, Robert.....	Nut machine.....	Mar. 18, 1856.....	II.
411	Griffiths, Robert.....	Nut machine.....	Nov. 25, 1856.....	Reissue.
16142	Griffiths, Robert.....	Nut machines.....	Dec. 2, 1856.....	II.
16304	Grimes, Andrew, assignor to Charles Day.....	Charcoal burning.....	Dec. 23, 1856.....	IV.
	Grimes, William C.....	Spark arresters.....	Jan. 23, 1856.....	Extension.
15100	Grinnell, Amos L., and John Z. Williams.....	Potato diggers.....	June 10, 1856.....	I.
14561	Griswold, George G.....	Angers, method of manufacturing.....	April 1, 1856.....	II.
15762	Griswold, George W.....	Boots and shoes, heels of, metallic braces for.....	Sept. 23, 1856.....	XVI.
14691	Griswold, George W.....	Door spring.....	April 15, 1856.....	II.
15336	Griswold, Victor M.....	Photographic pictures, collodion for.....	July 15, 1856.....	XVIII.
15924	Griswold, V. M.....	Photographic pictures, bituminous ground for.....	Oct. 21, 1856.....	XVIII.
14017	Grooms, Benjamin.....	Fire-arms, repeating.....	Jan. 1, 1856.....	XIX.
14957	Gross, Henry.....	Saws, circular, guard for.....	May 27, 1856.....	XIV.
15072	Gross, Henry.....	Fire-arms, breech loading.....	June 10, 1856.....	XIX.
15763	Gross, Henry.....	Bed pins, manufacturing, device in machines for.....	Sept. 23, 1856.....	XIV.
16144	Grosvenor, Jonathan P.....	Planing machines, method of clamping cutters in cutter heads for.....	Dec. 2, 1856.....	XIV.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Grover, Manasseh, and George W. Zeigler. (See Zeigler & Grover.)			
1535*	Grover, Oliver F.	Printer's composing stick.	July 15, 1856.	XVIII.
14956	Grover, William O.	Sewing machines, cases for.	May 27, 1856.	III.
	Grover, W., and William W. Wier. (See Wier & Grover.)			
	Grover & Tuggart, assignors. (See Tuggart & Grover, assignors.)			
16009	Groves, Hiram	Musical instruments, automatic.	Nov. 11, 1856.	XVIII.
14337	Guard, Chauncey H., assignor to John A. Scroggs and himself.	Wheelwright machines.	Feb. 26, 1856.	XIV.
15319	Guest, John.	Vessels, sounding guards for.	July 8, 1856.	VII.
382	Guild, William H., and William F. Garrison.	Valves, operating, in direct acting steam engines.	July 20, 1856.	IX.
14313	Guion, P. C.	Bridges, girders for.	Feb. 26, 1856.	V.
14398	Guion, Peter C.	Spark conductors for locomotive trains.	Mar. 11, 1856.	V.
16010	Guion, P. C.	Cowl, or draught accelerator for steamers.	Nov. 4, 1856.	V.
15636	Guion, Peter C., and Paul K. Wombough, assignors to Paul K. Wombough.	Lamps.	Aug. 26, 1856.	V.
14912	Gunner, John, jr.	Shutters, fastening, swing-bolt for.	May 20, 1856.	II.
	Gurley, Wm. & Kenney. (See Kenney, Cyrus, and Wm. Gurley.)			
14809	Gustine, John, and J. M. Rankin.	Scraper, road.	May 6, 1856.	IX.
14718	Haas, Christian, and John C. Noll.	Spokes, driving, machine for.	April 22, 1856.	XIV.
14383	Haasz, Daniel F.	Pianos, grand, construction of.	Mar. 4, 1856.	XVIII.
15764	Hackett, Charles W.	Stamp, hand.	Sept. 23, 1856.	XVIII.
817	Hackett, Joseph	Stoves, cooking.	July 29, 1856.	Design.
	Hager, Cox & Cox. (See Smith, Brown & Read, assignors.)			
	Hagen, Conrad, and Ferdinand Wietrich. (See Wietrich & Hagen.)			
14212	Hager, Abraham, & Youngs Allyn.	Furnaces, bagasse.	May 6, 1856.	V.
	Hager, Cox & Cox. (See Horton & Currie.)			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Haigh, James P., A. Hartuppee, and J. Morrow. (See Kenyon, Wm., assignor.)			
	Haigh, J. P., A. Hartuppee, and John Morrow. (See Hartuppee & Morrow, assignors.)			
16179	Hainaut, Elie Joseph	Process for washing grain.	Dec. 2, 1856.	I.
	Haines, M. J., & B. Kuhns. (See Kuhns & Haines.)			
14719	Hale, Wm. H.	Annunciators, hotel.	April 22, 1856.	XXII.
15110	Hall, Alexander, assignor to Alexander Hall and James C. Caldwell.	Fire arms, repeating.	June 10, 1856.	XIX.
16274	Hall, Alfred.	Brick-press, construction of the.	Sept. 3, 1856.	Extension.
14237	Hall, Andrew M.	Mowing machines.	Dec. 23, 1856.	I.
15231	Hall, Elijah.	Looms, power.	Feb. 12, 1856.	III.
15182	Hall, Franklin D.	Pitchers, refrigerating.	July 1, 1856.	XVII.
15292	Hall, George.	Planters, seed.	June 24, 1856.	I.
14501	Halsey, James E.	Fire-arms.	July 8, 1856.	XIX.
	Halvorson, Halvor, assignor to Slocum & Watkinson.	Miniature case.	Mar. 25, 1856.	XVIII.
15293	Hamer, James A.	Brick machine.	July 8, 1856.	XV.
14955	Hamlin, Emmons, assignor to Hamlin and Henry Mason.	Musical instruments, reed.	May 27, 1856.	XVIII.
137	Hamner, Adolph.	Mash machines.	Mar. 18, 1856.	Add'l'nal improvement.
15696	Hammon, H. B.	Planters, hand, corn.	Sept. 9, 1856.	I.
14058	Hammond, Charles.	Hammer-heads to shafts, attaching.	Jan. 8, 1856.	II.
16301	Hannah, W., assignor to L. H. Bowen and W. Hannah.	Bolts, trimming, machine for.	Dec. 23, 1856.	II.
15486	Hannay, Peter.	Bank notes, bills, &c., blanks for.	Aug. 5, 1856.	XVIII.
	Hanson, L. W., and Richard Colburn. (See Colburn & Hanson.)			
344	Hardinge, Benjamin.	Silica, apparatus for dissolving.	Jan. 22, 1856.	Reissue.
15546	Hargraves, Thomas S., and W. C. Chambers. (See Chambers & Hargraves.)	Brick machines.	Aug. 12, 1856.	XV.
16011	Hartman, Isaac, assignor to Isaac Hartman and William Bickel.	Brake, railroad car.	Nov. 11, 1856.	X.
14555	Harrigan, Dennis.	Carpet lining, machines for making.	April 1, 1856.	III.
	Harrington, John R.			
	Harrington, L. (See Carter C. P., assignor.)			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14193	Harrington, L., and W. O. Thompson. (See Thompson & Harrington.)	Hooks, ships', machine for bending	Feb. 5, 1856	II.
14194	Harris, Elisha. (See Corliss & Harris.)	Boilers, steam, water-gauges for	Nov. 11, 1856	VI.
14195	Harris, Elisha. (See Corliss & Harris.)	Ploughs	Sept. 2, 1856	I.
14196	Harris, John C.	Sifting coal and other articles, machine for	April 8, 1856	V.
14197	Harris, Josephus P.	Bedstead fastenings	Dec. 23, 1856	XVII.
14198	Harris, Samuel.	Cocks, basin	April 8, 1856	XI.
14199	Harrison, Charles	Steam whistles, automatic, on locomotives	April 1, 1856	VI.
14200	Harrison, James	Locks, pad	Jan. 8, 1856	II.
14201	Harrison, James, jr.	Watchmakers, tools for	June 10, 1856	XVIII.
14202	Harrison, Thomas. (See Oliver & Harrison.)	Engines, steam, adjustable cut-offs for	Sept. 2, 1856	VI.
14203	Hart, Benjamin J. (See Henry, Levi J., assignor.)	Musquito-nets, frames for	April 15, 1856	XXII.
14204	Hart, William	Paper-clip	July 1, 1856	XVIII.
14205	Hartupee, Andrew, and John Morrow, assignors to J. P. Haigh, A. Hartupee, and J. Morrow.	Priming trees, implements for	Jan. 15, 1856	I.
14206	Hartwell, Samuel E.	Water wheels	Mar. 25, 1856	XI.
14207	Harvey, John L., and C. A. Mills.	Press, hand, for stamping letters, &c.	Feb. 12, 1856	XVIII.
14208	Harvey, W. W.	Tanning, preparation of hides for	Sept. 16, 1856	XVI.
14209	Haseltine, John.	Washboards	April 8, 1856	XVII.
14210	Haswell, Livingston & Root. (See Carney, N B., assignor.)	Saws, marble, straining	April 15, 1856	XV.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14211	Hathaway, Anson S., assignor to himself and Frederick A. Ruggles.	Mowing grass and cutting grain, machines for	July 1, 1856	I.
14212	Hathaway, David, assignor to Cox, Richardson, & Boynton.	Stoves, parlor	May 20, 1856	Design.
14213	Hathaway, David, assignor to Cox, Richardson, & Boynton.	Stoves, parlor	Aug. 19, 1856	Design.
14214	Hathaway, John M.	Shot-pouches, chargers for	Sept. 2, 1856	XIX.
14215	Haviland, I. E.	Marble, sawing in obelisk form, machines for	April 15, 1856	XV.
14216	Havis, Jesse D.	Planters, seed	Oct. 28, 1856	I.
14217	Hawes, R. L.	Fluid meter, diaphragm	April 15, 1856	XI.
14218	Hawes, R. L.	Books, &c., machine for paging	Dec. 9, 1856	XVIII.
14219	Hawkins, Henry J. and Thomas	Engines, steam, adjustable cut-offs for	June 24, 1856	VI.
14220	Hawkins, Moses C. (See Goodwin & Hawkins.)	Furnaces, house, method of regulating the draught of	Nov. 11, 1856	V.
14221	Hawkins, Moses C., and Jacob W. Goodwin. (See Goodwin & Hawkins.)	Oil from cotton seed, processes for extracting	April 8, 1856	IV.
14222	Hay, Samuel L., and H. B. Osgood	Carriage tops	Mar. 11, 1856	X.
14223	Hayes, Augustus A., assignor to Geo. Ashmun and Charles Phelps.	Boring and mortising hubs, method of	Sept. 2, 1856	XIV.
14224	Hayes, Henry	Ovens, bake	July 29, 1856	V.
14225	Hayes, John P.	Ovens	Dec. 2, 1856	V.
14226	Hayes, John P.	Box, fruit	Aug. 12, 1856	XXII.
14227	Hayes, Wm. E.	Stoves, cooking arrangement of, dampers of	April 22, 1856	V.
14228	Haynes, E. K., assignor to himself and A. M. Mowe.	Sowing seed broadcast, machine for	Dec. 23, 1856	I.
14229	Hayward, Bartlett & Co. (See Smith, Brown & Read, assignors.)	India rubber, manufacture of	April 15, 1856	IV.
14230	Hayward, Nathaniel	Shoes, India rubber, elastic, preparing	May 6, 1856	IV.
14231	Hayward, Nathaniel	Rope, India rubber, catch for	Nov. 4, 1856	XVI.
14232	Hazard, O. S., and Isaac Peck	Ropes, machinery for making	Feb. 5, 1856	III.
14233	Heabert, H.	Rakes, hay	Sept. 2, 1856	I.
14234	Heald, Isaacchar A.	Marble in obelisk form, machines for sawing	Mar. 25, 1856	XV.
14235	Heath, Dousman, & Reilly. (See Reilly, John, assignor.)	Punching machine	May 13, 1856	II.
14236	Heath, Edward			
14237	Heath, Stephen P., and Robert Pilson. (See Pilson & Heath.)			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14927	Heston, John D.	Valves, arrangement of, for hydraulic engines.	April 8, 1856.	XI.
14927	Heckendorn, Jacob.	Flows.	Dec. 23, 1856.	I.
15315	Heldaus, Adolphus.	Nail plate feeding apparatus.	Aug. 12, 1856.	II.
15162	Hedgcock, Thomas.	Quadrant, reflecting.	June 17, 1856.	VIII.
14914	Hedley, Edward.	Shingle machine.	May 20, 1856.	XIV.
16235	Heller, John.	Water mill, portable.	Dec. 16, 1856.	XI.
14915	Helm & Tyer. (See Tyer, Henry G., and John Helm.)	Horse shoe.	May 20, 1856.	II.
14611	Henderson, John.	Valves, slide, and means for operating them, arrangement of.	April 8, 1856.	VI.
14611	Henderson, William M.			
14958	Hendrick, Peckham, & Hopkins. (See Hopkins, Henry S., assignor.)	Lock and key.	May 27, 1856.	II.
16056	Hendrickson, Ezekiel M.	Candle mould machine.	Nov. 11, 1856.	IV.
15233	Hengstenberg, August.	Carriage axle trees for, method of turning.	July 1, 1856.	X.
16117	Hennon, John.	Yarns, cotton, manufacturing.	Nov. 25, 1856.	III.
15392	Henry, Geo. G.	Musquito canopy.	Aug. 19, 1856.	XVII.
15211	Henry, Levi J., assignor to Benjamin J. Hart.	Pumps, steam, method of operating steam valves of.	June 24, 1856.	XI.
15977	Herbert, G. E. W.	Water wheel.	Oct. 23, 1856.	Design.
795	Herrick, Thos. H., assignor to Lemuel M. Leonard.	Stoves, cooking.	May 20, 1856.	XI.
16180	Hervey, H. L.	Lamps, pocket.	Dec. 9, 1856.	V.
14314	Hervey, Horace L.	Bridge, arched, trussed.	Feb. 26, 1856.	IX.
14453	Hervey, Horace L.	Harvester cutters.	Mar. 18, 1856.	I.
15040	Hervey, Horace L.	Measuring distances, parallelle instruments for.	June 3, 1856.	VIII.
15236	Hewermann, John, and Jonathan Reeves.	Harvesters.	July 1, 1856.	I.
14867	Hewlett, C. H. (See Rockhout & Hewlett.)			
14867	Hewson, James.	Portmonnaies and pocket books, fastening for.	May 13, 1856.	XVIII.
14867	Hibbard, B., and Wm. H. Burnham. (See Burnham & Hibbard.)			
15132	Hickok, Samuel.	Refrigerators.	June 17, 1856.	XVII.
15237	Hicks, John C.	Raking attachment for reapers.	July 1, 1856.	I.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14563	Higbee, Babbitt, & Plantz. (See Babbitt, Higbee, & Plantz.)	Slide rests.	April 1, 1856.	II.
14563	Hill, Albert V.			
14314	Hill, C. A., and V. O. Balcom. (See Balcom & Hill.)	Saw-mill dogs.	May 6, 1856.	XIV.
15803	Hill, George W., assignor to Francis Lyons and George W. Hill.	Brick machines.	Sept. 30, 1856.	XV.
14808	Hill, Joseph A.	Railroad bars, lock-joint for.	May 13, 1856.	IX.
14659	Hillard, James R.	Cloth, stretching, spreading rollers for.	April 15, 1856.	III.
15976	Hine, Reuben M.	Forks, shovels, and hoes, agricultural, the handles of.	Oct. 28, 1856.	I.
14159	Hinckley, Jonas.	Shafts, &c., universal joint for connecting.	Jan. 29, 1856.	XII.
15180	Hinman, David.	Grindstones, hangings.	June 24, 1856.	XIII.
14680	Hinman, William.	Bedstead fastenings.	April 15, 1856.	XVII.
14454	Hitchcock, A. C., and C. H. Amidon.	Mortising tool.	Mar. 18, 1856.	XIV.
14721	Hoard, C. B.	Boilers, steam.	April 22, 1856.	VI.
14502	Hoard, J. W.	Pile driver.	Mar. 25, 1856.	IX.
14913	Hock, John G.	Gas retort fastenings.	May 20, 1856.	IV.
15010	Hock, John G.	Gas retort bench, arrangement of a.	June 3, 1856.	IV.
15010	Hoc, Richard M.	Metallic surfaces, particularly saw plates, machinery for polishing and grinding.	May 26, 1856.	Extension.
15501	Hoe, Richard M.	Types, securing on rotary beds.	Aug. 5, 1856.	XVIII.
14267	Hoff, G. C., assignor to E. P. Russell.	Roofing, mastic, construction of.	Feb. 12, 1856.	IX.
15516	Hoffman, Conrad. (See Lindner & Hoffman.)			
16191	Hoffman, F. W. (See Blitkowski & Hoffman.)	Fire-arms.	Aug. 12, 1856.	XIX.
16191	Hoge, Thomas.	Fence for stock pen, portable prairie.	Dec. 9, 1856.	IX.
14239	Hollen, Daniel. (See Priestly Thomas, assignor.)	Engines, condensing steam, which are used for pumping.	Feb. 12, 1856.	VI.
14239	Hollingsworth & Kinyon. (See Kinyon & Hollingsworth.)	Railroads, compound rails for.	May 13, 1856.	IX.
14870	Holman, William J.			
14870	Holmead, Leigh R. (See Phillips, John H., assignor.)			
14018	Holmes, Elijah.	Spoke-shave.	Jan. 1, 1856.	XIV.
14753	Holmes, Geo. W., assignor to Jarvis C. Marble.	Hoop machine.	April 23, 1856.	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14869	Holmes, I. B.	Wash-boards, machinery for manufacturing	May 13, 1856.	XVII.
14916	Holmes, I. B.	Metal, sheet, working in.	May 20, 1856.	II.
15517	Holmes, Ira	Filtering sand for cider.	Aug. 12, 1856.	IV.
16087	Holmes, R. G., and W. H. Butler.	Safe, burglar proof.	Nov. 18, 1856.	I.
15074	Holmes, William.	Threshing machines	June 10, 1856.	I.
15238	Holmes, Lawrence.	Match machine.	July 8, 1856.	XXII.
	Holt, D. H., and L. A. Goodsell. (See Goodsell, L. A., assignor.)			
	Holyoke, Samuel G. (See Root, Riley.)			
14813	Hood, B. L., & E. P. Monroe.	Salt evaporators.	May 6, 1856.	IV.
14871	Hooker, W. D.	Knives to cutter heads, method of securing.	May 13, 1856.	XIV.
	Hooper, H. N., & Co. (See Kershaw, E., assignor.)			
14767	Hopkins, Edward.	Planters, hand-seed.	April 29, 1856.	I.
14545	Hopkins, Henry S., assignor to Hopkins, Hendrick & Peckham.	Engines, steam, means for regulating cut-offs for.	Mar. 25, 1856.	VI.
15975	Hopkins, J. R.	Salts, evaporators for	Oct. 28, 1856.	IV.
15375	Hopkins, Lausing E.	Hat bodies, machines for felting.	July 22, 1856.	III.
15363	Hopkins, Lausing E.	Compounds, felting	Aug. 19, 1856.	III.
15562	Hopkins, William W.	Knife cleaners.	Aug. 19, 1856.	XVII.
14240	Horn, J. L.	Planters, cotton seed	Feb. 12, 1856.	I.
14722	Horsford, E. N.	Acid phosphoric, preparing, as a substitute for other solid acids.	April 22, 1856.	IV.
		Grain, cleaning, machines for.	Nov. 18, 1856.	XIII.
16088	Horton, Chase B.	Fishing implement.	Nov. 4, 1856.	XXII.
16014	Horton, Elmore.	Ranges, portable	May 27, 1856.	Design.
797	Horton, James, and John Currie, assignors to Cox, Hager & Cox.			
15295	Hortsmann, Wm. J.	Looms	July 8, 1856.	III.
15294	Hotchkiss, A. A., and Andrew Hotchkiss & Merriam, Manufacturing Co. (See James C. Cook, assignor.)	Currycombs	July 8, 1856.	XXII.
15129	Honek, Valentine	Planing machines, certain devices in	June 17, 1856.	XIV.

14177	Houghton, F. A., and A. F. Johnson. (See Johnson, A. F., assignor.)	Marble, mouldings on, machines for cutting.	Jan. 29, 1856.	XV.
15131	Houghton, Henry S.	Traveller, brushes for cleaning	June 17, 1856.	III.
15564	Houseworth, Abraham	Paddle-wheel	Aug. 19, 1856.	VII.
14661	Hovey, Wm. H.	Harvesters, grain and grass.	April 15, 1856.	I.
14693	Hovey, Wm. H.	Harvester, raking attachments.	April 15, 1856.	I.
14768	Hovey, Wm. H.	Harvester, cutter-blades, attaching, to the sickle bar.	April 29, 1856.	I.
15973	Howard, Charles A.	Gas generator.	Oct. 28, 1856.	IV.
16275	Howe, E. B.	Clothing, card, trimming	Dec. 23, 1856.	III.
15609	Howe, Elias, jr.	Bedstead	Aug. 26, 1856.	XVII.
15111	Howe, John J., and Truman Piper, assignors to Howe Manufacturing Company.	Pins, japanning	June 10, 1856.	II.
15112	Howe, John J., and Truman Piper, assignors to Howe Manufacturing Company.	Pins, machine for sticking	June 10, 1856.	II.
	Howe Manufacturing Company. (See John J. Howe and Truman Piper, assignors.)			
	Howe Manufacturing Company. (See John J. Howe and Truman Piper, assignors.)			
	Howe Manufacturing Company. (See John J. Howe and Truman Piper, assignors.)			
	Howell, Colton, and La Baw. (See La Baw, George W., assignor.)			
15947	Howell, Jacob H.	India rubber hose, modes of making	Oct. 21, 1856.	IV.
15940	Howell, M. H. (See Ingalls, Joshua K., assignor.)	Saws, filing and setting.	Oct. 21, 1856.	XIV.
	Howland & Marsh. (See Marsh, Philo, assignor.)			
15654	Howlett, H. R., assignor to himself and A. W. Goodell.	Ploughs	Sept. 2, 1856.	I.
15423	Hoyt, Benajah C.	Stave machinery, certain improved devices in.	July 29, 1856.	XIV.
14959	Hoyt, Charles	Boilers, steam floats for.	May 27, 1856.	VI.
16182	Hoyt, F. A.	Boilers, steam, water gauges for.	Dec. 9, 1856.	VI.
	Hoyt & German. (See German, John, and C. B. Hoyt.)			
14723	Hubbard, George	Sails, top-yards, suspending extra.	April 22, 1856.	VII.
15234	Hubbard, M. G.	Carriage-springs, mode of adjusting.	July 1, 1856.	X.
15635	Hubbard, M. G.	Reapers, raking attachment for	Sept. 2, 1856.	I.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15885	Hubbard, M. G.	Wagons, side spar, arrangement of springs for	Oct. 14, 1856.	X.
16183	Hubbard, M. G.	Reaping-machines, teeth for	Dec. 9, 1856.	I.
15838	Hubbard, Moses G.	Mowing and reaping-machines, frames of	July 15, 1856.	I.
16157	Hubbard, Moses G.	Harvesters, grain and grass, cutting apparatus of	Nov. 11, 1856.	I.
16118	Hubbard, Wm. W.	Metal, lathes for planing	Nov. 11, 1856.	II.
14133	Hubbell, Wm. W.	Shells, explosive, eccentric	Jan. 22, 1856.	XIX.
14503	Hubbell, Wm. W.	Shells, explosive	Mar. 25, 1856.	XIX.
15075	Hubbell, Wm. W.	Shot and shell, sabot for rotating	June 10, 1856.	XIX.
15565	Hubbs, Isaac G.	Adding numbers, machines for	Aug. 19, 1856.	VIII.
15235	Huddleston, Silas	Bedsteads	July 1, 1856.	XVII.
	Huffer & Fahrney. (See Fahrney, Samuel, assignor.)			
14754	Huffman, Samuel, assignor to Samuel Huffman and J. D. Browne.	Shovel and tongs combined	April 22, 1856.	V.
14917	Hughes, David E.	Telegraphs	May 20, 1856.	VIII.
14195	Hughes, Harvey J.	Brick presses	Feb. 5, 1856.	XV.
337	Hubert, Samuel	Plows	Jan. 1, 1856.	Reissue.
14612	Hull, L.	Whip handles, machine for tapering whalebone for	April 8, 1856.	XXII.
	Hull, T. and S. (See Sandford, G. and T., and S. Hull.)			
15376	Humphrey, James	Gas stop cock	July 22, 1856.	IV.
15884	Humphrey, J. L.	Salt evaporators	Oct. 14, 1856.	IV.
14098	Hunt, Caleb S.	Presses, cotton	Jan. 15, 1856.	XII.
14613	Hunt, Henry W., and John Sands.	Mortar, machines for mixing lime and sand for	April 8, 1856.	XV.
16246	Hunt, James G.	Fence, field, portable	Dec. 16, 1856.	IX.
14547	Hunt, Richard	Horse power	Mar. 25, 1856.	XIII.
14019	Hunt, Walter	Collars, shirt	Jan. 1, 1856.	XXI.
15536	Hunt, Warren	Axes, machine for testing	Sept. 2, 1856.	II.
15518	Hunter, C., and N. Isham	Gates, farm, method of raising, lowering, and operating	Aug. 12, 1856.	IX.
15377	Hunter, Stephen R.	Harvesters	July 22, 1856.	I.
16146	Hunter, S. R.	Raking apparatus for harvesters	Dec. 2, 1856.	I.

15076	Huntress, William	Bedsteads	June 10, 1856.	XVII.
14455	Hurlbut, Daniel N.	Planing knives, rotary, arrangement of	Mar. 18, 1856.	XIV.
14241	Hurlbut, Westel W.	Saws, circular, method of hanging and adjusting	Feb. 12, 1856.	XIV.
15130	Hutton, George	Saws, circular, method of adjusting obliquely to their arbors.	June 17, 1856.	XIV.
14384	Hutton, Pelatiah M.	Pavement, cast-iron, mode of constructing	Mar. 4, 1856.	IX.
14584	Huygens, Geo. W. O., assignor to himself, Charles Bender, and D. F. Tiedeman.	Bridges	April 1, 1856.	IX.
16058	Hyatt, G. W.	Forks for handling heated plates	Nov. 11, 1856.	XVII.
15378	Hyde, Joseph A. (See Fisher, Maj. H., assignor.)	Traps, fly	July 22, 1856.	XXII.
15183	Hyter, Joseph	Plotting instruments	June 24, 1856.	VIII.
15424	Iliff, Charles R.	Boiler, steam, furnaces	July 29, 1856.	VI.
14456	Ingalls, E. T.	Grating, illuminating	Mar. 18, 1856.	IX.
15113	Ingalls, Joshua K.	Metal beams	June 10, 1856.	II.
14663	Ingalls, Joshua K., assignor to M. H. Howell.	Presses, bay and cotton	April 15, 1856.	XII.
15913	Ingersoll, Simon	Trees, felling, method of	Oct. 14, 1856.	XIV.
15978	Ingersoll, Simon, assignor to Farmers' and Mechanics' Manufacturing Company.	Suit machines	Oct. 23, 1856.	XIII.
15239	Ingham, Harvey B.	Locks	July 1, 1856.	II.
15425	Isbam, Henry	Rifle shot, mode of patching	July 29, 1856.	XIX.
	Isbam, N., and C. Hunter. (See Hunter & Isbam.)			
	Ives, E. M., and L. H. Allen, assignees. (See Allen, L. H., assignor.)			
15077	Ives & Gray. (See Gray, S. H., assignor.)			
16089	Ives, James	Saddle trees, mode of attaching pads to	June 10, 1856.	XVI.
14242	Ives, Wm. A.	Lock, spring latch and	Nov. 18, 1856.	II.
16238	Jackson, S. S.	Puddlers' balls, elevators for	Feb. 12, 1856.	II.
14704	Jackson, Peter H.	Ships' windlass	Dec. 16, 1856.	VII.
14315	James, Benjamin, assignor to Roswell E. James.	Awl haft	April 15, 1856.	II.
14572	James, Charles T.	Projectiles	Feb. 26, 1856.	XIX.
	Jamer, Daniel S.	Chairs, invalid	May 13, 1856.	XVII.
15426	Jameson & Willard. (See Willard, Geo., assignor.)	Planters, corn	July 29, 1856.	I.
15948	Jeffers, James D., Joseph Sparks, and John M. Jeffers.	Shearing sheep	Oct. 21, 1856.	I.
14359	Jenkins, J. V.	Coal holes, guards for	Mar. 4, 1856.	IX.
14061	Jenks, George C.	Weavers' harness, machinery for making	Jan. 8, 1856.	III.
15184	Jenks, George L.	Wrenches for gas-pipe, &c.	June 24, 1856.	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14504	Jenks, William.....	Planters, hand, corn.....	March 25, 1856.....	I.
14505	Jennings, Lewis.....	Sewing machines.....	Dec. 16, 1856.....	III.
15567	Jewett, Frederick A.....	Carriages, thorough braces for.....	Aug. 19, 1856.....	X.
16120	Johnson, A. F.....	Sewing machines, stitches for.....	Nov. 25, 1856.....	III.
15635	Johnson, A. F., assignor to himself and F. A. Houghton.....	Sewing machines.....	Aug. 26, 1856.....	III.
16315	Johnson, A. F., and F. A. Houghton.....	Sewing machines.....	Dec. 23, 1856.....	III.
14300	Johnson, Charles H.....	Heating buildings by the combination of and burning gas, air, and steam, apparatus for.....	March 4, 1856.....	V.
138	Johnson, Charles H.....	Gas-burner.....	March 13, 1856.....	Add'l imp't.
15898	Johnson, Danforth.....	Car-spring, metallic.....	Sept. 9, 1856.....	X.
14099	Johnson, Frank G.....	Wind-wheels, speed of, method of regulating.....	Jan. 15, 1856.....	XI.
14285	Johnson, John.....	Looms, power.....	Feb. 19, 1856.....	III.
14662	Johnson, John, and C. Tompkins. (See Tompkins & Johnson.).....	Hats, manufacture of.....	Jan. 8, 1856.....	III.
760	Johnson, Joseph.....	Printing-type.....	Feb. 12, 1856.....	Design.
14918	Johnson, L.....	Windmills, method of regulating.....	May 20, 1856.....	XI.
14815	Johnson, Morgan S.....	Yarns, felted, manufacturing.....	May 6, 1856.....	III.
14020	Johnson, Moses A.....	Boots and shoes, pegging, machines for.....	Jan. 1, 1856.....	XVI.
16208	Johnson, Waterman B.....	Cement, incorporating bituminous liquids with wet earths for a.....	Dec. 9, 1856.....	IV.
355	Johnson, W. H.....	Sewing machines.....	Feb. 26, 1856.....	Reissue.
15765	Johnson, William H.....	Corn-shellers.....	Sept. 23, 1856.....	I.
14724	Johnson, J. I.....	Moulding, flasks for.....	April 22, 1856.....	II.
14505	Jones, Jas. J.....	Sifters, ash.....	March 25, 1856.....	V.
16163	Jones, Chas.....	Planing, Bramah, machine.....	Dec. 2, 1856.....	XIV.
15610	Jones, Edwin.....	Planters, hand seed.....	Aug. 26, 1856.....	I.
14682	Jones, J. Herba.....	Candle cutting apparatus.....	April 15, 1856.....	IV.
14919	Jones, John M.....	Printing machine.....	May 20, 1856.....	XVIII.
14134	Jones, John M., assignor to Newton Foster.....	Planters, cotton seed.....	Jan. 22, 1856.....	I.
14100	Jones, R. W.....	Brick machines.....	Jan. 15, 1856.....	XV.

14060	Jones, Samuel R.....	Boots and shoes, peg-cutters for.....	Jan. 8, 1856.....	XVI.
15487	Jordan, E. E. C. Blakelee, and E. Platt. (See Blakelee, Platt & Jordan.)	Boats, line-ferry, or flying bridges, means for guiding. Brick machines.....	Aug. 5, 1856.....	VII.
15766	Jordan, J. H., and J. M. Merryman. (See Merryman, John M., assignor.)	Mortising machine.....	Sept. 23, 1856.....	XV.
14564	Jordan, Wm. A.....	Fire-arms, breech-loading.....	April 1, 1856.....	XIV.
15240	Joslyn, B. F.....	Vessels, lee-boards for.....	July 1, 1856.....	XIX.
16090	Jouan, A.....	Propeller-shafts.....	Nov. 18, 1856.....	VII.
16091	Jouan, A.....	Vessels, steam, arrangement of elastic plate paddles for.....	Nov. 18, 1856.....	VII.
15850	Jouan, Auguste.....	Mills, corn and cob.....	Oct. 7, 1856.....	VII.
15488	Joyce, Jacob O. (See McPherson, John L., and J. O. Joyce.)	Excavator, rotary.....	Aug. 5, 1856.....	XIII.
15182	Judd, Daniel.....	Gear, reversing.....	June 10, 1856.....	IX.
15697	Juengst, George.....	Spokes, machine to aid in making, by hand.....	Sept. 9, 1856.....	XIII.
16121	Julier, Edward.....	Scrapers, dumping.....	Nov. 25, 1856.....	XIV.
14817	Kable, Mathew S.....	Clover seed, machines for sowing.....	May 6, 1856.....	IX.
14816	Kable, Mathew S.....	Vehicles, shafts of, mode of attaching horses to.....	May 6, 1856.....	I.
15103	Kaughn, George B.....	Wrench.....	June 10, 1856.....	I.
14243	Keach, Abram, et al. (See Sargent & Keach, assignors.)	Photographic instruments.....	Feb. 12, 1856.....	II.
15209	Keehnold, Ferdinand.....	Horse power, reversible.....	Sept. 30, 1856.....	XVIII.
15206	Keeler, Jas. R. (See Woodford, E. S., assignor.)	Horse power, reversible.....	July 8, 1856.....	XIII.
406	Kelberg & Giesinger. (See Giesinger & Kelberg, assignors to Morris.)	Scales, weighing.....	Oct. 28, 1856.....	Reissue.
14361	Kellogg, D. J.....	Ships' blocks, anti-friction bushing for.....	Mar. 4, 1856.....	XII.
15886	Kella, Philip H.....	Shingle machines.....	Oct. 14, 1856.....	VII.
14101	Kelly, James.....	Smoke-houses.....	Jan. 15, 1856.....	XIV.
14101	Kendall, A.....	Vata, tan, arrangement of.....	Jan. 1, 1856.....	IX.
14021	Kendall, Moses W. S.....			
14135	Kendrick, J., P. Bennet and L. A. Cook. (See Glues, H. M., assignor.)			
14135	Kennedy, David.....			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Kennedy, E. A., and P. B. Green. (See Green & Kennedy.)			
15241	Kennedy, Cyrus, and William Gurley	Hinges, butt, machine for grinding	July 1, 1856	II.
15737	Kennedy, George	Sleighs, shafts to, mode of attaching	Sept. 16, 1856	X.
16122	Kenny, George	Carrriages, turning circles for	Nov. 25, 1856	X.
15460	Kenny, George, assignor to George Kenny and George N. Davis	Whistle-trees	July 29, 1856	X.
15461	Kenny, George, assignor to George Kenny and George N. Davis	Whistle-trees	July 29, 1856	X.
14316	Kent, Edward N.	Gold and other precious metals from foreign substances, machines for separating	Feb. 26, 1856	II.
361	Kent, Joseph. (See Brown, J. S., assignor.)			
	Kenyon, William, assignor to Joseph P. Haigh, Andrew Hartupce, and John Morrow	Nuts, washers, &c., machine for making	Mar. 18, 1856	Reissue.
15949	Kern, James M.	Washing machines	Oct. 21, 1856	XVII.
16209	Kern, James M.	Seeding machines	Dec. 9, 1856	I.
14268	Kern, James M., assignor to Enoch P. Fitch, and Isaac Scott	Saws, circular, method of concaving	Feb. 12, 1856	XIV.
14705	Kern, James M., assignor to Isaac Scott and E. P. Fitch	Saws, circular, method of adjusting for concave or convex work	April 15, 1856	XIV.
14457	Kernan, Edward R.	Window shades, transparent, processes for making	Mar. 18, 1856	IV.
15767	Kerr, David B.	Carpeting, ingrain, manufacturing	Sept. 23, 1856	III.
14178	Kershaw, E., assignor to Kershaw and H. N. Hooper & Co.	Lock, cell	Jan. 29, 1856	II.
15041	Kesling, George	Fire-arms	June 3, 1856	XIX.
15657	Ketchem, Charles	Pen, fountain, ruling	Sept. 2, 1856	XVIII.
15389	Ketchem, A. C.	Wheels, railroad car	July 15, 1856	X.
14788	Ketchem, A. C., assignor to Edward B. Oleott	Knives, cleaning, machines for	April 29, 1856	XVII.
14960	Ketchem, Samuel C.	Hat bodies, machines for sizing	May 27, 1856	III.
14102	Ketchem, William F.	Harvesters, grain and grass	Jan. 15, 1856	I.
14961	Ketchem, William F.	Mowing machines	May 27, 1856	I.
	Key, Charles H., administrator. (See Blunt, S. F.)			

16240	Keyes, H.	Apples, paring, machines for	Dec. 16, 1856	XVII.
14506	Kiefer, Koural	Chairs, fan rocking	Mar. 25, 1856	XVII.
15551	Kilburn, Edwin, and Artemus and Cheeney	Wood, bending, method of	Oct. 7, 1856	XIV.
14136	Killam, Joseph W.	Sticks to polygonal forms, machine for dressing	Jan. 22, 1856	XIV.
	Kimball, Thompson, et al. (See Buck, Joab, assignor.)			
15658	Kimball, W. H., and A. J. French, assignors to themselves and A. H. Noyes	Bedstead, spring	Sept. 2, 1856	XVII.
14317	Kimball, Wm. M.	Lamps	Feb. 26, 1856	V.
14318	King, Jas. T.	Steam generator, domestic	Feb. 26, 1856	V.
14244	King, Jas. T.	Washing machines	Feb. 12, 1856	VI.
14819	King, Jas. T.	Pumps, double-acting, valve for	May 6, 1856	XVII.
15134	King, John C.	Shingle machine	June 17, 1856	XI.
14103	King, Samuel M.	Sweeping gutters, machine for	Jan. 15, 1856	XIV.
15566	King, Wm. H., assignor to Wm. H. King and Isaac Hyneman	Brick machines	Aug. 19, 1856	IX.
14573	Kingsland, Edmund	Paper pulp, grinding, machinery for	May 13, 1856	XV.
16239	Kingsland, Joseph, jr.	Paper pulp engines	Dec. 16, 1856	III.
16278	Kingsland, Joseph, jr.	Paper pulp grinding, process of	Dec. 24, 1856	III.
16316	Kingsland, Joseph, jr.	Paper pulp grinding, process of	Dec. 24, 1856	III.
15582	Kinsney, Israel	Hats, ironing, machinery for	Oct. 7, 1856	III.
14401	Kinsnaue, S. A., and S. Field	Cotton cleaner	Mar. 11, 1856	III.
14725	Kinyon, Jas. H., and Jas. Hollingsworth	Harvesting machines	April 22, 1856	III.
15659	Kirby, W. A.	Harvesters, grain and grass	Sept. 2, 1856	I.
14634	Kirby, Wm. A.	Telegraph, electric	April 15, 1856	I.
14664	Kirchof, Chas.	Brick presses	April 15, 1856	VIII.
15135	Kirk, Lewis	Boring machines	June 17, 1856	XV.
16241	Klahr, Samuel	Skates	Dec. 16, 1856	XIV.
14586	Klein, Ferdinand	Pen-holder, flexible	April 1, 1856	XXII.
14286	Klein, Francis I.	Cars, railroad, safety platforms between	Feb. 19, 1856	XXIII.
14665	Kline, Jas., and Simon V. Kline	Pen and pencil case	April 15, 1856	X.
15660	Knapp, John H.	Press, copying	Sept. 2, 1856	XVIII.
15011	Knauer, Christian	Locks, door	June 3, 1856	XVIII.
15136	Knauer, Christian, assignor to Warwick, Atterbury & Co.	Ships, etc., method of ventilating	June 17, 1856	II.
16059	Knecht, Rudolph	Coal beds	Nov. 11, 1856	VII.
15549	Kneeland, Cyrus F.	Caster, ball, for trunks and furniture	Aug. 12, 1856	V.
15611	Knight, Judson		Aug. 26, 1856	XVII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14614	Knight, Robert T.	Envelopes, construction of.	April 8, 1856.	XVIII.
15185	Knight, Robert T.	Envelopes.	June 24, 1856.	XVIII.
	Knight, Watson & Wooster. (See Watson, Wm. C., assignor.)			
14160	Knowles, Hazard.	Mortising tool.	Jan. 29, 1856.	XIV.
15186	Knowles, Lucius J.	Looms.	June 24, 1856.	III.
16015	Knowles, Lucius J.	Looms.	Nov. 11, 1856.	III.
15887	Knox, Samuel A.	Plows.	Oct. 14, 1856.	I.
15340	Koenig, Julius J.	Type, composing and distributing, machine for.	July 15, 1856.	XVIII.
15853	Krauser, S.	Fluids, measuring, method of, while drawing.	Oct. 7, 1856.	XI.
16060	Kruse, Henry.	Wagons.	Nov. 11, 1856.	X.
15810	Kuhns, B., and M. J. Haines.	Planters, seed.	Sept. 30, 1856.	I.
15520	Kulmann, F.	Compounds, paint, vehicle for.	Aug. 12, 1856.	IV.
15399	Kulinski, John.	Cars, railroad, collision apparatus.	Sept. 9, 1856.	X.
14161	Kumler, Noah W.	Pill-making machine.	Jan. 29, 1856.	XX.
15078	Kurtzman, Joseph.	Sawing mills, head-blocks of, method of operating.	June 10, 1856.	XIV.
14565	La Baw, Geo. W.	Boat, life.	April 1, 1856.	VII.
14686	La Baw, Geo. W.	Hoisting drums.	April 15, 1856.	XII.
14843	La Baw, Geo. W., assignor to himself, Joseph Colton, and Theo. Howell.	Boats, life, propellers for.	May 6, 1856.	VII.
14631	Lacey, E. P.	Planters, corn.	April 8, 1856.	I.
16279	Lacy, Edward W.	Hemp brakes.	Dec. 23, 1856.	III.
16280	Ladd, Jesse.	Shoe pegs, machine for pointing.	Dec. 23, 1856.	XVI.
	Laing & Spencer. (See Emmons, Phineas, assignor.)			
15661	Lamb, Charles B. (See Gould & Lamb.)	Churns.	Sept. 2, 1856.	I.
14769	Lamb, Loomis.	Harvesters, automatic rakes for.	April 29, 1856.	I.
360	Lamb, Salem T.	Cars, railroad.	Mar. 18, 1856.	X.
15768	La Mothe, B. J.	Hoops, notching, machine for.	Sept. 23, 1856.	XIV.
	Lamson, Daniel.			
	Lamson, Nathaniel. (See Ball, Thomas C., assignor.)			

ANNUAL REPORT OF THE

COMMISSIONER OF PATENTS.

14667	Lancaster, Palmer.	Fire-arms.	April 15, 1856.	XIX.
16251	Landfear, Wm. R.	Sewing machines.	Dec. 23, 1856.	III.
14962	Landis, Charles K.	Hydrants, steam, arrangement of means for operating the valves of.	May 27, 1856.	XI.
15943	Lanigan, Andrew.	Pastilles, disinfecting.	July 1, 1856.	IV.
15341	Langdell, Giles, and Marcus A. Root.	Photographic pictures, mode of tinting.	July 15, 1856.	XVIII.
15427	Langwith, F. R.	Clamp for plumbers.	July 29, 1856.	II.
16092	Lapham, A., assignor to himself and S. Wilkes.	Boilers, steam, and kettles combined.	Nov. 18, 1856.	VI.
15187	Large, Daniel.	Boats, ice, arrangement of means attached to.	June 24, 1856.	VII.
14319	Latrobe, John H. B.	Fire-arms, percussion locks for.	Feb. 26, 1856.	XIX.
14963	Latta, A. B.	Valves, safety, for steam engines.	May 27, 1856.	VI.
15297	Latta, A. B.	Carrages, steam, wheel for.	July 9, 1856.	X.
15244	Lawrens, John.	Gun carriage.	July 1, 1856.	XIX.
14104	Lavender, Wm. R., and Atkins Smith.	Steering wheel stopper.	Jan. 15, 1856.	VII.
15738	Law, Hervey.	Paper, cutting, machine for.	Sept. 16, 1856.	III.
	Lawrence, A., and J. G. Abbott. (See Smith, G., H. Brown, and J. A. Read, assignors.)			
16038	Lawrence, D. M.	Shutter fastener.	Nov. 4, 1856.	II.
15980	Lawrence, George C.	Soap mixtures.	Oct. 28, 1856.	IV.
15242	Lawrence, Henry.	Marble-sawing machine.	July 1, 1856.	XV.
14630	Lawson, Peter.	Sowing seed broadcast, machines for.	April 8, 1856.	I.
14575	Lawson, O. G.	Blow-pipes.	May 13, 1856.	V.
16061	Lawson, Robert.	Hydrants, waste-valve for.	Nov. 11, 1856.	XI.
147	Leach, James O.	Looms.	July 8, 1856.	Add'l impt.
14458	Learned, Charles. (See Brown, John L., assignor.)	Churns.	Mar. 18, 1856.	I.
15012	Leavenworth, Lucius.	Sawing-machine.	June 3, 1856.	XIV.
131	Leavitt, William D.	Hydraulic heaters.	Feb. 5, 1856.	Add'l impt.
14668	Lefferts, Marshall.	Bedsteads, metallic.	April 15, 1856.	XVII.
14023	Leibee, Daniel.	Amalgamator, gold.	Jan. 1, 1856.	II.
	Leibrunn, McDowell & Co. (See Smith, Brown, & Reed, assignors.)			
14964	Leicht, Conrad.	Billiard cues.	May 27, 1856.	XXII.
14365	Le Mat, Alexander.	Ships and other vessels, means for increasing the buoyancy of.	Mar. 4, 1856.	VII.
15925	Le Mat, Alexander.	Fire-arm.	Oct. 21, 1856.	XIX.
16124	Lemon, Thomas D. (See Fravel, Abraham, assignor.)	Fire-arms.	Nov. 25, 1856.	XIX.

Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14459	Lespeke, A.	Wind-mill, self-regulating	Mar. 18, 1856.	XI.
14566	Laut, Vincent D.	Springs, spiral, former for	April 1, 1856.	II.
14820	Leonard, George.	Fire-arms, repeating.	May 6, 1856.	XIX.
14486	Leonard, Lemuel M. (See Herrick & Leonard.)			
	Leonard, Orville, assignor to O. Leonard and Geo. H. Reynolds.	Engines, steam, cut-off gear for	Mar. 18, 1856.	VI.
16252	Letort, James.	Door-fasteners	Dec. 23, 1856.	II.
14576	Lettington, Horace	Bits, fastening	May 13, 1856.	II.
14508	Lewis, Charles H.	Cars, railroad, spring platform for	Mar. 25, 1856.	X.
14024	Lewis, Charles N.	Pump	Jan. 1, 1856.	XI.
14245	Lewis, R. W.	Cans, preserve, sealing	Feb. 12, 1856.	XVII.
15811	Lewis, S. J., and W. Alston	Saw-gummers	Sept. 30, 1856.	XIV.
16043	Lewis, Spencer	Bedstead fastenings	Nov. 18, 1856.	XVII.
16242	Lewis, Wm. and W. H.	Photographic baths	Dec. 16, 1856.	XVIII.
15554	Lewis, W. and W. H., assignors to Malonzo J. Drummond	Photographic cameras, plate-holder for	Oct. 7, 1856.	XVIII.
14507	Lewy, Benj. M.	Chairs, fan rocking	Mar. 25, 1856.	XVII.
15633	Liblong, John, assignor to Edward Brown and Jas. R. Case.	Boiling, device for preventing liquids from, over the sides of vessels.	Aug. 26, 1856.	V.
15613	Liddle, John	Furnaces, air-heating	Aug. 26, 1856.	V.
15888	Ligon, Edwin T.	Pumps	Oct. 14, 1856.	XI.
16210	Lightfoot, Goodrich	Churns	Dec. 9, 1856.	I.
14162	Lincoln, A. L. (See Paige, Lucius, assignor.)			
15266	Lincoln, Albert L., assignor to himself and Chas. M. Foss.	Macaroni sewer	July 1, 1856.	XVII.
14629	Lincoln, Jesse	Sowing seed broadcast, machine for	April 8, 1856.	I.
14320	Lincoln, William	Painting or varnishing woven wire	Feb. 26, 1856.	IV.
15198	Linden, N.	Lamps, fountain	June 24, 1856.	V.
415	Lindner, Edward	Gun, magazine, repeating and needle	Dec. 23, 1856.	Reissue.
416	Lindner, Edward	Gun, magazine, repeating and needle	Dec. 23, 1856.	Reissue.
14819	Lindner, Edward	Guns, breech-loading	May 6, 1856.	XIX.
14246	Lindner, Edward, and Conrad Hoffman	Porte-monnaies	Feb. 12, 1856.	XVIII.

14594	Lindner, G. H.	Door-fasteners	April 8, 1856.	II.
	Lindsey, John P., and Thomas Sands. (See Sands, Thomas, assignor.)			
14965	Lindsay, William B.	Cotton gins	May 27, 1856.	III.
14460	Lippincott, John	Projectiles, percussion	Mar. 18, 1856.	XIX.
14896	Lippincott, Joseph M.	Locks	May 13, 1856.	II.
15489	Lippincott, Joseph	Locks	Aug. 5, 1856.	II.
	Little & Swetland. (See Vedder & Sanderson, assignors, and Vedder & Ripley, assignors.)			
14362	Littlefield, Dennis G.	Stoves and furnaces for railroad cars and other purposes	Mar. 4, 1856.	V.
14299	Livemore, George W., assignor to Livemore Manufacturing Company.	Stave machine	Feb. 19, 1856.	XIV.
14162	Lloyd, Daniel	Window shades, stencilling apparatus for	Jan. 29, 1856.	XVII.
395	Loche, C.	Boats, life, folding	Sept. 16, 1856.	Reissue.
15403	Lockwood, Asahel, assignor to L. B. Flanders	Planing machine	July 22, 1856.	XIV.
15137	Lockwood, N. S., and J. D. Wiun.	Plows	June 17, 1856.	I.
15042	Longley, Servetus	Barrels, &c., rolling and handling, apparatus for	June 3, 1856.	XXII.
	Loomis, Timothy H., et al. (See Bosworth, Albert, assignor.)			
15979	Lord & Day. (See Day, Charles, and Alanson D. Lord.)	Carriages, perch couplings for	Oct. 28, 1856.	X.
339	Lord, William S.	Types, composing and setting, machine for	Jan. 8, 1856.	Reissue.
16094	Loughborough, W. S.	Melodeons	Nov. 18, 1856.	XVIII.
14402	Love, Lafayette	Harvester cutters	Mar. 11, 1856.	I.
15855	Love, Israel S.	Harvesters	Oct. 7, 1856.	I.
14509	Lowe, N. M. (formerly N. L. Murphy)	Piano-forte action	Mar. 25, 1856.	XVIII.
14789	Lowe, Samuel W., assignor to himself and Jacob M. Beck.	Printing, machines for embossing and	April 29, 1856.	XVIII.
15428	Lowe, Samuel W., assignor to Samuel Lowe and Wm. F. Scheible.	Printing press, portable	July 30, 1856.	XVIII.
14643	Low, William H.	Envelopes, machine for making	April 8, 1856.	XVIII.
14670	Loyd, William	Stereoscope case	April 15, 1856.	XVIII.
15104	Luce, C. O.	Seedling machines	June 10, 1856.	I.
14574	Lufkin, C. M.	Mowing machines	May 13, 1856.	I.
14920	Lull, Harvey	Paddle wheels, feathering	May 20, 1856.	VII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14062	Lund, George D.	Saws, reciprocating, method of hanging.	Nov. 11, 1856.	XIV.
14567	Lutz, Stimmel.	Spark-arresters.	April 1, 1856.	V.
14577	Lyford, Zebulon.	Chairs, portable.	May 13, 1856.	XVII.
14510	Lynan, A. S.	Cooling and ventilating rooms, &c., method of.	Mar. 25, 1856.	V.
14639	Lynan, Wm. H.	Whip-socket.	April 15, 1856.	XXII.
15997	Lynahon, D., and C. J. Wing, assignor to D. Lynahon.	Car, railroad, coupling.	Oct. 28, 1856.	X.
16103	Lyndall, J., assignor to C. Roberta.	Grain separators and conveyers.	Nov. 18, 1856.	XIII.
15158	Lyon, Benjamin F.	Fence, field.	June 24, 1856.	IX.
15700	Lyon, James W.	Screw-cutter.	Sept. 9, 1856.	II.
15406	Lyon, T. Kenton.	Pen-holder.	Aug. 5, 1856.	XVIII.
14770	Lyon, Wm., & Charles W. Dickinson.	Gas metres, dry, construction of.	April 29, 1856.	V.
14461	Mabury, James B.	Stoves.	Mar. 18, 1856.	V.
14727	Mace, Alonzo M.	Lamps, hydrocarbon vapor.	April 22, 1856.	V.
14196	Macferran, Samuel.	Furnaces, hot-air.	Feb. 5, 1856.	V.
16040	Mackertley, Benjamin.	Mill, cider.	Nov. 4, 1856.	XIII.
15662	Mackintire, James.	Alc and beer coolers.	Sept. 2, 1856.	IV.
15079	Macomber, A. S.	Wheelwrights' machinery.	June 10, 1856.	XIV.
15769	Macomber, D. O.	Omnibus.	Sept. 23, 1856.	X.
14103	Macomber, Horatio N.	Blow-pipe, spirit.	Mar. 11, 1866.	V.
814	Macy, John C.	Grate, ornamental, for fire-places.	July 9, 1856.	Design.
14568	Mallitt, Robert.	Motion, reciprocating into rotary, method of converting.	April 1, 1856.	XIII.
14910	Magee, John, assignor to John Magee and Wm. J. Towne.	Stoves, ventilating regulators and damper for.	May 20, 1856.	V.
14511	Mahan, J. W.	Bench, carpenters'.	Mar. 25, 1856.	XIV.
14569	Mahan, J. W.	Bench, mitreing.	April 1, 1856.	XIV.
15789	Mahan, J. W.	Bench, carpenters'.	Sept. 16, 1856.	XIV.
16283	Maher, Wm.	Crane, blacksmiths'.	Dec. 23, 1856.	XII.
15138	Mallard, L. John, and Wm. S. Baker.	Cotton gins, roller of, feeder for.	June 17, 1856.	III.
15139	Mallett, Samuel, and Augustus B. Smith.	Teeth, artificial, adjustable punches for setting.	June 17, 1856.	XX.
14025	Mallory, O. E.	Eave-troughs, machine for making.	Jan. 1, 1856.	IX.

14063	Manahan, John F.	Fuel, wet, mode of burning.	Jan. 8, 1856.	V.
14137	Manley, Emmons.	Riveting-machine.	Jan. 22, 1856.	II.
15814	Manly, M. M.	Marble, sawing in taper form, machine for.	Sept. 30, 1856.	XV.
14966	Mann, Charles A., jr.	Excavators.	May 27, 1856.	IX.
15013	Mann, Henry F.	Harvester-frames.	June 3, 1856.	I.
14404	Mann, Jacob J.	Mowing-machines.	Mar. 11, 1856.	I.
15044	Mann, Torrance & Co. (See Vedder, N. S., assignor.)	Reaping-machines.	June 3, 1856.	I.
14138	Manning, Jos. S.	Mowing-machines.	Jan. 22, 1856.	I.
15014	Manning, W. N.	Melodeons.	June 3, 1856.	XVIII.
14026	Manny, John H.	Harvesters.	Jan. 1, 1856.	I.
14148	Manny, John H.	Harvesters, grain and grass.	Jan. 22, 1856.	I.
14149	Manny, John H.	Harvester cutter-bars.	Jan. 22, 1856.	I.
354	Manny, John H., assignor to P. H. Watson.	Harvesting-machines.	Feb. 19, 1856.	Reissue.
14726	Manny, Pells.	Plow, sub-soil.	April 22, 1856.	I.
15927	Manny, P.	Harvesters.	Oct. 21, 1856.	I.
15926	Manny, P.	Harvesters, sickles for.	Oct. 21, 1856.	I.
16016	Mauney, Pells.	Rakes for reapers, automatic.	Nov. 11, 1856.	I.
14570	Marable, Thomas E.	Seeds or grain in the field, machines for gathering.	April 1, 1856.	I.
14027	Markille, Thomas R.	Lath sawing machines, bed for.	Jan. 1, 1856.	XIV.
15703	Marland, John.	Delaines, manufacturing, process of.	Sept. 9, 1856.	III.
14257	Marquiss, A. E. and C., and Chas. Emerson.	Plows, draining, mole for.	Feb. 9, 1856.	I.
14128	Marsh, David, assignor to T. B. Stout, J. A. Cody, and David Marsh.	Mill-stones, hanging.	Jan. 15, 1856.	XIII.
14028	Marsh, Joseph.	Sash-lock.	Jan. 1, 1856.	II.
14921	Marsh, Nathan B.	Water meter.	May 20, 1856.	XI.
14042	Marsh, Philo, assignor to Marsh & Howland.	Oils, treating.	Jan. 1, 1856.	IV.
15614	Marshall, A. R.	Gas-burners, automatic attachment to.	Aug. 26, 1856.	V.
	Marshall & Butterfield. (See Butterfield, J. S., and S. Marshall.)			
16063	Martin, Jas. W.	Umbrellas, preparing raton for.	Nov. 11, 1856.	XXI.
14939	Martin, Jas. W., assignor to himself and Lewis Rotherwell.	Weighing-cart.	May 20, 1856.	XII.
15140	Martin, Jos. L.	Odometers and counting machines.	June 17, 1856.	VIII.
15616	Marttatt, Cornelius.	Planters, hand, corn.	Aug. 26, 1856.	I.
14671	Martz, George.	Hoisting coal, apparatus for.	April 15, 1856.	XII.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14321	Martiz, Nathan..... Marvel & Keach. (See Sargent & Keach, assignors.)	Rakes, horse.....	Feb. 25, 1856.....	I.
134	Mascher, John F..... Mason & Hamlin. (See Hamlin, Emmons, assignor.) Mason, J., and N. C. Sherman. (See Sherman & Mason.)	Daguerreotype cases.....	Feb. 19, 1856.....	XVIII.
15391	Mason, John L.....	Porte-monnaies.....	Oct. 14, 1856.....	XVIII.
15379	Mason, Joshua.....	Metal planers, cutter stock for.....	July 22, 1856.....	II.
16234	Mason, William.....	Fluid meters, device for operating by hand.....	Dec. 23, 1856.....	XI.
14771	Massey & Stratton. (See Allen, John F., assignor.)	Corn shellers.....	April 29, 1856.....	I.
14363	Mathers, E.....	Planes, bench.....	Mar. 4, 1856.....	XIV.
14462	Mathers, Ebenezer.....	Trees, felling, machine for.....	Mar. 18, 1856.....	I.
356	Mathers, Ebenezer.....	Spark and gas-consumers.....	Feb. 26, 1856.....	Reissue.
357	Matthew, David.....	Spark-arresters.....	Mar. 4, 1856.....	Reissue.
15683	Matthew, David.....	Engines, steam, condensers for.....	Sept. 2, 1856.....	VI.
14730	Mauck, R. G., and W. T. McGahey.....	Harvesters, corn.....	April 22, 1856.....	I.
14616	Mawrer, Wm. P.....	Locks.....	April 8, 1856.....	II.
15701	Maxson, Wm. P.....	Harvester, grain and grass.....	Sept. 9, 1856.....	I.
16035	Maxwell & Merrill. (See Merrill, Ira, assignor.)	Tile, drain, machine.....	Nov. 4, 1856.....	XV.
15141	Maycock, Thos., assignor to himself and Henry Rice. Maynard, Edward..... McArthur, A. H., & Co. (See Gibbs, Samuel W., assignor.)	Cartridges.....	June 17, 1856.....	XIX.
15380	McBride, Matthew J.....	Stone or marble, sawing, machine for.....	July 22, 1856.....	XV.
15043	McChesney, John..... McClintock, J. S., and George Felters. (See Felters and McClintock.)	Washing machines.....	June 3, 1856.....	XVII.
15142	McComb, D.....	Bands, non-elastic, for bales of cotton or other fibrous materials.....	June 17, 1856.....	XII.

15064	McCracken, Joseph.....	Process of stiffening hat bodies.....	Sept. 2, 1856.....	IV.
15929	McCracken, Joseph.....	Hat bodies, sizing.....	Oct. 21, 1856.....	III.
14879	McCracken, W. J.....	Trunks, wardrobe.....	May 13, 1856.....	XVI.
14672	McCreary, B. F.....	Settees, reversible, backs of, double acting catch for.....	April 15, 1856.....	XVII.
14433	McCrone, John.....	Winding frames, cone tubes for.....	Mar. 18, 1856.....	III.
14322	McCurdy, James S.....	Binding guides.....	Feb. 26, 1856.....	III.
15665	McCutly, John F.....	Glass, black bottle, manufacture of.....	Sept. 2, 1856.....	XV.
379	McCurdy, R. A. L., assignor to David G. Olmstead. McDonough, Thomas.....	Gins, cotton.....	July 15, 1856.....	Reissue.
15771	McDowell, Leibrant & Co. (See Smith, Brown & Read, assignors.) McGahey, W. T. (See Mauck & McGahey.)	Engine, air.....	Sept. 23, 1856.....	XI.
15050	McGraw, Patrick.....	Die stock cutting screws.....	June 10, 1856.....	II.
14105	McGrath, Horatio.....	Bits for boring fellos and tenoning spokes.....	Jan. 15, 1856.....	XIV.
15812	Mellroy, G. R.....	Fence, portable.....	Sept. 30, 1856.....	IX.
14772	Melnes, John.....	Printing woollen and other fabrics, machine for.....	April 29, 1856.....	XVIII.
14673	Melutosh, W. J.....	Rice, reaping, implement for.....	April 15, 1856.....	I.
16243	Melnyre, Joseph T.....	Gate, railroad, for cattle guard.....	Dec. 16, 1856.....	IX.
16095	McKee, B.....	Stave jointer.....	Nov. 18, 1856.....	XIV.
16017	McLachlan, William..... McLaren, Bryant, & Anderson. (See Anderson, McLaren & Bryant.) McLaughlin & Dougherty. (See Dougherty & McLaughlin.)	Burglars' alarm.....	Nov. 11, 1856.....	XXII.
14364	McLaughlin, George T.....	Car seats, railroad.....	Mar. 4, 1856.....	X.
15568	McLean, Sherman.....	Cupping instruments.....	Aug. 19, 1856.....	XX.
14935	McLellan, James.....	Bars, railroad, repairing.....	April 15, 1856.....	II.
14571	McMannus, Philip.....	Wrenches.....	April 1, 1856.....	II.
15245	McMullen, John.....	Netting machines.....	July 1, 1856.....	III.
14464	McMullin, R.....	Process for making elastic rubber cloth.....	Mar. 18, 1856.....	IV.
15429	McMurtry, John.....	Stave machine.....	July 29, 1856.....	XIV.
14108	McNab, James, and Adam Carr.....	Valves, stop, steam.....	Jan. 15, 1856.....	VI.
417	McNair, John G.....	Carpets, manufacturing.....	Dec. 23, 1856.....	Reissue.
16285	McNary, Wm. H.....	Hosiery, manufacture of.....	Dec. 23, 1856.....	Reissue.
14247	McPherson, John L., and Jacob O. Joyce.....	Pumps, diaphragm.....	Feb. 12, 1856.....	XI.
15928	McPhetridge, C. A.....	Spike machine.....	Oct. 21, 1856.....	II.
16096	McPhetridge, C. A.....	Cotton gins.....	Nov. 18, 1856.....	III.
16097	McPhetridge, C. A.....	Harvesters, grain binder for.....	Nov. 18, 1856.....	I.
16211	McPhetridge, C. A.....	Candle-dipping machine.....	Dec. 9, 1856.....	IV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15105	Menckam, George A.	Planters, seed.	June 10, 1856.	I.
14907	Mead, Wm. W. H.	Engines, &c., steam, instantaneous governors for.	May 27, 1856.	VI.
14139	Medcalf, W. H.	Cars, railroad, ventilating.	Jan. 22, 1856.	X.
14288	Mell, James B.	Plows.	Feb. 19, 1856.	I.
15930	Mell, James B.	Cotton-gins.	Oct. 21, 1856.	III.
14199	Melville, John G. and Wm.	Looms.	Feb. 21, 1856.	Disclaimers.
14288	Mendenhall, S. C.	Bolts, flour.	Jan. 5, 1856.	XIII.
15455	Mendenhall, S. C., and J. Conner.	Bolts, flour.	July 29, 1856.	XIII.
14755	Merklein, G. H., et al. (See Senseney, Jeremiah S., assignor.)	Tunnelling and quarrying, machine for.	Feb. 22, 1856.	IX.
14077	Merrill, Geo. H., et al. (See Floyd, Thomas, assignor.)	Fire-arms.	Jan. 8, 1856.	XIX.
14755	Merrill, James H.	Tunnelling and quarrying, machine for.	Feb. 22, 1856.	IX.
14077	Merrill, Joshua, and S. Downer. (See Downer & Merrill.)	Fire-arms.	Jan. 8, 1856.	XIX.
14106	Merriman & Hotchkiss Manufacturing Company.	Mortising-machine.	Jan. 15, 1856.	XIV.
15430	Merriman, J. A.	Faucets, method of inserting into fluids under pressure.	July 29, 1856.	XL.
16246	Mihau, Patrick.	Chimney-cowls.	Dec. 16, 1856.	V.
15351	Miles, James B.	Cotton-gins.	July 22, 1856.	III.
15615	Miles, Purches.	Curtain-fixtures.	Aug. 26, 1856.	XVII.
15431	Miller, A. C.	Planters, hand seed.	July 29, 1856.	I.
14922	Miller, Augustin.	Engine, hydraulic.	May 20, 1856.	VI.
16064	Miller, Charles.	Files, cutting.	Nov. 11, 1856.	II.
14984	Miller, E. T.	Calipers for measuring irregular forms.	May 27, 1856.	XIV.
14729	Miller, James.	Marble, sawing in obelisk form, machines for.	April 22, 1856.	XV.

14923	Miller, J. C., and C. A. Fowler. (See Burk, Thomas D., assignor.)	Engines, steam, surface condensers for.	May 20, 1856.	VI.
14512	Miller, James M.	Streets, sweeping, machine for.	Mar. 25, 1856.	IX.
14578	Miller, Joseph.	Metal, sheet-working.	May 13, 1856.	II.
15246	Miller, Lewis, and Cornelius Aultman. (See Aultman & Miller, assignors to Ball, &c.)	Steam-gauge.	July 1, 1856.	VI.
15299	Miller, S. B., and E. W. Whitehead.	Stone sawing-mills.	July 9, 1856.	XV.
15931	Mills, Abner, and Uel West. (See West & Mills.)	Chairs, head-rests for.	Oct. 21, 1856.	XVII.
14198	Mills, C. A.	Scales, weighing.	Feb. 5, 1856.	XII.
14696	Mills, James H., and Wm. M. Booth. (See Booth & Mills.)	Kettles, brass, making.	April 15, 1856.	II.
15247	Minard, O. W.	Kettle, brass, machine.	July 1, 1856.	II.
15772	Minard, O. W.	Kettles, brass, making.	Sept. 23, 1856.	II.
14985	Miner, H. H., M. Stevens, and Wm. H. Saunders.	Coupling for vehicles.	May 27, 1856.	X.
15295	Minifie, James.	Vessels, life and property-saving, arrangement of means for balancing and propelling.	July 8, 1856.	VII.
15702	Mitchell, Bailey, & Co. (See Vance, S. B. H., assignor.)	Brushes, wooden part of, machine for manufacturing the.	Sept. 9, 1856.	XVII.
14248	Mitchell, Bailey, & Co. (See Vance, Samuel B. H., assignor.)	Lamps, argand, wick-holders for.	Feb. 12, 1856.	V.
14323	Mitchell, Bailey, & Co. (See Vance, Samuel B. H., assignor.)	Cellars, walls and floors of, mode of constructing.	Feb. 26, 1856.	IX.
14163	Mitchell, Bailey, & Co. (See Vance, Samuel B. H., assignor.)	Mastic for covering walls.	April 8, 1856.	Reissue.
14140	Molliere, Jean Pierre.	Boots and shoes, soles and heels of, machine for hammering leather for the.	Jan. 9, 1856.	IV.
14513	Monroe, Edwin P.	Locks, gun.	Jan. 22, 1856.	XVI.
16018	Monroe, James F.	Lubricator.	Mar. 25, 1856.	XIX.
			Nov. 4, 1856.	IV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14197	Monroe & Hood. (See Hood, B. L., and E. P. Monroe.)	Carrage springs.....	Feb. 5, 1856.....	X.
15249	Montgomery, Richard.....	Bedstead.....	July 1, 1856.....	XVII.
14968	Mooney, H. L., and W. B. Carter.....	Hubs, boring tool for.....	May 27, 1856.....	XIV.
15190	Mooney, John.....	Metals, tool for cutting.....	June 21, 1856.....	II.
15770	Moor, Robert.....	Hubs of wheels, securing spokes in the.....	Sept. 23, 1856.....	X.
15594	Moore, Charles.....	Process of preparing linseed, &c., for pressing, in extracting oil.....	Aug. 19, 1856.....	IV.
10256	Moore, Charles, assignor to himself, William G. Sheldon, and Lorenzo B. Chandler.....	Paper, cutting and folding, machine for.....	Dec. 16, 1856.....	XVIII.
10212	Moore, Edwin.....	Planters, seed.....	Dec. 9, 1856.....	I.
14107	Moore, F. H.....	Coal hole covers, safety.....	Jan. 15, 1856.....	IX.
14200	Moore, George R.....	Pokers, fire.....	Feb. 5, 1856.....	V.
153-2	Moore, John.....	Polishing machine.....	Feb. 22, 1856.....	XIV.
15433	Moore, John.....	Planters, potato.....	July 29, 1856.....	I.
15932	Moore, John.....	Screw machine.....	Oct. 21, 1856.....	II.
15890	Moore, John H.....	Saws, reciprocating method of hanging.....	Oct. 14, 1856.....	XIV.
16134	Moore, Joseph A., and Asahel H. Patch.....	Harvesters: finger bar, arrangement for.....	Nov. 25, 1856.....	I.
15569	Moore, Larkin L.....	Harvesting machine.....	Aug. 19, 1856.....	I.
14201	Morandi, Francis.....	Lanterns.....	Feb. 5, 1856.....	V.
15432	Morey, D. C., and S. A. Garrison. (See Garrison & Morey.)	Soap boiling apparatus.....	July 29, 1856.....	IV.
14270	Morfit, Campbell.....	Planters, potato.....	Feb. 12, 1855.....	I.
14465	Morgan, Charles, assignor to Samuel Emilen.....	Planters, seed.....	Mar. 18, 1856.....	I.
	Morgan, Elijah.....			
	Morgan, Eustis P. (See Thompson, William H., and E. P. Morgan.)			
	Morgan & Seymour. (See Seymour & Pease, assignors.)			
	Morgan & Seymour. (See Seymour & Pease, assignors.)			

16147	Morgan & Seymour. (See Seymour, William H., assignor.)	Chairs, railroad.....	Dec. 2, 1856.....	X.
15143	Morley, James H.....	Smoother-irons.....	June 17, 1856.....	XVII.
16065	Morrill, Oscar F.....	Clothes dryers.....	Nov. 11, 1856.....	XVII.
	Morris, D. A. (See Gissinger & Kelberg, assignors.)			
15300	Morris, Ephraim.....	Coal, raising and dumping, apparatus for.....	July 9, 1856.....	IX.
14405	Morris, John C.....	Wood, method of bending.....	Mar. 11, 1856.....	XIV.
	Morrison, Cox, Warren, & Co. (See Pierce & Dulle, assignors.)			
	Morrison, Cox, Warren, & Co. (See Pierce & Burnam, assignors.)			
	Morrison, Cox, Warren, & Co. (See Burnam, Sanford, assignor.)			
15105	Morrison, Ebenezer.....	Corn-shellers.....	June 10, 1856.....	I.
	Morrison, E. R., and A. Wyckoff, assignor to A. Wyckoff. (See Wyckoff & Morrison.)			
	Morrison, Fuller, & Warren. (See Pierce & Dulle, assignors.)			
	Morrison, Fuller, & Warren. (See Pierce & Dulle, assignors.)			
	Morrison, Fuller, & Warren. (See Dulle, James J.)			
14614	Morrison, Robert J.....	Harvesting machines.....	Dec. 16, 1856.....	I.
	Morrow, John, and Andrew Hartupee. (See Hartupee & Morrow.)			
	Morrow, John, J. P. Haigh, and A. Hartupee. (See Kenyon, William, assignor.)			
15813	Morrow, S. G. L.....	Excavators.....	Sept. 30, 1856.....	IX.
14880	Morse, C. B.....	Planing machine.....	May 13, 1856.....	XIV.
15596	Morse, G. W.....	Carriages.....	Oct. 28, 1856.....	XIX.
15995	Morse, G. W.....	Fire-arms, breech-loading.....	Oct. 28, 1856.....	XIX.
15248	Moses, Oren.....	Meat, mincing, machine for.....	July 1, 1856.....	XVII.
15342	Moses, Oren.....	Straw-cutter.....	July 15, 1856.....	I.
	Mott, J. L., Iron Works. (See Demarest, John, assignor.)			
15323	Mott, John M., Jr.....	Marble sawing machine.....	July 22, 1856.....	XV.
14773	Moulton, Elisha P.....	Door-fasteners.....	April 29, 1856.....	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15982	Moulton, Joseph C.	Hook, suspension, combined, and insect insulator	Oct. 28, 1856.	XVII.
16245	Moutrie, William	Press for printing hat linings.	Dec. 16, 1856.	XVIII.
15889	Mowe, A. M., and E. K. Haynes. (See Haynes, E. K., assignor.)			
15889	Mozart, Don J.	Fans, automatic, escapement movement for.	Oct. 14, 1856.	XXII.
847	Muller, Charles	Statuettes of Burton as Captain Cattle	Oct. 21, 1856.	Design.
771	Muller, Nicholas	Clock-case fronts	April 1, 1856.	Design.
786	Muller, Nicholas	Clock-case fronts	April 29, 1856.	Design.
787	Muller, Nicholas	Clock-case fronts	April 29, 1856.	Design.
812	Muller, Nicholas	Clock-case fronts, the base of.	July 1, 1856.	Design.
813	Muller, Nicholas	Clock-case fronts	July 1, 1856.	Design.
16247	Mulley, Jeremiah W.	Mowing and reaping machines.	Dec. 16, 1856.	I.
15945	Mumford, Josiah	Last-holders, revolving.	June 3, 1856.	XIV.
15981	Mumford, Josiah, and John W. Wilson	Washing machines.	Oct. 28, 1856.	XVII.
15784	Monroe, A.	Water-wheel, reacting.	July 22, 1856.	XI.
15491	Munson, David	Lightning rods	Aug. 5, 1856.	VIII.
15189	Murdoch, Richard	Carriages, running gear of.	June 24, 1856.	X.
16066	Murphey, E. M.	Respirator, medical.	Nov. 11, 1856.	XX.
14064	Murphey, N. L. (See Lowe, N. M.)			
16184	Musgrave, H. B.	Stoves, gas cooking	Jan. 8, 1856.	V.
15434	Mussell, William	Potato-diggers	Dec. 9, 1856.	I.
15015	Myers, James, jr.	Coal scuttles.	July 29, 1856.	IX.
16213	Myers, Robert	Marble sawing machine	June 3, 1856.	XV.
14822	Nason, Jos.	Tubes, connecting.	Dec. 9, 1856.	II.
14029	Neal, James	Gas-burners	May 6, 1856.	XV.
14632	Neal, James, and Charles W. Emery.	Pump	Jan. 1, 1856.	XI.
14824	Neckerman, Michael	Lathes, chuck for	April 8, 1856.	XIV.
16248	Neff, Wm. and P., jr. (See Smith, H. L., assignor.)			
15435	Neisch, Robert	Stone, artificial, preparing.	May 6, 1856.	XV.
14169	Nelson, Thomas	Weaving shade cord, machinery for	Dec. 16, 1856.	III.
	Nemith, John	Knitting machines	July 29, 1856.	III.
	Nemith, R. D.	Mill stones, machines for dressing	Jan. 15, 1856.	XIII.

16148	Neumeyer, Henry	Pentagraphs	Dec. 2, 1856.	VIII.
16214	Nevill, John, assignor to L. Curtis, for an undivided one-half, and Nevill & Curtis, by J. P. Far- rar, to Demasius Manufacturing Co.	Cast-steel, making	Dec. 9, 1856.	II.
14677	Newbrough, Wm.	Churns	April 15, 1856.	I.
15740	Newbury, A. and B.	Printing press	Sept. 16, 1856.	XVIII.
14106	Newbury, F.	Fire-arms, revolving	Mar. 11, 1856.	XIX.
14774	Newbury, Frederick	Fire-arms	April 29, 1856.	XIX.
CO 15521	Newbury, Frederick D., assignor to Richard Va- rick De Witt, jr.	Fire-arms	Aug. 12, 1856.	XIX.
152	Newbury, Frederick D., assignor to Richard Va- rick De Witt.	Fire-arms	Sept. 16, 1856.	Add'l imp't.
15706	Nowell, John L.	Tooth-plates, by the electrotpe process, casting artificial.	Sept. 9, 1856.	XX.
14675	New England Screw Company. (See Whipple, Cullen, assignor.)			
14271	New England Screw Company (See Whipple, Cullen, assignor.)			
145	New England Screw Company. (See Whipple, Cullen, assignor.)			
15322	Newman, M., 2d	Lock, hasp	April 15, 1856.	II.
14271	Newsam, Henry	Caldrons	Feb. 12, 1856.	V.
145	Newton, Abner N.	Fire-arms, breech-loading	June 17, 1856.	Add'l imp't.
157	Newton, Abner N.	Fire-arms	Aug. 12, 1856.	XIX.
14219	Newton, Abner N.	Fire-arms, breech-loading	Dec. 23, 1856.	Add'l imp't.
14823	Newton, Eliza P.	Wrench	Feb. 12, 1856.	II.
	Nickelson, Samuel	Marble sawing, machines for, in kerfs of varying angles.	May 6, 1856.	XV.
15773	Nippes, A. S.	Saws, grinding, machine for	May 23, 1856.	XIV.
15704	Nixon, Christopher N.	Ships' rudders, hanging	Sept. 9, 1856.	VII.
15705	Noette, F.	Wire, cutting and drawing	Sept. 9, 1856.	II.
	Noll & Haas. (See Haas, Christian, and John C. Noll.)			
15823	Norcross, Samuel C.	Saw-mill pitmen, adjustable stirrup for	Oct. 14, 1856.	XIV.
	North, Chase, & North. (See Vedder & Sander- son, assignors)			
	North, Chase, & North. (See Gibbs, S. W., as- signor.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	North, Chase, & North. (See Gibbs, S. W., assignor.)			
	North, Chase, & North. (See Vedder & Sanderson, assignors.)			
15144	North, Henry S.	Fire-arms	June 17, 1856.	XIX.
14937	North, John	Paper, folding, machine for	April 15, 1856.	XVIII.
15292	North, John	Stone, sawing	Oct. 14, 1856.	XV.
14821	North, O. B., & Co. (See Gazlay, A. H., assignor.)	Morocco, machines for figuring and polishing.	May 6, 1856.	XVI.
14881	Norton, Eugene L.	File-cutting machine.	May 13, 1856.	II.
	Norton, James L.			
	Norton, Perry, & Treadwell. (See Gibbs, S. W., assignor.)			
	Norton, Perry, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Norton, Perry, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Norton, Perry, & Treadwell. (See Pratt, Samuel F., assignor.)			
	Norton, Treadwell, & Perry. (See Pratt, Samuel F., assignor.)			
	Norton, Treadwell, & Perry. (See Pratt, Samuel F., assignor.)			
15016	Nowell, Foster	Carding-machines, wool	June 3, 1856.	III.
15145	Noye, John T.	Packer, flour, clutch for.	June 17, 1856.	XII.
	Noyes, A. H., et al. (See Kimball & French, assignors)			
14407	Nycum, Henry.	Hubs, carriage	Mar. 11, 1856.	X.
	Nye, Thomas C., et al. (See Engelbrecht, Theodore F.)			
14826	Oberholzer, Samuel.	Gates, doors, &c., method of hanging	May 6, 1856.	IX.
	Ogborn & Stigleman. (See George Taylor, assignor.)			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14366	Ogden, John T.	Vice, handle for.	Mar. 4, 1856.	II.
14825	Ohmert, Jesse	Ovens	May 6, 1856.	V.
	Olcott, Edward B. (See Ketchum, A. C., assignor)			
14030	Oldis, I. J.	Lock, pad	Jan. 1, 1856.	II.
15151	Oleudorff, Garret J.	Harrows, revolving	June 17, 1856.	I.
14676	Oliver, H. W.	Clamp, floor	April 15, 1856.	XIV.
14924	Oliver, Wm. G., and Thomas Harrison	Teeth, artificial, devices for setting.	May 20, 1856.	XX.
	Olmstead, David G. (See McCurdy, R. A. L., assignor.)			
14141	O'Neil, John.	Sewing-machines	Jan. 22, 1856.	III.
15301	Orcutt, Lyander A.	Dovetailing machine	July 9, 1856.	XIV.
14969	Ormsbee, Marcus	Thread, winding, from skeins	May 27, 1856.	III.
15302	Orr, Adrian V. B.	Shingle-machine	July 9, 1856.	XIV.
14142	Osborn, John T.	Grate-bars	Jan. 22, 1856.	V.
15570	Osborn, William	Bonnets and bonnet-frames, machines for pressing.	Aug. 19, 1856.	XXI.
	Osborne, Marmaduke	Felting for coats, hats, &c.	May 22, 1856.	Extension.
16019	Osgood, Henry B.	Packages, spring-frame for.	Nov. 4, 1856.	XXII.
	Osgood, H. B., and Samuel L. Hay. (See Hay & Osgood.)			
16185	Osgood, Hudson	Planing-machines	Dec. 9, 1856.	XIV.
15385	Otterson, James P. S.	Fluids under pressure, method of tapping	July 22, 1856.	XI.
15436	Pagett, Washington F.	Binding grain, &c., machines for	July 29, 1856.	I.
14164	Paige, Lucius	Mills, grinding	Jan. 29, 1856.	XIII.
14515	Paige, Lucius	Brakes, railroad car, levers of.	Mar. 25, 1856.	X.
14756	Paige, Lucius, assignor to himself and Albert L. Lincoln.	Studs for wearing apparel	April 22, 1856.	XXI.
15343	Paige, Lucius	Sash-lock	July 15, 1856.	II.
15617	Paige, Lucius	Boilers, steam, water-gauges for.	Aug. 26, 1856.	VI.
15250	Painter, M. and C.	Mill-stones, swinging spout for feeding	July 1, 1856.	XIII.
14734	Palmer, Edwin A.	Faucet, measuring	April 22, 1856.	XI.
15743	Palmer, E. A.	Clevis	Sept. 16, 1856.	I.
14289	Palmer, John H.	Tensioning window-blinds, machine for.	Feb. 19, 1856.	XIV.
15774	Palmer, S. B.	Blow-pipes	Sept. 23, 1856.	V.
15081	Palmiter, Jason	Shingle-machine	June 10, 1856.	XIV.
14065	Pancost, William C.	Presses, cheese	Jan. 8, 1856.	XII.
	Parlin, H. (See Tyler, C. N., assignor.)			
15083	Parietta, Joseph	Freezers, ice-cream	June 10, 1856.	XVII.
5492	Park Sidney W. and Edgar S. Ella	Knitting-machines, rotary	Aug. 5, 1856.	III.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14017	Parker, Earl, and Wm. Reynolds	Valve, automatic thermo-hydro-olao-pneumatic	April 8, 1856	XL
15606	Parker, Edward	Buckle for wearing apparel	Sept. 2, 1856	XXI
14110	Parker, Ephraim	Clothes-pins, machines for making	Jan. 15, 1856	XVII
14466	Parker, Geo. W.	Clothes-pins, machines for making	Mar. 18, 1856	XVII
14111	Parker, Ira S.	Wash-boards	Jan. 15, 1856	XVIII
15437	Parkes, Thomas and Alfred	Printing-press	July 29, 1856	II
15571	Parkhurst, Chas., and Chas. Weed	Forging horse-shoe nails, machine for	Aug. 19, 1856	VI
15742	Parrott, Wm. P.	Boiler-furnace, locomotive and steam	Sept. 16, 1856	XIV
15082	Parry, M. L.	Saw-teeth, circular, method of repairing	June 10, 1856	VIII
14731	Partridge, A. J.	Telegraphs, printing, electro-magnetic	April 22, 1856	II
	Patch, Asahel H., and J. A. Moore. (See Moore & Patch.)			
14618	Patterson, Andrew	Locks, door	April 8, 1856	II
	Patterson, Horace, and Calvin D. Smith. (See Smith & Patterson.)			
14304	Patton, John	Engines, steam, oscillating	Feb. 5, 1856	V
15523	Paul, Mifflin. (See Worrall, T. D., assignor.)	Sash-fastener	Aug. 12, 1856	II
15891	Pawling, Chas.	Bee-hives	Oct. 14, 1856	I
	Payne & Wilson. (See Wilson, Geo. F., and Geo. Payne.)			
14143	Peabody, Francis	Wind-wheels, velocity of, method of regulating	Jan. 22, 1856	XL
14572	Peabody, Francis	Wind-wheels	April 1, 1856	XL
15194	Peabody, Francis	Wind-wheel, self-regulating	June 24, 1856	XL
15192	Peale, Franklin	Valve, elastic tubular	June 24, 1856	I
15741	Pease, A.	Churns	Sept. 16, 1856	I
14078	Pease, Henry, assignor to himself and Jas. Roby	Mowing-machines	Jan. 8, 1856	I
	Pease, H., and W. H. Seymour, assignors. (See Seymour & Pease, assignors.)			
	Pease, H., and W. H. Seymour, assignors. (See Seymour & Pease, assignors.)			
340	Peaslee, Horace W.	Paper-stock, machines for washing	Jan. 8, 1856	Reissue.

16149	Peaslee, Horace W.	Fibrous manufactures, drying cylinders for	Dec. 2, 1856	III.
14112	Peck, Isaac. (See Hazard, O. S., and Isaac Peck.)	Door-fastenings	Jan. 15, 1856	II.
14262	Peck, Reed	Daguerreotype cases, hinges of, fastening for the	Feb. 5, 1856	XVIII.
14467	Peckham, Hendrick & Hopkins. (See Hopkins, Henry S., assignor.)	Stores and furnaces, sectional fire-pots for	Mar. 18, 1856	V.
16259	Peckham, Merrit	Drying grain in the mass, apparatus for	Dec. 16, 1856	I.
14031	Pedrick, John C.	Presses, hay and cotton	Jan. 1, 1856	XII.
15386	Peery, Joseph	Type-casting machines, valve for	July 22, 1856	XVIII.
14885	Pelouze, Edward, jr.	Heating buildings by steam, apparatus for	May 13, 1856	V.
	Pelton, A. S.			
15815	Penrose, W. H. (See Wimley, John M., assignor.)	Steam wagon	Sept. 30, 1856	VI.
14925	Percy, John	Ash-leaching apparatus	May 20, 1856	IV.
14468	Perdow, Philip, and Alex. W. Brinkerhoff	Axles, railroad car, boxes of	Mar. 18, 1856	X.
15899	Perkinpine, David R.	Metal pipe, bending, machine for	Oct. 14, 1856	II.
16287	Perkins, J., and W. H. Burnet	Furnace, hot-air	Dec. 23, 1856	V.
16023	Perkins, John H. H.	Husking corn, machines for	Nov. 4, 1856	I.
14113	Perkins, Joshua	Ships and other vessels, cargo-ports for	Jan. 15, 1856	VII.
15933	Perley, Charles	Ships' capstans	Oct. 21, 1856	VII.
14516	Perley, Charles	Valve motion for oscillating engines	Mar. 25, 1856	VI.
16020	Perry, Joseph R.	Mortising chisel to its mandrel, joint for uniting a	Nov. 4, 1856	XVI.
	Perry, Norton, & Treadwell. (See Gibbs, Samuel W., assignor.)			
	Perry, Norton, & Treadwell. (See Gibbs, Samuel W., assignor.)			
14619	Perry, Sanford S.	Charring wood	April 8, 1856	V.
	Perry, Treadwell, & Norton. (See Gibbs, Samuel W., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Perry, Treadwell, & Norton. (See Pratt, Samuel F., assignor.)			
	Peterson, Cresson, & Stuart. (See Deesley & Delany, assignors.)			
	Peterson, R., & E. Braman. (See Braman & Peterson.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14732	Petherick, Thomas.	Coal breakers.	April 22, 1856.	XXII.
13950	Pettjean, Tony.	Processes for silvering mirrors.	Oct. 21, 1856.	IV.
15388	Pettengill, C. S.	Fire-arms, repeating.	July 22, 1856.	XIX.
14926	Pettenkofer, Max, and Carl Ruland.	Gas generators, construction of.	May 20, 1856.	IV.
15017	Pettes, George W. (See Davis, Ari, Asahel Davis, & C. Cunningham.)			
14114	Peverly, R. H.	Compasses, ships', self-registering.	June 3, 1856.	VIII.
15351	Pevey, Abiel.	Iron scraps, remelting.	Jan. 15, 1856.	II.
15351	Pfaltz, Augustus.	Soaps, rosin.	Oct. 21, 1856.	IV.
14290	Phelan, Michael.	Billiard table cushions.	Feb. 19, 1856.	XXII.
15191	Phelps, Charles, and Geo. Ashman. (See Hayes, Augustus A., assignor.)			
15191	Phelps, Henry.	Vehicles, running gear of.	June 24, 1856.	X.
16125	Phelps, Samuel W.	Trunks, travelling.	Nov. 25, 1856.	XVI.
16187	Phelps, Sprague, Russell, & Foote. (See Foote, Alvah, assignor.)			
14066	Phillips, William G.	Gate, approach-opening.	Dec. 9, 1856.	IX.
14250	Phillips, Charles.	Cars, dirt, machine for loading.	Jan. 8, 1856.	X.
15212	Phillips, Job.	Harvesters, grain.	Feb. 12, 1856.	I.
15898	Phillips, John H., assignor to Leigh R. Holmead.	Breastpins, shield to protect.	June 24, 1856.	XV II.
16021	Phillips, L. D.	Sub-marine exploring armors.	Oct. 14, 1856.	VII.
14733	Phillips, Nathan M.	Trowels.	Nov. 4, 1856.	XV.
14970	Phillips, Philetus.	Scale, grain, electro-magnetic.	April 22, 1856.	XII.
14203	Phillips, Thomas, Merrill, & Willey. (See Willey, John F., assignor.)	Musical notation.	May 27, 1856.	XVIII.
14408	Phineas, Myer.	Pens, metallic.	Feb. 5, 1856.	VI.
15983	Phleger, Leonard.	Boilers, steam.	Mar. 11, 1856.	IV.
14828	Phyfe, John.	Bleaching ivory apparatus.	Oct. 28, 1856.	V.
15952	Pierce, George.	Cooking apparatus.	May 6, 1856.	V.
	Pierce, Samuel.	Stoves, cooking.	Oct. 21, 1856.	V.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
923	Pierce, Samuel, and J. J. Duley, assignors to Fuller, Warren, & Morrison.	Stoves, cooking.	Aug. 5, 1856.	Design.
764	Pierce, Samuel, and J. J. Duley, assignors to Cox, Warren, Morrison, & Co.	Stoves, cooking.	Feb. 12, 1856.	Design.
822	Pierce, Samuel, and J. J. Duley, assignors to Fuller, Warren, & Morrison.	Stoves, parlor.	Aug. 5, 1856.	Design.
766	Pierce, Samuel, and Sanford Burnam, assignors to Cox, Warren, & Morrison.	Stoves, cooking.	Feb. 12, 1856.	Design.
15524	Pierce, Warren S.	Amalgamator, gold washer and.	Aug. 12, 1856.	II.
14573	Pierpont, Asahel.	Soldering wire ferrules.	April 1, 1856.	II.
14971	Pilson, Robert, and Stephen P. Heath.	Looms.	May 27, 1856.	III.
14633	Pine, Robert G.	Buckles, polishing, machine for.	April 8, 1856.	II.
15896	Pingree, S. W.	Tan liquor to hides, order of applying.	Oct. 14, 1856.	XVI.
15303	Pingree, Samuel W.	Tanning hides.	July 8, 1856.	XVI.
	Pingree, T. P. (See Pratt, Elisha, assignor.)			
	Piper & Howe, assignors. (See Howe & Piper, assignors.)			
	Piper & Howe, assignors. (See Howe & Piper, assignors.)			
	Piper, W., and J. H. Darlington. (See Darlington & Piper.)			
14291	Pitman, Charles S.	Axles to shafts, mode of applying.	Feb. 19, 1856.	X.
14882	Pitcock, George W., John B. Stott, and Galen Richmond.	Water-wheels, reacting.	May 13, 1856.	XI.
14165	Pitta, Joseph N.	Paper stock, flocks and, machine for cutting.	Jan. 29, 1856.	III.
14591	Place, John A. (See Stowell, Abijah D.)	Ranges, cooking.	April 8, 1856.	V.
15744	Plant, John, and Charles G. Ball.	Saddles, riding.	Sept. 16, 1856.	XVI.
	Plant, Pascal.			
	Plantz, Higbee, and Habbitt. (See Habbitt, Higbee, and Plantz.)			
15493	Platt, Anson H.	Door stay.	Aug. 5, 1856.	II.
	Platt, E., E. C. Blakeslee, and E. Jordan. (See Blakeslee, Platt, and Jordan.)			
14514	Plimpton, H. R. & J. L.	Bedsteads, wardrobe, combined with other furniture.	Mar. 25, 1856.	XVII.
15084	Pluche, J. C. & L. C.	Harvesters, sickle bars of, attaching teeth to.	June 10, 1856.	I.
15146	Pluche, J. C. & L. C.	Harvesters.	June 17, 1856.	I.
16039	Plumb, William Henry.	Ores, &c., crushing rollers for.	Nov. 4, 1856.	II.
14144	Plummer, F.	Planters, seed.	Jan. 22, 1856.	I.
15934	Pochin, Henry Davis.	Alum making, preparing clay for.	Oct. 21, 1856.	IV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15653	P. J. J. Joseph. Pollak, M. (See Falkenau, M., M. Pollak, and S. Wiener.)	Process of coating metals with metals.	Oct. 21, 1856.	IV.
15775	Pomeroy, N. W.	Lubricator.	Sept. 23, 1856.	IV.
16105	Pouroy, Josiah B.	Lumber feeding rollers, parallel yielding of, device for governing the.	Nov. 18, 1856.	XIV.
14166	Porter, Rufus.	Punching machine.	Jan. 29, 1856.	II.
15085	Porter, Rufus.	Signals, flag, mode of sounding whistles for.	June 10, 1856.	VII.
14469	Post, Nathan.	Harness buckles.	Mar. 18, 1856.	XVI.
16092	Post, Stephen. (See Carlton, Thomas L.)	Cork, softening, by steam.	Nov. 18, 1856.	XXII.
15572	Potter, Bennett, Jr.	Tanning machine.	Aug. 19, 1856.	XIV.
	Potter, Nathaniel. (See Baird, Daniel N., as signor.)			
	Powers, D., A. E., and N. B. (See Glominski, Antoine, assignor.)			
	Powers, D., A. E., and N. B. (See Glominski, Antoine, assignor.)			
14827	Powers, Thomas H.	Iron, smelting, furnaces for.	May 6, 1856.	II.
14884	Powers, Thomas H.	Pump, cattle.	May 13, 1856.	XI.
14883	Powers, Thomas H.	Brooms and brushes.	May 13, 1856.	XVII.
14430	Pratt, Eliska, assignor to E. Pratt and H. P. Upton, assignors to Pratt and T. P. Pingree.	Leather splitting machines.	Mar. 11, 1856.	XVI.
14775	Pratt, Ephraim L.	Apples, paring, machines for.	April 29, 1856.	XVII.
16067	Pratt, Ephraim L.	Apples, slicing machines for.	Nov. 11, 1856.	XVII.
16080	Pratt, Ephraim L., assignor to L. Harrington.	Apples, potatoes, &c., machines for paring.	Nov. 11, 1856.	XVII.
	Pratt, Julius, & Co. (See Breckenridge, A. C., as signor.)			
	Pratt, Julius, & Co. (See Fosket & Stedman, as signors.)			
14067	Pratt, Randall.	Rake, horse, hay.	Jan. 8, 1856.	I.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
809	Pratt, Samuel F., assignor to W. & J. Treadwell, Perry, & Norton.	Stoves.	June 24, 1856.	Design.
834	Pratt, Samuel F., assignor to Treadwell, Perry, & Norton.	Stoves, oven.	Sept. 23, 1856.	Design.
833	Pratt, Samuel F., assignor to Treadwell, Perry, & Norton.	Stoves, parlor.	Sept. 23, 1856.	Design.
16036	Pratt, Wm. S., assignor to J. S. C. Thursby.	Carpets, fabric for underlaying.	Nov. 4, 1856.	XVII.
14927	Price, E.	Elevator for cotton, sugar-cane, &c.	May 20, 1856.	XII.
14641	Priestly, Thomas, assignor to Daniel Holliden.	Cans, oil.	April 8, 1856.	V.
14254	Prime, John.	Compasses, ships.	Feb. 12, 1856.	VIII.
14928	Proctor, Napoleon B.	Bridge, draw, floating.	May 20, 1856.	IX.
15438	Prosser, T. T.	Sawing-machine.	July 29, 1856.	XIV.
16089	Proust, P. E.	Axles, car, and other journals, lubricating.	Nov. 18, 1856.	X.
15897	Provinces, William.	Uterine supporters.	Oct. 14, 1856.	XX.
15936	Provost, Wm. F. and Charles J.	Presses, cotton.	Oct. 21, 1856.	XII.
14698	Pruyne, George W.	Leather straps, &c., machines for raising and creasing.	April 15, 1856.	XVI.
14929	Puffer, A. D.	Gutta-percha, lining metal pipes with.	May 20, 1856.	IV.
	Pugh, Jonathan H., and Jacob J. Smith. (See Smith & Pugh.)			
16022	Purdon, Wilson A.	Cotton-gins.	Nov. 4, 1856.	III.
15895	Purkey, Jacob.	Washing-machines.	Oct. 14, 1856.	XVII.
16126	Purnell, A. M.	Cans and vessels, apparatus for exhausting air from, and hermetically sealing.	Nov. 25, 1856.	XVII.
14252	Pusey, Lea.	Fires, method of extinguishing.	Feb. 12, 1856.	V.
16286	Putnam Machine Company. (See Brown, C. H., and C. Burleigh.)	Scales, railroad platform, arrangement of.	Dec. 23, 1856.	XII.
	Putnam Machine Company. (See Burleigh, Chas., assignor.)			
16186	Putnam, S. S.	Iron, forging, machines for.	Dec. 9, 1856.	II.
15816	Pyle, Joseph.	Leather, finishing, machines for.	Sept. 30, 1856.	XVI.
14308	Quantin, A.	Gaseous pressure, method of bottling fluids under.	Mar. 4, 1856.	IV.
14735	Quigley, Alanson.	Carriage tops, apparatus for raising and lowering.	April 22, 1856.	X.
150	Quigley, Alanson.	Carriage tops, raising and lowering, apparatus for.	Aug. 26, 1856.	Add. imp't.
14906	Quinby, Samuel D., assignor to Edward A. Locke.	Bags, travelling, and mail pouches, frames for.	May 13, 1856.	XXII.
15575	Rains, H. A.	Saddles, cart.	Aug. 19, 1856.	XVI.
342	Ralston, Andrew.	Threshing and winnowing grain, machines for.	Jan. 15, 1856.	Reissue.
		Threshing and winnowing grain, machines for.	Feb. 18, 1856.	Extension.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14167	Ramsay, George M.	Hinge.	Jan. 29, 1856.	II.
14525	Ramsay, George M.	Filles.	Aug. 12, 1856.	II.
15776	Ramsay, George M.	Pavement, cast-iron.	Sept. 23, 1856.	IX.
15618	Ramsay, H. R.	Brick-machines.	Aug. 26, 1856.	XV.
14776	Randall, Silas G.	Planters, corn.	April 29, 1856.	I.
15194	Randall, Silas G.	Seeding-machine, hand.	June 24, 1856.	I.
15357	Randall, Silas G.	Harvesters, self-raker for.	July 22, 1856.	I.
15573	Randell, Adonijah Rankin & Guscine. (See Gustine, John, and J. M. Rankin.)	Bristle separator.	Aug. 19, 1856.	XVII.
775	Ransom, Samuel H.	Stoves, cooking.	April 1, 1856.	Design.
772	Ransom, Samuel H.	Stoves, parlor.	April 1, 1856.	Design.
774	Ransom, Samuel H.	Stove-plates.	April 1, 1856.	Design.
773	Ransom, Samuel H.	Stoves, six-plate.	April 1, 1856.	Design.
776	Ransom, Samuel H.	Stoves, cooking, elevated oven.	April 1, 1856.	Design.
781	Ransom, Samuel H.	Stoves, cooking.	April 15, 1856.	Design.
380	Rapp, Adam W.	Pens, gold.	July 22, 1856.	Reissue.
16188	Ratcliff, Charles.	Nut-machines.	Dec. 9, 1856.	II.
15526	Ravenel, St. Julien.	Stone, artificial.	Aug. 12, 1856.	XV.
402	Ravenel, St. Julien.	Stone, artificial.	Oct. 14, 1856.	Reissue.
14205	Ray, B. F. Read, Brown, & Smith. (See Smith, G. H. Brown, and J. A. Read, assignors.) Read, Brown, & Smith. (See Smith, G. H. Brown, and J. A. Read, assignors.) Read, Brown, & Smith. (See Smith, G. H. Brown, and J. A. Read, assignors.) Read, Brown, & Smith, assignors to Leibbrand, McDowell, & Co. (See Smith, Brown, & Read, assignors.) Read, Henry F. (See Dod, Daniel, assignor.)	Harvesters.	Feb. 5, 1856.	I.

Read, J. A., G. Smith, and H. Brown. (See Smith, Brown, & Read)	Read, J. A., G. Smith, and H. Brown. (See Smith, Brown, & Read)	Projectiles for ordnance.....	Oct. 23, 1856.....	XIX
Read, J. A., G. Smith, and H. Brown, assignors to Hayward, Bartlett & Co. (See Smith, Brown, & Read, assignors.)	Read, J. A., G. Smith, and H. Brown, assignors to Hayward, Bartlett & Co. (See Smith, Brown, & Read, assignors.)	Reaping-machines.....	Mar. 11, 1856.....	Extension.
Read, Jonathan.....	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
Read, Jonathan.....	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
Read, Jonathan.....	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
Read, Jonathan.....	Read, Jonathan.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
Read, Joseph A., assignor to John H. Cahill.....	Read, Joseph A., assignor to John H. Cahill.....	Reaping-machines.....	Aug. 19, 1856.....	Reissue.
Read, Joseph A., H. Brown, and G. Smith. (See Smith, Brown, & Read.)	Read, Joseph A., H. Brown, and G. Smith. (See Smith, Brown, & Read.)	Oven and stove doors.....	May 13, 1856.....	Design.
Read, Smith, & Brown, assignors to Cox, Hagar, & Cox. (See Smith, Brown, & Read, assignors.)	Read, Smith, & Brown, assignors to Cox, Hagar, & Cox. (See Smith, Brown, & Read, assignors.)			
Redmond, O.....	Redmond, O.....	Sash-lock.....	Oct. 7, 1856.....	II.
Reed, Charles C., assignor to Charles C. Reed, W. S. Reinert, and J. Schnell.	Reed, Charles C., assignor to Charles C. Reed, W. S. Reinert, and J. Schnell.	Umbrella ribs, manufacturing.....	Mar. 11, 1856.....	XXI.
Reed, George P.....	Reed, George P.....	Watches: independent seconds, movement for.....	July 1, 1856.....	VIII.
Reeves, Jonathan, and John C. Heuermann. (See Heuermann & Reeves.)	Reeves, Jonathan, and John C. Heuermann. (See Heuermann & Reeves.)			
Reilly, John.....	Reilly, John.....	Harvesting-machines.....	Jan. 29, 1856.....	Reissue.
Reilly, John.....	Reilly, John.....	Harvester-fingers.....	April 29, 1856.....	I.
Reilly, John.....	Reilly, John.....	Reaping and mowing machines.....	July 1, 1856.....	I.
Reilly, John, assignor to Heath, Dousman & Reilly.	Reilly, John, assignor to Heath, Dousman & Reilly.	Harvesters.....	Jan. 8, 1856.....	I.
Reinhardt, Charles C.....	Reinhardt, Charles C.....	Truss-pads, glass or earthen.....	Oct. 7, 1856.....	XX.
Reisinger, Graff & Graff. (See Veddlar, N. S., assignor.)	Reisinger, Graff & Graff. (See Veddlar, N. S., assignor.)			
Renwick, E. S. (See Comfort, Sannel, jr., assignor.)	Renwick, E. S. (See Comfort, Sannel, jr., assignor.)	Valve-motions for steam engines.....	Aug. 19, 1856.....	VI.
Renwick, Edward S.....	Renwick, Edward S.....	Stoves, cooking.....	June 3, 1856.....	Design.
Resor, Wm.....	Resor, Wm.....	Stoves, cooking.....	June 3, 1856.....	Design.
Reyman, J. B.....	Reyman, J. B.....	Fence, field.....	Mar. 25, 1856.....	IX.
Reynolds, Charles H.....	Reynolds, Charles H.....	Engines, steam, variable cut-off for.....	Sept. 16, 1856.....	VI.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16068	Reynolds, Ira.....	Washing-machines.....	Nov. 11, 1856.....	XVII.
14972	Reynolds, James.....	Gutta-percha, apparatus for cleaning.....	May 27, 1856.....	IV.
15086	Reynolds, James.....	Gutta-percha tubing, mandrels for making.....	June 10, 1856.....	IV.
15087	Reynolds, James.....	Gutta-percha, feed apparatus for working.....	June 10, 1856.....	IV.
15439	Reynolds, James.....	Gutta-percha, apparatus for covering wire.....	July 29, 1856.....	IV.
16215	Reynolds, James.....	Gutta-percha cord, making.....	Dec. 9, 1856.....	IV.
14272	Reynolds, Rensselaer.....	Looms, temples for.....	Feb. 19, 1856.....	III.
	Reynolds, William. (See Parker & Reynolds.)			
	Riblet, St. John, Burr & Wright. (See Wells, Henry A., assignor.)			
	Riblet, St. John, Burr, & Wright. (See Wright, Henry A., assignor.)			
	Rice, Charles. (See Whorf, S. H., assignor.)			
	Rice, Charles. (See Whorf, S. H., and Charles Rice.)			
	Rice, Henry, et al. (See Maycock, Thomas, assignor.)			
15304	Rice, Orrin.....	Saws, circular and other, method of grinding.....	July 8, 1856.....	XIV.
15344	Rich, John.....	Ploughs.....	July 15, 1856.....	I.
16189	Rich, Obadiah.....	Process of preparing tannate of lime.....	Dec. 9, 1856.....	IV.
	Rich, Reuben.....	Water-wheels.....	July 8, 1856.....	Extension.
14886	Richards, Samuel.....	Railroads, snow plough for.....	May 13, 1856.....	IX.
15018	Richards, Samuel.....	Furnaces, glass.....	June 3, 1856.....	V.
15359	Richards, Samuel.....	Furnaces, glass.....	July 22, 1856.....	V.
14574	Richardson, Calvin A.....	Beds, straw and husk, instrument for stirring.....	April 1, 1856.....	XVII.
	Richardson, Cox, & Boynton. (See Hathaway, David, assignor.)			
	Richardson, Cox, & Boynton. (See Vedder, N. S., assignor.)			
	Richardson, Cox, & Boynton. (See Vedder & Ripley, assignors.)			

14987	Richardson, Cox, & Boynton. (See Hathaway, David, assignor.)	Felloes, machine for manufacturing.....	May 27, 1856.....	XIV.
15253	Richardson, J. B. (See Davis, Ari, Asahel Davis, and C. Cunningham.)	Streets, sweeping, machine for.....	July 1, 1856.....	IX.
15254	Richmond, A. B.....	Dough, making and kneading, machines for.....	July 1, 1856.....	XVII.
15707	Richards, D. H.....	Cartridges.....	Sept. 9, 1856.....	XIX.
	Ridgway, Socrates M.....			
	Riedel, Julius.....			
	Rightor, W. R. (See Craig & Rightor.)			
	Rightor, W. R., and W. P. Craig. (See Craig, Waldo P., assignor.)			
15817	Riley, John M.....	Ships' blocks, sheave pin of, means for lubricating the.....	Sept. 30, 1856.....	VII.
15818	Riley, John M.....	Hubs to axles, mode of attaching.....	Sept. 30, 1856.....	X.
14115	Ripley, Ezra.....	Metals, casting.....	Jan. 15, 1856.....	II.
	Ripley, Ezra, and N. S. Vedder, assignors to Cox, Richardson, & Boynton. (See Vedder & Ripley, assignors.)			
14703	Ripley, E., & N. S. Vedder, assignors to Sweetland & Little. (See Vedder & Ripley, assignors.)	Seeding machines.....	April 15, 1856.....	I.
	Risher, Thomas A., assignor to himself and J. K. Cooper.			
16025	Roach, Thomas R.....	Rakes, hay.....	Nov. 4, 1856.....	I.
16150	Robbins, E. Y.....	Baby-walker and jumper.....	Dec. 2, 1856.....	XVII.
15777	Robbins, Isaac I.....	Rakes, hay.....	Sept. 23, 1856.....	I.
15255	Roberts, C. (See Lyndall, J., assignor)	Mill, corn and cob.....	July 1, 1856.....	XIII.
14517	Roberts, Cyrus.....	Separators, grain.....	Mar. 25, 1856.....	I.
14899	Roberts, Milton, assignor to himself and Isaac N. Felch.	Lathes, cutter-head for.....	May 13, 1856.....	XIV.
14941	Roberts, Milton, assignor to himself, Isaac Roberts, and Isaac N. Felch.	Lathe arrangement for turning irregular forms.....	May 20, 1856.....	XIV.
14163	Robertson, H. G.....	Bee-hives.....	Jan. 29, 1856.....	I.
15107	Robertson, H. G.....	Collars, horse, machines for stuffing.....	June 10, 1856.....	XVI.
15630	Robertson, John.....	Pipe-lead, making.....	Aug. 26, 1856.....	II.
14324	Robertson, Thomas J. W.....	Sewing-machine.....	Feb. 26, 1856.....	III.
343	Robertson, Thomas J. W., assignor to himself and A. E. Beach.	Sewing-machine.....	Jan. 15, 1856.....	III.
14253	Robertson, Wm. H., and George W. Simpson.....	Fire-arms, breech-loading.....	Feb. 12, 1856.....	XIX.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14930	Robinson, John	Saws, reciprocating, method of hanging	May 20, 1856	XIV.
15067	Robinson, John	Engines, steam, rotary	Sept. 2, 1856	VI.
15668	Robinson, John	Candle-moulding machine	Sept. 2, 1856	IV.
15820	Robinson, John	Locomotives for roads, &c	Sept. 30, 1856	VI.
16024	Robinson, John	Pumps, chain	Nov. 4, 1856	XI.
14736	Robinson, Asa P.	Pavements, cast-iron	April 22, 1856	IX.
14032	Robinson, Charles, and Charles T. Chester	Electrical, automatic, circuit breakers	Jan. 1, 1856	VIII.
15236	Robinson, Daniel	Gates, balance for flumes in water power	July 1, 1856	XI.
15819	Robinson, George W. and E. B.	Vessels, steering apparatus for	Sept. 26, 1856	Extension.
14829	Robinson, L.	Cultivators	Sept. 30, 1856	I.
15794	Roby, James. (See Pease, Henry, assignor.)	Barrel-heads, machine for manufacturing	May 6, 1856	XIV.
15300	Rockwood, Aaron W. (See Barden, J. S., assignor.)	Boat-oars	Sept. 23, 1856	VII.
14470	Rode, Rufus, assignor to John Denig.	Scaffold for shingling roofs	July 22, 1856	IX.
14575	Rudefer, J. W.	Omibus-registers	Mar. 18, 1856	X.
14293	Rodgers, James	Forge-fires	April 1, 1856	II.
15778	Rodgers, Wm., and Abraham Bannon	Peasaries, construction of	Feb. 19, 1856	XX.
15823	Roesler, F.	Brick-press, hydraulic	Sept. 23, 1856	XV.
16190	Rogers, Ethan	Bridges	Sept. 30, 1856	IX.
15019	Roland, Isaac S.	Washing-machines	Dec. 9, 1856	XVII.
14409	Rollins, Josiah A.	Melodions	June 3, 1856	XVIII.
14777	Roney, B. T.	Harvesters, grain and grass	Mar. 11, 1856	I.
14778	Root, Eliza K. (See Dickerson, Edward N.)	Harvester-cutters	April 29, 1856	I.
14169	Root, John B.	Engines, steam, rotary	April 29, 1856	VI.
16026	Root, Marets A., and Giles Langdell. (See Langdell & Root.)	Railroad-tracks, machine for clearing snow from	Jan. 29, 1856	X.
14832	Root, Kiley, and Samuel G. Holyoke	Sewing-machines	Nov. 4, 1856	III.
14831	Roper, S. H.	Composition for stuffing leather	May 6, 1856	IV.
14831	Rose, John	Wagons, extension	May 6, 1856	X.
14831	Rosencrantz, E. D.			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14146	Ross, James F.	Valves, steam, in blower engines, means for operating the	Jan. 23, 1856	VI.
14973	Ross, John Gerard	Propellers, hand	May 27, 1856	VII.
16100	Roth, Julius A.	Bleaching process	Nov. 18, 1856	IV.
14779	Rotherwel, Lewis, et al. (See Martin, James W., assignor.)	Wrench	April 29, 1856	II.
14519	Rowe, James	Fences, field, portable	Mar. 25, 1856	IX.
15779	Rowe, J. A.	Chimney-tops, self-regulating draught for	Sept. 23, 1856	V.
15441	Ruger, Nelson	Wood, carving, certain improved devices in	July 29, 1856	XIV.
15440	Ruggles, Frederick A., et al. (See Hathaway, Anson S., assignor.)	Detector, pickpocket	July 29, 1856	XXII.
14830	Ruggles, Solomon W.	Stumps, extracting, machine for	May 6, 1856	IX.
16257	Ruggles, Solomon W., assignor to Silas Ruggles	Windmills	Dec. 16, 1856	XI.
15088	Ruland, Carl, and Max Pettenkofer. (See Pettenkofer & Ruland.)	Cans, preserve, hermetically sealing	June 10, 1856	XVII.
15089	Russell, Charles E.	Fire-engines, method of applying horse-power to	June 10, 1856	V.
15574	Russell, David	Stamp, hand	Aug. 19, 1856	XVIII.
14410	Russell, Edwin A.	Straw-cutters	Mar. 11, 1856	I.
15708	Russell, E. P. (See Hoff, C. C., assignor.)	Lock	Sept. 9, 1856	II.
15725	Russell, Henry D.	Carriage-tops, mode of adjusting	Sept. 9, 1856	X.
15345	Russell, Shroder, & Anderson. (See Shroder, Richard, assignor.)	Carriage, pleasure, three-wheeled	July 15, 1856	X.
15196	Saladee, C. W.	Forma, tapering, method of turning	June 21, 1856	XIV.
15391	Saladee, Cyrus W.	Liquids used as a motive-power	July 22, 1856	IV.
15392	Saladee, Cyrus W., & Schmidt. (See Shroder, Salowski, & Schmidt.)	Saddles, riding	July 22, 1856	XVI.
15196	Salisbury, H. E.			
15391	Salisbury Manufacturing Company. (See Derby, John P., assignor.)			
15392	Salomon, John C., Fr., and George E. Cooper			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16302	Sampson, E., assignor to the Vergennes Scale Manufacturing Company.	Scale, weighing.....	Dec. 23, 1856.....	XII.
14520	Sampson, Junius M.....	Post-driver.....	Mar. 25, 1856.....	IX.
15022	Santola, William, and Geo L. Stansbury.....	Boring machines.....	June 3, 1856.....	XIV.
15821	Santorn, S. T. (See Davis, Ari, Asahel Davis, and G. Cunningham D.).....	Candles, many-wicked.....	Sept. 30, 1856.....	IV.
791	Sanders, Wolfe, & Warren. (See Sanderson, W. L., and N. S. Vedder, assignors.) Sanders, Wolfe, & Warren, assignors. (See Vedder & Sanderson.) Sanderson, W. L., and N. S. Vedder, assignors to Sanders, Wolfe, & Warren. Sanderson, W. L., and N. S. Vedder. (See Vedder & Sanderson, assignors.) Sanderson, W. L., and N. S. Vedder, assignors to Sweetland & Little. (See Vedder & Sanderson.) Sanderson, W. L., and N. S. Vedder, assignors to Sweetland & Little. (See Vedder & Sanderson.) Sanderson & Vedder, assignors. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to North, Chase & North. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to Eddy. (See Vedder & Sanderson.) Sanderson & Vedder, assignors to North, Chase, & North. (See Vedder & Sanderson, assignors.) Sands, Job.....	Stoves, cooking, plates of.....	Ma 13, 1856.....	Design.
14411	Sands, John. (See Hunt & Sands.)	Kilns, lime.....	Mar. 11, 1856.....	XV.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14992	Sands, Thomas, assignor to Thomas Sands and John P. Lindsey.	Organs, parlor.....	May 27, 1856.....	XVIII.
14127	Sanford, G. T. Hull, and S. Hull.....	Harvesters, grain and grass.....	Jan. 15, 1856.....	I.
15147	Sanford, N. C.....	Auger handles.....	June 17, 1856.....	II.
16250	Sanson, John S., & Wm. P. Farrand.....	Metallic slats for blinds, machine for making.....	Dec. 16, 1856.....	II.
16221	Sargent, Charles G., and Abram Keach, assignors to Abram Keach and Caleb M. Marvel.	Printing presses.....	Dec. 9, 1856.....	XVIII.
14369	Sargent, Prentice.....	Lamps for burning rosin oil.....	Mar. 4, 1856.....	V.
14931	Sarven, James D.....	Carriage shaft coupling.....	May 20, 1856.....	X.
15527	Satterlee, L. R.....	Inkstands to desks, mode of attaching.....	Aug. 12, 1856.....	XVIII.
16069	Sault, T.....	India rubber, process of cleaning.....	Nov. 11, 1856.....	IV.
16153	Saunders, Miner, & Stevens. (See Miner, Stevens, & Saunders.)	Axle box.....	Dec. 2, 1856.....	X.
14068	Savage, J. J.....	Excavating machines.....	Jan. 8, 1856.....	IX.
136	Savage, J. J.....	Excavating machines.....	Mar. 11, 1856.....	Add'l Imp't.
15984	Savage, S. T.....	Stoves and furnaces.....	Oct. 23, 1856.....	V.
14412	Savary, Richard.....	Iron, puddling.....	Mar. 11, 1856.....	II.
14642	Sawyer, Jno., assignor to himself and Thomas Hale.	Heating and ventilating buildings, apparatus for.....	April 8, 1856.....	V.
15780	Sawyer, J. & S.....	Hoop machine.....	Sept. 23, 1856.....	XIV.
14833	Sawyer, Joseph, and Sylvester.....	Hoop machine.....	May 6, 1856.....	XIV.
14254	Sayre, C. H., and G. Klineck.....	Boats, steam, capstans for.....	Feb. 12, 1856.....	I.
15954	Schaffer, John.....	Cultivator teeth.....	Oct. 21, 1856.....	VII.
16070	Scharffe, Gustave.....	Fire-arms, breech-loading.....	Nov. 11, 1856.....	XIX.
14338	Scheidlin, Jacob, assignor to J. Scheidlin and O. A. Dailey.	Valves of steam engines, operating the, arrangement of means for.....	Feb. 26, 1856.....	VI.
15669	Schelly, J. Y., and J. Stauffer, assignors to Wm. Watson.	Harvesting machines.....	Sept. 2, 1856.....	I.
15197	Schlickeyson, Carl F.....	Clay, mixing, pug-mill for.....	June 24, 1856.....	XV.
14434	Schmidt, Charles.....	Wheels, carriage, method of boxing.....	Mar. 11, 1856.....	X.
15361	Schmidt, Friedrich E.....	Dye-stuff, vegetable, preparing a.....	July 15, 1856.....	IV.
15577	Schmidt, William. (See Schroeder, H., L. Sallowaki, and Wm. Schmidt.) Schnell, J. (See Reed, Charles C., assignor.) Scholfeld, N.....	Projectiles.....	Aug. 19, 1856.....	XIX.
14537	Schrag, Philip.....	Vessels, pots, &c., earthen, mould for.....	Mar. 25, 1856.....	XV.
14246	Schrag, Philip, and W. J. Von Kaumerhueber.....	Marble in obelisk form, machines for sawing.....	Feb. 19, 1856.....	XV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15000	Schroder, Charles.	Bed bottoms, spring.	Oct. 14, 1856.	XVII.
16283	Schroeder, H., L. Salewski, and Wm. Schmidt.	Fire-arms, breech-loading.	Dec. 23, 1856.	XIX.
14370	Schuh, Geo., and Phineas L. Slayton.	Boots and shoes, pegging, machines for.	Mar. 4, 1856.	XVI.
14471	Schultz, C. A.	Marble in taper form, machine for sawing.	Mar. 18, 1856.	XV.
14472	Schwager, John A. (See Reid, L., assignor.)	Wood, designs on, mode of producing.	Mar. 18, 1856.	XIV.
	Schwickardt, Philip M., assignor.)			
	Scott, Isaac, and E. P. Fitch. (See Kern, James M., assignor.)			
	Scott, Isaac, and E. P. Fitch. (See Kern, James M., assignor.)			
16152	Scott, S.	Ice saw.	Dec. 2, 1856.	XXII.
15148	Scruggs, John A. (See Guard, C. H., assignor.)	Apples, paring machine for.	June 17, 1856.	XVII.
15822	Seaman, John F.	Planters, seed.	Sept. 30, 1856.	I.
15825	Seaman, A. M.	Boiler, steam, grates.	Sept. 30, 1856.	VI.
14473	Sees, John R.	Rods, connecting, adjusting the brasses of.	Mar. 18, 1856.	XIII.
14576	Sees, John R.	Pump, feeding, method of varying the stroke of, for steam-engines.	April 1, 1856.	XI.
15494	Sees, John R.	Boilers, steam, heating feed-water apparatus for.	Aug. 5, 1856.	VI.
16071	Sees, John R.	Locomotive engines, heating feed-water of, arrangement for.	Nov. 11, 1856.	VI.
14255	Seithen, John.	Bottles, envelopes for.	Feb. 12, 1856.	XXII.
15070	Selby, N. N.	Whistle-tree for detaching horses from carriages.	Sept. 2, 1856.	X.
14836	Selpho, William.	Legs, artificial, construction of.	May 6, 1856.	XX.
15364	Senor, Jos. W. (See Waite & Senor.)	Lamps, lard.	July 15, 1856.	V.
	Senseny, Jeremiah S., assignor to himself and G. H. Merklein.	Bank notes, &c., from being counterfeited, method of preventing.	Jan. 8, 1856.	XVIII.
14369	Seropyan, C. D.	Window-sash.	Aug. 19, 1856.	IX.
15578	Sessions, Francis E.	Kettles, brass, making.	May 13, 1856.	II.
14587	Seymour, Frederick J.			

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15395	Seymour, Frederick J.	Lamps, locomotive reflector.	July 8, 1856.	V.
377	Seymour, P.	Sowing machines.	July 15, 1856.	Release.
16253	Seymour, Wm. H., assignor to Seymour & Morgan.	Harvesting-machines, finger-bar for.	Dec. 16, 1856.	I.
15721	Seymour, W. H. and H. Pease, assignors to Seymour & Morgan.			
	Seymour, W. H., and H. Pease, assignors to W. H. Seymour and Dayton S. Morgan.			
15624	Shaler, Reuben.	Ships and other vessels, bilge and leakage water indicator for.	Aug. 26, 1856.	VII.
15149	Shanda, Jos. G.	Paddle-wheels, feathering.	June 10, 1856.	VII.
15782	Shannon, Sinclair.	Lanterns.	Sept. 23, 1856.	V.
14609	Shapter, John S.	Engines, steam, cut-offs for.	April 15, 1856.	VI.
15759	Shapter, John S.	Boiler, steam cylinder within the, arrangement of.	Aug. 19, 1856.	VI.
14116	Sharp, Samuel T.	Straw-cutters.	Jan. 15, 1856.	I.
14413	Sharp, Theodore.	Saws, mulley, method of straining.	Mar. 11, 1856.	XIV.
16072	Sharps, C.	Guns, breech-loading.	Nov. 11, 1856.	XIX.
15781	Shattuck, A. D.	Carding engines.	Sept. 23, 1856.	III.
15784	Shattuck, A. D.	Carding engines.	Sept. 23, 1856.	III.
16193	Shaw, Charles A.	Churns.	Dec. 9, 1856.	I.
14170	Shaw, Henry F.	Jackcrew.	Jan. 29, 1856.	XII.
15834	Shaw, Henry F., assignor to H. F. & G. F. Shaw.	Valves, regulating, for steam-engines.	Sept. 23, 1856.	VI.
15150	Shaw, James.	Portfolio.	June 17, 1856.	XVIII.
15532	Shaw, Jerome B.	Glass, method of lettering and ornamenting.	Aug. 12, 1856.	XVIII.
14325	Shaw, Wm. F.	Gas, heating by, apparatus for.	Feb. 26, 1856.	V.
14414	Shaw, Wm. F.	Gas, heating and cooking by, apparatus for.	Mar. 11, 1856.	V.
14737	Shaw, Wm. F.	Gas-burners.	April 22, 1856.	V.
149	Shaw, Wm. F.	Gas heater.	July 22, 1856.	Add'l imp't.
15531	Shaw, Wm. F.	India-rubber, treating.	Aug. 12, 1856.	IV.
407	Shaw, Wm. F.	Gas, heating by, apparatus for.	Oct. 23, 1856.	Reissue.
16031	Shaw, Wm. F.	Gas, heating or cooking by, apparatus for.	Nov. 4, 1856.	V.
	Sheldon, Chandler, & Moore. (See Moore, Chas., assignor.)			
	Sheldon & Smith. (See Smith, Harvey, and F. A. Sheldon.)			
15596	Shepard, Edward C.	Electro-magnetic machines.	Aug. 19, 1856.	VIII.
14738	Shepard, Samuel R., and Orson W. Stow.	Metal, sheet, working in.	April 22, 1856.	II.
818	Shepherd, J. & R.	Clock-fronts.	July 29, 1856.	Design.
15530	Shepler, John S.	Washing-machine.	Aug. 19, 1856.	XVII.
16314	Sherman, N. C., and J. Mason.	Planters, seed.	Dec. 23, 1856.	I.

Alphabetical List of Patentes—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
374	Sherman, S. I.	Levels, spirit, mounting	July 1, 1856.	Reissue. XX.
16292	Sherman, Sylvester I.	Truss-pads	Dec. 23, 1856.	XIV.
15747	Sherwin, P. O.	Shingle-machine	Sept. 16, 1856.	II.
14474	Sherwood, John P.	Nail-plate feeding machines	Mar. 18, 1856.	Extension.
401	Sherwood, John P.	Locks, door	Dec. 15, 1856.	Reissue.
	Sherwood, John P., assignor to Calvin Adams, assignor to J. P. Sherwood.	Locks, door	Oct. 7, 1856.	I.
15746	Shields, B. G.	Cotton-pickers	Sept. 16, 1856.	I.
15955	Shireman, J. H.	Planters, seed	Oct. 21, 1856.	I.
405	Shirley, Daniel H.	Placoforte action	Oct. 21, 1856.	Reissue. X.
14256	Shoenberger, Edwin F.	Coupling-safety-spring	Feb. 12, 1856.	V.
15495	Shopland, John	Stove, cooking, combined steam and hot-air	Aug. 5, 1856.	IX.
15528	Shopland, John	Window-sashes, spring-pulleys for	Aug. 12, 1856.	XI.
15463	Shorey, John C., assignor to himself and A. J. Webster.	Water-wheels, gates for, method of operating	July 29, 1856.	II.
15306	Short, Sewall	Horse-shoes	July 9, 1856.	IV.
16255	Shroder, Richard, assignor to J. L. Russell, R. Shroder, and A. Anderson.	Oil, coal, apparatus for	Dec. 16, 1856.	II.
14257	Shunk, Christian	Furnaces, blast, fluxing	Feb. 12, 1856.	XXII.
14740	Sibley, H. H.	Tent, conical	April 22, 1856.	XX.
14739	Sibley, L. D.	Emissions, nocturnal, rings to prevent	April 22, 1856.	XIII.
15346	Siemens, J. G.	Mill-stones, adjustment of	July 15, 1856.	X.
15935	Sigourney, John M.	Wheels, railroad car, cast-iron	Oct. 21, 1856.	IX.
	Siller, Henry J. (See Fox & Siller.)			
	Silver, Dole, & Felch. (See Dole, L. A., assignor.)			
15257	Silver, Wm., Jr.	Blasting powder	July 1, 1856.	X.
	Simms, B. F., and Arthur Barbarin. (See Barbarin & Simms.)			
14371	Simonds, Horace B.	Hubs to axles, mode of attaching	Mar. 4, 1856.	XII.
15795	Simpson, A., assignor to S. H. F. Bingham.	Belc-punch	Sept. 23, 1856.	

14475	Simpson, George W. (See Robertson, W. H., and G. W. Simpson.)	Sewing-machines	Mar. 18, 1856.	III.
15020	Singer, Isaac M.	Sewing-machines, for binding hats	June 3, 1856.	III.
16030	Singer, Isaac M.	Sewing-machines	Nov. 4, 1856.	III.
14741	Sirret, Emile, and Wm. H. Scott	Lanterns, lamps to, method of fastening	April 22, 1856.	V.
14577	Sitton, John	Wheelwright machine	April 1, 1856.	XIV.
15901	Sitton, John	Wheelwrights' machine	Oct. 14, 1856.	XIV.
16290	Skeels, Levi	Shears, tinners'	Dec. 23, 1856.	II.
15671	Skinner, Haleyon, & Alex. Smith. (See Smith & Skinner.)	Buckle for wearing apparel	Sept. 2, 1856.	XXI.
15783	Slade, William	Lock for freight cars	Sept. 23, 1856.	II.
15581	Slaughter, Wm. B.	Cars, railroad, head-rest to be used in	Aug. 19, 1856.	X.
15622	Slayton, Nelson B.	Pen, fountain	Aug. 26, 1856.	XVIII.
14022	Slayton, P. L.	Sewing-machines	Jan. 1, 1856.	III.
	Slayton, Phineas L. (See Schuh, George, and P. L. Slayton.)			
14835	Sloan, Thomas	Boilers, steam-heating, feed-water apparatus for	May 6, 1856.	VI.
	Slocum & Watkinson. (See Halvorson, Halvor, assignor.)			
14373	Smith, Aaron and Thomas S.	Plows, gang	Mar. 4, 1856.	I.
15529	Smith, A. B., and Wm. Weaver	Projectiles, throwing, machine for	Aug. 12, 1856.	XIX.
15937	Smith, Abbey S.	Music, instrumental, scale for	Oct. 21, 1856.	XVIII.
16037	Smith, Alexander, and Haleyon Skinner	Looms, power	Nov. 11, 1856.	III.
14415	Smith, Alfred E.	Axles, boxes for	Mar. 11, 1856.	X.
16294	Smith, Atkins. (See Lavender, Wm. R.)	Axletrees, mode of connecting shafts with	Dec. 23, 1856.	X.
15393	Smith, Augustus B. (See Mallett & Smith.)	Match, friction, machine	July 22, 1856.	XVII.
14326	Smith, Calvin D., and Horace Patterson	Door-spring	Feb. 26, 1856.	II.
16165	Smith, David G.	Ships, steering apparatus for	Dec. 2, 1856.	VII.
16251	Smith, David W.	Reaping and mowing machines	Dec. 16, 1856.	I.
15530	Smith, Daniel C.	Chairs, manufacturing	Aug. 12, 1856.	XIV.
849	Smith, Edward Q.	Stoves, parlor	Nov. 11, 1856.	Design.
854	Smith, Elihu	Stoves, cooking	Dec. 23, 1856.	Design.

Alphabetical List of Patentees—Continued.

No	Name of patentee.	Invention or discovery.	Date.	Class.
803	Smith, Garretson, and Henry Brown, assignors to J. G. Abbott and A. Lawrence.	Stoves, air-tight	June 17, 1856.....	Design.
756	Smith, G., H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, cooking.....	Jan. 22, 1856.....	Design.
802	Smith, G., H. Brown, and Jos. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, cooking.....	June 17, 1856.....	Design.
804	Smith, G., H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves, nine-plato.....	June 17, 1856.....	Design.
805	Smith, G., H. Brown, and Jos. A. Read, assignors to J. G. Abbott and A. Lawrence.	Stoves	June 17, 1856.....	Design.
757	Smith, G., H. Brown, and J. A. Read, assignors to A. E. Warfield.	Furnaces, portable	Jan. 22, 1856.....	Design.
758	Smith, G., H. Brown, and J. A. Read, assignors to A. E. Warfield.	Ranges, portable	Jan. 22, 1856.....	Design.
830	Smith, G., H. Brown, and J. A. Read, assignors to Cox, Hagar, & Cox.	Stoves	Sept. 16, 1856.....	Design.
844	Smith, G., H. Brown, and J. A. Read, assignors to Hayward, Bartlett, & Co.	Stoves.....	Oct. 7, 1856.....	Design.
811	Smith, Garretson, Henry Brown, and Joseph A. Read, assignors to Leibrant, McDowell, & Co.	Stoves, cooking.....	June 24, 1856.....	Design.
15496	Smith, Gilbert.....	Fire arms, breech-loading.....	Aug. 5, 1856.....	XIX.
15785	Smith, H. E.....	Grain-separators	Sept. 23, 1856.....	XIII.
16191	Smith, Hamilton E.....	Corn-shellers	Dec. 9, 1856.....	I.
785	Smith, Harvey, and Frederick A. Sheldon.....	Stove-plates	April 22, 1856.....	Design.
14620	Smith, H. H.....	Valve, governor, for steam engines.....	April 8, 1856.....	VI.
14372	Smith, Hiram.....	Pumps, air, escapes for.....	Mar. 4, 1856.....	XI.
14300	Smith, H. L., assignor to Wm. Neff and Peter Neff, jr.	Photographic pictures on japanned surfaces.....	Feb. 19, 1856.....	XVIII.
14147	Smith, Horace, and Daniel B. Wesson, assignor to the Volcanic Repeating Arms Co.	Fire-arms, cartridges of, primers for	Jan. 22, 1856.....	XIX.
15621	Smith, Jacob J., and Jonathan H. Pugh.....	Bedsteads	Aug. 26, 1856.....	XVII.
	Smith, James. (See Henry Remy, assignor.)			

16106	Smith, James, Jr.....	Metallic tubes, casting.....	Dec. 2, 1856.....	II.
14374	Smith, Jeremiah P.....	Corn-shellers	Mar. 4, 1856.....	I.
16127	Smith, Jeremiah P.....	Corn, shelling, disk for.....	Nov. 25, 1856.....	I.
16028	Smith, Joel.....	Spinning, throttle, machine	Nov. 4, 1856.....	III.
14034	Smith, John C.....	Fire-arms, repeating, and magazine.....	Jan. 1, 1856.....	XIX.
16029	Smith, John C.....	Weaving long warps.....	Nov. 4, 1856.....	III.
14294	Smith, Joseph.....	Hubs for carriages.....	Feb. 19, 1856.....	X.
15046	Smith, Joseph.....	Raking and loading hay, machine for	June 3, 1856.....	I.
381	Smith, Joseph.....	Hubs for carriages	July 22, 1856.....	Reissue.
156	Smith, Joseph.....	Hubs for irregular forms.....	Dec. 16, 1856.....	Add'l impt.
16192	Smith, Lemuel.....	Lathes for irregular forms.....	Dec. 9, 1856.....	XIV.
359	Smith, L. S., assignor to B. Howard.....	Match-splints, machinery for splitting.....	Mar. 11, 1856.....	Relasue.
15625	Smith, Marvin.....	Apple parers.....	Aug. 26, 1856.....	XVII.
15444	Smith, Miron.....	Yokes, ox	July 29, 1856.....	I.
15711	Smith, R.....	Washing-machine.....	Sept. 9, 1856.....	XVII.
	Smith, R. M. (See Leeds, L. W.)			
15710	Smith, Robert A.....	Streets, sweeping, machine for	Sept. 9, 1856.....	IX.
14742	Smith, Thomas.....	Fire-arms, projectiles for	April 22, 1856.....	XIX.
14834	Smith, Willard H.....	Door-fastener	May 6, 1856.....	II.
15965	Smith, William H.....	Husking corn, machine for	Oct. 28, 1856.....	I.
14587	Smith, Wooster.....	Fishing-leads	April 1, 1856.....	XXII.
14206	Snider, John S.....	Saw-mills.....	Feb. 5, 1856.....	XIV.
14635	Snow, Martin.....	Spoke-shave	April 8, 1856.....	XIV.
14073	Snyder, John G.....	Seeding machines	Jan. 8, 1856.....	I.
15195	Soule, Charles R.....	Teeth, rake, machine for making	June 24, 1856.....	II.
15347	Soule, George H.....	Fire-arms	July 15, 1856.....	XIX.
	Soules, Isaac, and John Case. (See Case & Soules.)			
14207	Southwick, Mass Branch.....	Vegetables, for preservation, machines for preparing.....	Feb. 19, 1856.....	XVII.
14417	Soverel, Matthias.....	Axles, thills to, mode of securing.....	Mar. 11, 1856.....	X.
14578	Spalding, Henry C.....	Lathe.....	April 1, 1856.....	XIV.
	Sparks, Joseph, and James D. and J. M. Jeffers. (See Jeffers and Sparks and Jeffers.)			
15348	Speed, John J., jr., and John A. Bailey.....	Metal tubes, seamless, making	July 15, 1856.....	II.
14744	Speer, Alfred.....	Windows, &c., weather strip and lock for	April 22, 1856.....	IX.
16296	Spence, G. O.....	Melodeons.....	Dec. 23, 1856.....	XVIII.
14743	Spence, George S. G.....	Heating boilers, steam-pressure regulating apparatus for	April 22, 1856.....	V.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14521	Spencer, Albert.	Hat bodies, machines for sizing	Mar. 25, 1856.	III.
	Spencer, Albert, and A. E. Laing. (See Emmons, Phineas, assignor.)			
15786	Spencer, Isaac S.	Threshing, grain, machine	Sept. 23, 1856.	I.
15859	Spofford, Charles	Forms, irregular, machine for cutting	Oct. 7, 1856.	XIV.
15497	Spooner, D. B., & H. B.	Photographic pictures on glass, mode of coloring	Aug. 5, 1856.	XVIII.
15021	Spooner, Lyander	Chairs and other articles, elastic bottoms for	June 3, 1856.	XVII.
14674	Sprague, Alexander McD.	Furnaces with fuel, apparatus for feeding	April 15, 1856.	V.
15533	Sprague, Andrew	Harvesters, corn	Aug. 12, 1856.	I.
	Sprague, Russell, Phelps, & Foote. (See Foote, Alvah, assignor.)			
14376	Squarza, Vincenzo	Candle dipping machines	Mar. 4, 1856.	IV.
16318	Squire, John J.	Rakes, hay	Dec. 23, 1856.	I.
14214	Standing, John, assignor to himself and James Baxendale.	Printing machines, calico, movement for the doctors of.	Feb. 5, 1856.	XVIII.
	Stanley, C. H. (See Surgey, assignor to Stanley.)			
	Stansbury, Geo. L. (See Samuels & Stansbury.)			
	Stansbury, Geo. L. (See Samuels & Stansbury.)			
	Stanton, John M. and Simon F., et. al. (See Glines, H. M.)			
14780	Stanton, Simon F.	Fire-arms, breech-loading	April 29, 1856.	XIX.
15623	Stanton, Simon F., assignor to J. M. and S. F. Stanton.	Seine needles, filling, machinery for	Aug. 26, 1856.	III.
14522	Staples, Solon	Clamp for planking ships	Mar. 25, 1856.	XIV.
15442	Starbuck, G. H., and L. D. Gilman	Saw machine	July 29, 1856.	XIII.
14118	Starr, Eben T.	Fire-arms, revolving	Jan. 15, 1856.	XIX.
14295	Starrett, James F.	Printing from engraved plates, machine for	Feb. 19, 1856.	XVIII.
14888	Starrett, John, and N. J. Wier	Stores, gas	May 13, 1856.	V.
16293	Staufen, Werner	Fibres, vegetable, preparing, for stuffing mattresses and cushions	Dec. 23, 1856.	III.

14700	Stauffer, J., and J. Y. Schelly, assignors to Wm. Watson. (See Schelly & Stauffer.)	Saw mills, head and tail blocks for	April 15, 1856.	XIV.
14416	Stearns, E. H.	Boring and mortising machine	Mar. 11, 1856.	XIV.
	Stedman, Benjamin S., and Wm. Fosket. (See Fosket & Stedman.)			
14418	Steers, Abraham	Extracts, apparatus for making	Mar. 11, 1856.	IV.
14375	Steers, Abraham	Tanning apparatus	Mar. 4, 1856.	XVI.
15285	Stephens, James	Curtain fixtures	July 1, 1856.	XVII.
14580	Stephens, William	Valve gear of oscillating engines	April 1, 1856.	VI.
16073	Sterling, W. G.	Gas-regulator	Nov. 11, 1856.	V.
15619	Stetson, Alva M.	Amalgamator	Aug. 26, 1856.	II.
14745	Stevens, A. H.	Corn-shellers	April 22, 1856.	I.
16291	Stevens, Edgar M., assignor to E. Townsend	Corn-shellers	Dec. 23, 1856.	I.
16101	Stevens, G. H.	Boring and mortising machine	Nov. 11, 1856.	XIV.
	Stevens, Miner, & Saunders. (See Miner, Stevens, & Saunders.)			
15269	Stevens, Oliver P.	Hulling and scouring grain, seed, &c., machines for	July 1, 1856.	I.
14419	Stevens, Robert L.	Valves of steam engines, slide, means for reducing the friction of	Mar. 11, 1856.	VI.
14974	Stevenson, William J.	Preserve vessels, self-sealing	May 27, 1856.	XVII.
15395	Stever, J.	Ships, pendulum-pumps for, arrangement of means in.	July 22, 1856.	VII.
15260	Stewart, J. A.	Planters, cotton seed	July 1, 1856.	I.
	Stewart, John, and William H. Tristler. (See Tristler & Stewart)			
15199	Stewart, V. R.	Washing-machines	June 24, 1856.	XVII.
	Stigleman & Ogborn. (See Taylor, George, assignor.)			
14523	Stillman, O. M., and Stephen Wilcox, jr.	Boilers, steam	Mar. 25, 1856.	VI.
14837	Stillman, Samuel N. (See Bevin, Julius.)	Sowing seed broadcast, machines for	May 6, 1856.	I.
	Stimson, Enos			
	St. John, Burr, Wright, & Riblet. (See Wells, Henry A., assignor.)			
	St. John, Burr, Wright, & Riblet. (See Wells, Henry A., assignor.)			
15709	St. John, John R.	Wind-mills	Sept. 9, 1856.	XI.
16292	St. John, Thaddeus F.	Wiring blind rods, machine for	Dec. 16, 1856.	II.
16075	St. John, William F.	Gas retort fastening, coppering	Nov. 11, 1856.	IV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15324	Stocker, Amos.....	Tailors' measures.....	Sept. 30, 1856.....	XXI.
15472	Stoddard, O.....	Harvesters, grain and grass.....	Sept. 2, 1856.....	I.
15047	Stoddard, Oren.....	Husking corn, machines for.....	June 3, 1856.....	I.
14071	Stoddard, William.....	Mortising machines.....	Jan. 8, 1856.....	XIV.
15788	Stone, Amasa.....	Bottles and other vessels made from plastic substances, tool for forming grooves around the orifice of.....	Sept. 23, 1856.....	XXII.
14070	Stone, Gustavus.....	Mowing machines, blades of.....	Jan. 8, 1856.....	I.
16151	Stone, Harley, and Mason D. Cole.....	Tap, expanding.....	Dec. 2, 1856.....	II.
14430	Storm, Wm. Mt.....	Fire-arms, revolving.....	Mar. 11, 1856.....	XIX.
15090	Storm, Wm. Montgomery.....	Ships and other vessels, safes for.....	June 10, 1856.....	VII.
15259	Storm, William M.....	Steam-pressure indicators and regulators.....	July 1, 1856.....	VI.
15307	Storm, Wm. Mt.....	Fire-arms, breech-loading.....	July 5, 1856.....	XIX.
	Stott, Pitcock, & Richmond. (See Pitcock, Stott, & Richmond.)			
16074	Stout, T. B., et al. (See Marsh, David.)			
16249	Stout, Thomas B.....	Mill-stone dress.....	Nov. 11, 1856.....	XIII.
14421	Stover, Henry D., and J. W. Bicknell.....	Mill, grinding.....	Dec. 16, 1856.....	XIII.
15593	Stow and Shepherd. (See Shepherd & Stow.)	Forms, irregular, machine for cutting.....	Mar. 11, 1856.....	XIV.
16295	Stowell, Abijah D., assignor to John A. Place.....	Wheelwright's machine.....	Aug. 19, 1856.....	XIV.
14579	Stowell, John.....	Saws, reciprocating gig, method of hanging.....	Dec. 23, 1856.....	XIV.
14322	Stratton, Ezra M.....	Axe boxes for carriages.....	April 1, 1856.....	X.
	Stratton, Lorenzo, assignor to himself and Luther Hill.....	Boot and shoe soles, manufacture of.....	Mar. 11, 1856.....	XVI.
14117	Stratton & Massey. (See Allen, John F., assignor.)			
14072	Stratton, T. J.....	Ditching machines.....	Jan. 15, 1856.....	IX.
14119	Straub, Abraham.....	Marble obelisks, machines for sawing.....	Jan. 8, 1856.....	XV.
16280	Strong, Francis M., and Thomas Ross.....	Scales, platform.....	Jan. 15, 1856.....	XII.
	Strouse, S. H., and J.....	Shirts.....	Dec. 23, 1856.....	XXI.
	Stuart, Cresson, and Peterson. (See Beesley and Delany.)			

14033	Stubblefield, Thomas.....	Boiler, steam, alarms.....	Jan. 1, 1856.....	VI.
14942	Stubber, John, assignor to John Carton.....	Lamps, locomotive and railroad.....	May 20, 1856.....	V.
14524	Stull, John.....	Syringe bottles for medicinal agents.....	Mar. 25, 1856.....	XX.
15866	Sturtevant, B. F., assignor to E. Townsend.....	Roots and shoes, pincers for lasting.....	Oct. 7, 1856.....	XVI.
14678	Summers, Joseph.....	Hub, wheel.....	April 15, 1856.....	X.
15826	Summers, S. F.....	Trunks.....	Sept. 30, 1856.....	XVI.
16200	Surgey, William Palmer, assignor to Chas. Henry Stanley.....	Cigars.....	Dec. 9, 1856.....	XXII.
14120	Sutherland, Abner J.....	Yarn-dressing frames.....	Jan. 15, 1856.....	III.
14525	Sweeny, A. I.....	Water meter.....	Mar. 25, 1856.....	XI.
	Swetland & Little. (See Vedder and Sanderson, assignors.)			
	Swetland & Little. (See Vedder and Sanderson, assignors.)			
	Swetland & Little. (See Vedder and Ripley, assignors.)			
15349	Swift, George W.....	Threshing and cleaning grain in the field, machines for.....	July 15, 1856.....	I.
14207	Swingle, Alfred, assignor to Elmer Townsend.....	Sewing machines.....	Feb. 5, 1856.....	III.
14269	Swingle, Alfred, assignor to Elmer Townsend.....	Roots and shoes, pegging.....	Feb. 12, 1856.....	XVI.
15396	Swingle, A., assignor to E. Townsend.....	Sewing machines.....	July 22, 1856.....	III.
15462	Swingle, A., assignor to E. Townsend.....	Pegging jacks.....	July 29, 1856.....	XVI.
410	Swingle, A., assignor to E. Townsend.....	Sewing machines.....	Nov. 4, 1856.....	III.
14258	Taft, Timothy F.....	Bolt machine.....	Feb. 12, 1856.....	II.
14933	Taggart, John.....	Excavating scoops.....	May 20, 1856.....	IX.
15200	Taggart, John.....	Buoy, tidal alarm.....	June 24, 1856.....	VII.
16201	Taggart, John, and Leonard A. Grover, assignors to Taggart, Grover & Banker.....	Husking corn, machines for.....	Dec. 9, 1856.....	I.
15723	Taggart, John, assignor to himself and Vernon Brown.....	Smoothing irons, furnace.....	Sept. 9, 1856.....	XVII.
16076	Taggart, William.....	Projectile for fire-arms.....	Nov. 11, 1856.....	XIX.
15473	Tailant, C. L.....	Chairs, invalid.....	Sept. 2, 1856.....	XVII.
15907	Talbot, G. H.....	Gimlet handles.....	Oct. 14, 1856.....	II.
14377	Talbot, D. & G.....	Ships' capstans.....	Mar. 4, 1856.....	VII.
14986	Talbot, Daniel and George.....	Ships' capstans.....	May 27, 1856.....	VII.
15350	Tarbox, Hiram, 2d.....	Cattle stall.....	July 15, 1856.....	I.
14679	Tatum, Joel H.....	Photographic impressions, preparation of oil ground to receive.....	April 15, 1856.....	XVIII.
363	Tatum, Joel H.....	Photographic impressions, preparation of oil ground to receive.....	May 13, 1856.....	Reissue.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14176	Taylor, Alvah B.	Hat bodies, machinery for making.	April 18, 1856.	III.
15443	Taylor, Alvah B.	Hat bodies, machinery for forming.	July 29, 1856.	III.
15534	Taylor, Alvah B.	Hat bodies, manufacture of.	Aug. 12, 1856.	III.
14259	Taylor, Benjamin.	Corn, green, instrument for grating.	Feb. 12, 1856.	XVII.
15213	Taylor, George, assignor to H. Ogborn and George W. Stigleman.	Gate, farm.	June 21, 1856.	IX.
14121	Taylor, James S.	Hats, felting, machinery for.	Jan. 15, 1856.	III.
14845	Taylor, James S.	Hat bodies, machinery for felting.	May 6, 1856.	III.
15903	Taylor, James S.	Hat bodies, machinery for forming.	Oct. 14, 1856.	III.
	Taylor, Samuel.	Warps, dressing, manner of constructing brushes for.	May 22, 1856.	Extension.
15308	Taylor, Samuel.	Warps, dressing, brushes for.	July 8, 1856.	III.
15535	Taylor, Thomas W.	Spinning frames.	Aug. 12, 1856.	III.
15351	Teal, Peter.	Coupling shaft, detachable.	July 15, 1856.	X.
15153	Tear, John.	Forms, irregular, method of operating cutters in their head for.	June 17, 1856.	XIV.
14327	Temple, James.	Boring-machine.	Feb. 26, 1856.	XIV.
14215	Terral, Charles C., assignor to himself and S. Crawford.	Cannon, many chambered breech-loading.	Feb. 5, 1856.	XIX.
14205	Terry, Harriet V., administratrix of William D. Terry, deceased.	Buildings, cast-iron, mode of constructing.	Feb. 5, 1856.	IX.
15091	Terry, J. B.	Pins, machine for sticking.	June 10, 1856.	II.
15526	Thatcher, George W.	Chimney-cowl.	Aug. 12, 1856.	V.
14422	Thayer, Pliny.	Harvester-cutters.	Mar. 11, 1856.	I.
14781	Thayer, Pliny.	Reaping machines.	April 29, 1856.	I.
15583	Thickins, R. W.	Vice.	Aug. 19, 1856.	II.
16129	Thieme, Charles F.	Gas-cock and swing joint.	Nov. 25, 1856.	IV.
14171	Thomas, Charles F.	Chimney-cowls.	Jan. 29, 1856.	V.
14423	Thomas, John B.	Plane, stock.	Mar. 11, 1856.	XIV.
15154	Thomas, Joseph.	Hat-bodies, sizing, machines for.	June 17, 1856.	III.
15261	Thomas, Joseph.	Hat-bodies, felting, machinery for.	July 1, 1856.	III.
15627	Thomas, Joseph.	Hat-bodies, felting, machinery for.	Aug. 26, 1856.	III.

15827	Thomas, Samuel.	Ore-washer.	Sept. 30, 1856.	II.
14746	Thomas, Samuel T.	Looms for weaving bags.	April 22, 1856.	III.
14890	Thomas, William.	Chairs for ships' cabins.	May 13, 1856.	XVII.
15956	Thomas, William, jr.	Blacking, stove.	Oct. 21, 1856.	IV.
14526	Thomas, Wm., assignor to Abner Van Horn.	Cock for steam, water, &c.	Mar. 25, 1856.	XI.
14477	Thomas, William P.	Harness for shoeing horses.	Mar. 18, 1856.	XVI.
16195	Thompson, Anson.	Seeds in the earth, implements for rolling.	Dec. 9, 1856.	I.
14538	Thompson, D. H.	Raking and loading hay, machines for.	Mar. 25, 1856.	I.
15957	Thompson, George.	Alkalies, caustic, devices for putting up.	Oct. 21, 1856.	IV.
15352	Thompson, Hiram, & Richard Q. Tuson.	Mop-heads.	July 15, 1856.	XVII.
14035	Thompson, Ira F.	Vessels, velocimeters for.	Jan. 1, 1856.	VII.
14328	Thompson, Ira F.	Vessels, velocimeters for.	Feb. 26, 1856.	VII.
761	Thompson, James M.	Bricks, moulded.	Feb. 12, 1856.	Design.
15986	Thompson, James M.	Cans, oil.	Oct. 23, 1856.	V.
15354	Thompson, John W.	Mowing-machines.	July 15, 1856.	I.
	Thompson, Kimball, & Buck. (See Buck, Josab, assignor.)			
	Thompson, M. Minthorne. (See Everett, Wm E., and M. M. Thompson.)			
15498	Thompson, Meriwether, jr.	Hemp-breaker.	Aug. 5, 1856.	III.
398	Thompson, Moses.	Furnaces for burning wet fuel.	Oct. 7, 1856.	Reissue.
14932	Thompson, Nathan, jr.	Engines, steam, surface condensers for.	May 20, 1856.	VI.
15674	Thompson, Shelton M.	Straw-cutters.	Sept. 2, 1856.	I.
14260	Thompson, Thomas.	Paper, &c., folding, machine for.	Feb. 12, 1856.	XVIII.
15537	Thompson, W. O., and L. Harrington.	Stumps, extracting, mode of.	Aug. 12, 1856.	IX.
15201	Thompson, Wm. H., and Eustis P. Morgan.	Houses, ware, safety-hatches for.	June 24, 1856.	X.
15092	Thompson, William R.	Wheels, railway car, constructing.	June 10, 1856.	X.
15787	Thorpe, Franklin.	Churns.	Sept. 23, 1856.	I.
	Thursby, William S. (See Pratt, William S., assignor.)			
	Tiedeman, D. F., et al. (See Huygens, George W. O., assignor.)			
15828	Tiffany, David B.	Pillows and bolsters into their cases, implement for putting.	Sept. 30, 1856.	XVII.
15626	Tillotson, Loyall.	Capping.	Aug. 26, 1856.	XX.
14378	Tilton, Wm. B.	Guitars.	Mar. 4, 1856.	XVIII.
15152	Tingley & Vielo (See Brown, Albert H., assignor.)	Harvesters, corn.	June 17, 1856.	I.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15582	Tinker, Wm.	Harvesters	Aug. 19, 1856.	I.
16194	Tinker, Wm.	Harvesters	Dec. 9, 1856.	I.
	Tinkham, Samuel M. (See Crane, Charles S. C., assignor.)			
16041	Tippett, Alfred	Tenoning, etc., tool for	Nov. 4, 1856.	XIV.
14261	Titus, Wm. D.	Oil-box for axles, with conical journals	Feb. 12, 1856.	XII.
14680	Titus, Wm. D.	Vault covers	April 15, 1856.	IX.
16128	Todd, George C.	Boot and shoe soles, edges of, edge keys for making and polishing.	Nov. 25, 1856.	XVI.
15748	Tolhart, G. W.	Harvesting-machines	Sept. 16, 1856.	I.
15024	Toll, John A.	Marble sawing machine	June 3, 1856.	XV.
15713	Toll, Jose.	Marble sawing machine	Sept. 9, 1856.	XV.
413	Toll, Jose.	Marble sawing machine	Dec. 9, 1856.	Reissue.
132	Tomlinson, O. B.	Cloth, ornamental felt, manufacture of	Feb. 5, 1856.	Add'l imp't.
16297	Tompkins, Clark	Knitting-machines	Dec. 23, 1856.	III.
14975	Tompkins, Joseph H.	Knitting-machines, rotary	May 27, 1856.	III.
14122	Torrance, Mann, & Co. (See Vedder, N. S., assignor.)	Daguerreotype plates, box for coating	Jan. 15, 1856.	XVIII.
15353	Torrey, H. H.	Washing-machine	July 15, 1856.	XVII.
15998	Torstrick, Henry	India-rubber, vulcanized, working over	Oct. 23, 1856.	IV.
14262	Towers, Wm. H.	Clothes clamp	Feb. 12, 1856.	XVII.
14527	Towers, William H.	Creepers to prevent slipping on ice, &c.	Mar. 25, 1856.	XXII.
14263	Towne, Loison D.	Planing-machines, cutter-heads for	Feb. 12, 1856.	XIV.
	Towne, Wm. J., et al. (See Magee, John, assignor.)			
	Townsend, E. (See Swingle, A., assignor.)			
	Townsend, E. (See Swingle, A., assignor.)			
	Townsend, E., et al. (See Sturtevant, B. F., assignor.)			
	Townsend, Elmer. (See Swingle, Alfred, assignor.)			
	Townsend, Elmer. (See Swingle, Alfred, assignor.)			
	Townsend, Elmer. (See Turner, Sidney S., assignor.)			

15720	Towasend, G. G.	Gauges, feather-edge	Sept. 23, 1856.	XVI.
	Townsend & Turner. (See Turner, Sidney, assignor.)			
14424	Tracy, Erasmus	Wrench	Mar. 11, 1856.	II.
14209	Trask, S. J.	Locks, alarm	Feb. 5, 1856.	II.
14529	Treadwell, F. C., Jr.	Crackers, moulding, machines for preparing dough for.	May 13, 1856.	XVII.
	Treadwell, F. C., Jr. (See Gibbs, Samuel W., assignor.)			
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)			
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)			
	Treadwell, Perry, & Norton. (See Pratt, Sam'l F., assignor.)			
15023	Treadwell, Wm. B.	Stores, cooking	June 3, 1856.	V.
	Treadwell, W. and J., and Perry & Norton. (See Gibbs, S. W., assignor.)			
	Treadwell, W. and J., and Perry & Norton. (See Gibbs, Sam'l W., assignor.)			
14651	Trimmer, Benj. T.	Brake, railroad	April 15, 1856.	X.
15988	Trisler, Wm. H., and John Stewart	Roofs, sheet-metal coverings to, mode of securing	Oct. 28, 1856.	IX.
15712	Trott, Geo., R. H. Coles, and Wm. A. Clark	Hydraulic puppet valves, method of suspending	Sept. 9, 1856.	XI.
15048	Truesdell, Lucius E.	Bridges, lattice	June 3, 1856.	IX.
15362	Truslow, John W.	Penders for fire-places	July 15, 1856.	V.
153	Truslow, John W.	Penders for fire-places	Sept. 30, 1856.	Add'l imp't.
16032	Truslow, Richard	Saddles, riding, stirrups for	Nov. 4, 1856.	XVI.
14210	Tufts, Otis	Shafts, wrought-iron, making	Feb. 5, 1856.	XII.
15025	Tufts, Otis	Valves, operating, of steam-engines	June 3, 1856.	VI.
14581	Tupper, D. D.	Fence, field	April 1, 1856.	IX.
15749	Turley, Marshall	Shingle machine	Sept. 16, 1856.	XIV.
16216	Turner, J., jr., assignor to W. Covell	Plows, prairie	Dec. 9, 1856.	I.
14040	Turner, Sidney S., assignor to Elmer Townsend	Shoe-bindings, manufacture of leather	Jan. 1, 1856.	XVI.
363	Turner, Sidney S., assignor to himself and Elmer Townsend	Sewing-machines	Mar. 25, 1856.	Reissue.
15941	Turner, T., and J. M. Colman. (See Colman, J. M., and T. Turton.)	Mackarel, splitting, machine for	Oct. 21, 1856.	XXII.
	Tuson, Richard Q., and Hiram Thompson. (See Thompson & Tuson.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15093	Tuttle, Edward A.	Registers and ventilators	June 10, 1856.	V.
15094	Tuttle, John L.	Cotton-gins and machine cards, manufacturing cylinders for.	Oct. 14, 1856.	III.
15095	Tuttle, John L.	Card teeth for machine cards	Oct. 14, 1856.	III.
15096	Tuttle, John L.	Cotton-gins	Oct. 14, 1856.	III.
15097	Twiford, William B.	Wagon, dumping	Oct. 28, 1856.	X.
14814	Tyer, Henry G., and John Helm.	Gum elastic cloth, making	May 6, 1856.	IV.
15058	Tyler, C. N., and John C. Mellar. (See Mellar & Tyler.)			
16027	Tyler, C. N., assignor to H. Pardin.	Washing-machines	Oct. 21, 1856.	XVII.
15309	Tyler, David M.	Water-wheels, method of starting and stopping.	Nov. 4, 1856.	XI.
14172	Tyler, John	Water-wheel	July 8, 1856.	XI.
15002	Tyler, P. B.	Saw-plates, teeth to, method of attaching.	Jan. 29, 1856.	XIV.
14976	Tyler, P. B.	Caster-wheel for furniture, finishing.	Oct. 14, 1856.	XVII.
14782	Uebatus, Franz	Steel, making	June 2, 1856.	II.
16212	Underwood, Alex.	Matches, friction, machine for manufacturing.	April 29, 1856.	XXII.
14636	Underwood, John	Engines, hydraulic and steam, cylinder and piston of.	Dec. 9, 1856.	VI.
14891	Updegraff, Edward J.	Wood, machine for bending.	April 8, 1856.	XIV.
386	Upon, H. P. (See Pratt, Elisha, assignor.)			
14478	Van Amringe, John	Fire and escape ladder.	May 13, 1856.	V.
753	Van Anden, William, assignor to the American Railroad Chair Manufacturing Co., assignors to A. Frear, J. Brown, and William Van Anden.	Railroad chairs, wrought-iron, machine for making	Aug. 12, 1856.	Reissue.
754	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Lamps, argand, for burning rosin-oil	Mar. 18, 1856.	V.
777	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Pendants, hall.	Jan. 2, 1856.	Design.
778	Vance, Samuel B. H., assignor to Mitchell, Bailey, & Co.	Pendants, or chandeliers, hall	Jan. 2, 1856.	Design.
		Chandeliers.	April 8, 1856.	Design.
		Chandeliers	April 8, 1856.	Design.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
16217	Vancleve, Aaron H. (See Anderson & Vanclove.)	Trap for catching fish, &c.	Dec. 9, 1856.	XXII.
15538	Van Hoesen, Levi.	Metal, planing.	Aug. 12, 1856.	II.
15829	Van Horn, Abner. (See Thomas, Wm., assignor.)	Lamps, hydro-carbon vapor	Sept. 30, 1856.	V.
15161	Varney, Thomas			
824	Vaughan, Ebenezer, and W. S. Bartle. (See Bartle & Vaughan.)	Compositions for working steel.	June 17, 1856.	IV.
821	Vedder, N. S., assignor to Cox, Richardson, and Boynton.	Stoves, cooking.	Aug. 19, 1856.	Design.
843	Vedder, N. S., assignor to G. F. Filley.	Stove-plates.	Aug. 5, 1856.	Design.
842	Vedder, N. S., assignor to G. F. Filley.	Stoves, cooking.	Oct. 7, 1856.	Design.
825	Vedder, N. S., assignor to Mann, Torrance, & Co.	Stove-plates, cooking.	Oct. 7, 1856.	Design.
827	Vedder, N. S., and Ezra Ripley, assignors to Cox, Richardson, & Boynton.	Stoves, cooking	Aug. 19, 1856.	Design.
	Vedder, N. S., and E. Ripley, assignors to Sweetland & Little.	Stoves, six-plate.	Aug. 26, 1856.	Design.
846	Vedder & Sanderson. (See Sanderson & Vedder, assignors to Sanders, Wolfe, & Warren.)			
810	Vedder, N. S., and W. L. Sanderson, assignors to North, Chase, & North.	Stoves, cooks.	Oct. 21, 1856.	Design.
839	Vedder, N. S., and Wm. L. Sanderson, assignors to North, Chase, & North.	Stoves	June 24, 1856.	Design.
779	Vedder, N. S., and Wm. L. Sanderson, assignors to Sanders, Wolfe, & Warren	Stoves	Oct. 7, 1856.	Design.
828	Vedder, N. S., and Wm. L. Sanderson, assignors to Sweetland & Little.	Stoves, parlor.	April 8, 1856.	Design.
829	Vedder, N. S., and W. L. Sanderson, assignors to Sweetland & Little.	Stoves, cooking	Aug. 26, 1856.	Design.
790	Vedder, N. S., and W. L. Sanderson, assignors to N. S. Vedder.	Stoves, cooking	Aug. 26, 1856.	Design.
	Vergennes Scale Manufacturing Company. (See Sampson, E., assignor.)	Stoves, parlor.	May 13, 1856.	Design.
14682	Vergues, Maurice.			
16203	Vertrees, William A.	Engines, electro-magnetic	April 15, 1856.	VIII.
	Vile & Tingley. (See Brown, Albert H., assignor.)	Churns.	Dec. 9, 1856.	I.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Volcanic Repeating Arms' Company. (See Smith, Horace, and D. B. Wesson.)			
	Von Kammerhueber, W. J. (See Schragg & Von Kammerhueber.)			
15359	Von Kammerhueber, W. Jose	Centrolineads	July 16, 1856.	VIII.
14747	Vose, Richard	Axles, dividend. for railroad cars	April 22, 1856.	X.
768	Vose, Samuel D.	Stoves, parlor	Mar. 4, 1856.	Design.
15026	Vrooman, H. S.	Sawing-machine	June 3, 1856.	XIV.
15204	Wagner, Cyril B.	Harvesters	June 24, 1856.	I.
15205	Wagner, Cyril B.	Harvesters, cutting apparatus for	June 24, 1856.	I.
14485	Wagner, L. Z. A.	Saws, reciprocating, method of adjusting	Mar. 18, 1856.	XIV.
14621	Watt, P. H.	Paper-machines, felt guide of	April 8, 1856.	III.
14748	Waite, Chas. B., and Joseph W. Senor	Coffee-pots	April 22, 1856.	XVII.
16034	Walbridge, A. S.	Sawing-mills, self-acting head and tail blocks for	Nov. 4, 1856.	XIV.
14546	Walcott, Halsey D., assignor to H. D. and M. E. Walcott.	Wrenches	Mar. 25, 1856.	II.
15864	Walker, Alexander J.	Door-springs, bracket for	Oct. 7, 1856.	II.
	Walker, F. C., and J. W. Cormack. (See Cormack & Walker.)			
16154	Walker, Henry M.	Siphon à clapet	Dec. 2, 1856.	XI.
14934	Walker, Samuel H. and Matthew C.	Gas retort cleaners	May 20, 1856.	IV.
	Wall, A. Little O., and John Cole. (See Cole & Wall.)			
15836	Wallace, James, jr.	Bleaching, washing and, use of the dash-wheel for	Sept. 30, 1856.	III.
15835	Walsh, Henry, assignor to H. Walsh and M. B. Eady.	Corn, green, from the cob, separating	Sept. 30, 1856.	XVII.
14839	Walter, Wm. P., and Jacob Green	Glass, molten, lading of	May 6, 1856.	XV.
15445	Walton, G. W., and H. Edgarton	Forms, ellipsoidal, method of turning	July 29, 1856.	XIV.
16196	Walton, W. H.	Carding-engines, cleaning the top-flats of	Dec. 9, 1856.	III.
15208	Walton, Wm. H., assignor to W. H. Walton and J. E. Winants.	Wool, combing, machinery for	July 1, 1856.	III.
15860	Walworth, Caleb C.	Pipe-fittings, gas, machine for finishing	Oct. 7, 1856.	II.

15862	Walworth, Caleb C.	Vice	Oct. 7, 1856.	II.
14839	Ward, A. F.	Marble sawing-machines	May 6, 1856.	XV.
14037	Ward, Andrew H., jr.	Compositions for breaking wool	Jan. 1, 1856.	IV.
14479	Ward, Israel W.	Boring-machines, adjustment in	Mar. 18, 1856.	XIV.
15262	Ward, James N.	Fire-arms, magazine, hammer for	July 1, 1856.	XIX.
15909	Ward, John C.	Car, railroad, coupling	Oct. 14, 1856.	X.
15630	Ward, Richard	Grain-cleaner and separator	Aug. 26, 1856.	XIII.
14925	Ward, Thomas	Music-rack	May 20, 1856.	XVIII.
15861	Ward, William E.	Nut-machines	Sept. 30, 1856.	II.
	Warden, W. (See Wightman, H., and W. Warden.)			
819	Wardwell, Benjamin, and Ephraim R. Bartow	Stoves, cooking	July 29, 1856.	Design.
14783	Wardwell, Charles P. S.	Box-openers	April 22, 1856.	XXII.
16033	Wardwell, George J.	Marble and stone, machine for sawing	Nov. 4, 1856.	XV.
	Warfield, A. E. (See Smith, G. H. Brown, and J. A. Read, assignors.)			
	Warfield, A. E. (See Smith, G. H. Brown, and J. A. Read, assignors.)			
15908	Warlick, Noah	Vehicles, arrangement of the thills of	Oct. 14, 1856.	X.
15993	Warlick, Noah	Harness, plow, back-band hook for	Oct. 28, 1856.	XVI.
15027	Warner, Chapman	Filter	June 3, 1856.	IX.
14683	Warner, Dewitt C.	Wigs	April 15, 1856.	XXI.
15202	Warner, James	Fire-arms	June 24, 1856.	XIX.
15094	Warner, Philip	Shutters, bolt for	June 10, 1856.	II.
16299	Warren, A. F.	Pen, fountain	Dec. 23, 1856.	XVIII.
14425	Warren, A. F., and C. M. H.	Pen, fountain	Mar. 11, 1856.	XVIII.
	Warren, Cox, Morrison, & Co. (See Pierce & Dullely, assignors.)			
	Warren, Cox, Morrison, & Co. (See Pierce & Burnam, assignors.)			
	Warren, Cox, Morrison, & Co. (See Burnam & Sanford, assignors.)			
	Warren, Fuller, & Morrison. (See Pierce & Dullely, assignors.)			
	Warren, Fuller, & Morrison. (See Pierce & Dullely, assignors.)			
	Warren, Fuller, & Morrison. (See Pierce & Dullely, assignors.)			
	Warren, Fuller, & Morrison. (See Dullely, James J., assignor.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Warren, Sanders, & Wolf. (See Sanderson & Vedder, assignors.)			
	Warren, Wolf, and Sanders. (See Vedder & Sanderson.)			
16155	Warth, Albin.....	Motion, converting rotary into reciprocating.....	Dec. 2, 1856.....	XIII.
14528	Warwick, Atterbury, & Co. (See Knauer, Christian, assignor.)	Wrenches.....	Mar. 25, 1856.....	II.
14529	Warwick, William.....			
14539	Warwick, William, <i>et al.</i> (See Atterbury & Warwick, assignors.)	Planters, cotton-seed.....	Mar. 25, 1856.....	I.
14540	Washburn, A. W.....	Hillera, cotton.....	Mar. 25, 1856.....	I.
15863	Washburn, A. W.....	Scrapers, cotton.....	Mar. 25, 1856.....	I.
15900	Washburn, G. I., and E. H. Bellows.....	Brick-machines.....	Oct. 7, 1856.....	XV.
14593	Washington, T. A.....	Fire-arms, breech-loading.....	Oct. 28, 1856.....	XIX.
14593	Waterman, Henry.....	Gas-regulators.....	May 13, 1856.....	V.
15584	Watkins, C. H.....	Chimney cowl, self-cleaning.....	Aug. 19, 1856.....	V.
	Watkinson & Slocum. (See Halvorson, Halvor, assignor.)			
15675	Watson, A.....	Table, self-waiting.....	Sept. 2, 1856.....	XVII.
14936	Watson, Edward S.....	Saw-set.....	May 20, 1856.....	XIV.
	Watson, P. H. (See Manny, John H., assignor.)			
14433	Watson, P. H. (See Manny, John H., assignor.)	Sewing-machines.....	Mar. 11, 1856.....	III.
16136	Watson, William. (See Schelly & Stauffer, assignors.)	Sewing-machines.....	Nov. 25, 1856.....	III.
16218	Watson, William C., assignor to Ira W. Gregory.....			
15446	Watson, Wm. C., assignor to Watson, Wooster, & Knight.....	Plows.....	Dec. 9, 1856.....	I.
15447	Watt, George.....	Spools, manufacturing, machine for.....	July 29, 1856.....	XIV.
	Waymouth, A. D.....	Window-sash, hanging, mode of.....	July 29, 1856.....	IX.
	Weaver, Cromwell P.....			

14334	Weaver, Wm., and A. B. Smith. (See Smith & Weaver.)	Coffee-pots.....	Feb. 26, 1856.....	XVII.
14173	Webb, Jacob M.....	Tree-nail machines, device in.....	Jan. 29, 1856.....	XIV.
15310	Webber, Elbridge.....	Turning-machine.....	July 9, 1856.....	XIV.
15792	Webster, Alonzo, and D. K. Bennett.....	Marble monuments, sawing tapering.....	Sept. 23, 1856.....	XV.
	Webster, A. J., <i>et al.</i> (See Shorey, John C., assignor.)			
14542	Webster, A. W., and Charles Frost. (See Frost & Webster.)	Printing cylinder.....	Mar. 25, 1856.....	XVIII.
15585	Webster, Justus, and Samuel H. Folsom.....			
14179	Weed, Charles, and Charles Parkhurst. (See Parkhurst & Weed.)	Fabrics, textile, water-proofing.....	Aug. 19, 1856.....	III.
14441	Weigert, Benjamin.....	Mills, flouring.....	Jan. 29, 1856.....	XIII.
15715	Wells, Joseph.....	Carding-machines, stripping top-flats of.....	Mar. 18, 1856.....	III.
396	Wells, D. G.....	Hat-bodies, machinery for forming.....	Sept. 30, 1856.....	III.
	Wells, Henry A., assignor to Charles St. John, H. A. Barr, A. H. Wright, and James M. Riblet.	Hat-bodies, making, machinery for.....	Sept. 30, 1856.....	Reissue.
400	Wells, Henry A., deceased, assignor to Charles St. John, Henry A. Burr, Albert H. Wright, and James M. Riblet.	Hat-bodies, manufacturing.....	Oct. 7, 1856.....	Reissue.
14480	Wells, Hiram.....			
16293	Wells, Joseph.....	Saw-spindles, circular, method of suspending.....	Mar. 18, 1856.....	XIV.
15969	Wells, Moses D.....	Lubricating spindle-steps.....	Dec. 23, 1856.....	IV.
16219	Wells, Moses D.....	Washing-machines.....	Oct. 23, 1856.....	XVII.
15832	Wells, Richard.....	Seeding-machines.....	Dec. 9, 1856.....	I.
14426	Wells, William, and Mellen Bray.....	Furnaces.....	Sept. 30, 1856.....	V.
		Boots and shoes, soles of, machine for cutting out and "skiving" the, and also for cutting the "rands" therein.....	Mar. 11, 1856.....	XVI.
14211	Wentworth, John B.....	Leather, softening, machines for.....	Feb. 5, 1856.....	XVI.
15991	Wentz, Wm.....	Shaft-tugs.....	Oct. 28, 1856.....	X.
15267	Werner, C. F., and C. Deutschmann.....	Gas purifiers, dry lime.....	July 1, 1856.....	IV.
759	Weeche, Herman E., assignor to Robert Wood.....	Gates.....	Feb. 5, 1856.....	Design.
762	Weeche, Herman E., assignor to Robert Wood.....	Gates.....	Feb. 12, 1856.....	Design.
	Wesson, Daniel B. (See Smith, Horace, and D. B. Wesson, assignors.)			
16130	West, Uel, and Abner Mills.....	Condensers and heaters, tubular construction of.....	Nov. 25, 1856.....	VI.
16197	Westerfeld, John J.....	Mouldings, curved, method of cutting.....	Dec. 9, 1856.....	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15397	Wetherhood, Bernard H.	Fire-arms, trigger protector for	July 22, 1856	XIX.
755	Wetherill, Augustus E.	Bottles, perfumery	Jan. 8, 1856	Design.
15399	Wetherill, Samuel	Furnaces for zinc-white	Sept. 30, 1856	V.
15448	Wharton, Joseph	Zinc-white, oxide of, apparatus for purifying	July 29, 1856	IV.
15311	Wheeler, C., jr.	Harvesters, raking attachment for	Sept. 2, 1856	I.
15677	Wheeler, C., jr.	Harvesters, cutting device for	Sept. 2, 1856	I.
15449	Wheeler, C. B., and A. Bascom.	Harvesters, clover seed	July 29, 1856	I.
	Wheeler, D., and J. B. Fayette. (See Fayette & Wheeler.)			
15028	Wheeler, Marshal	Gas regulators	June 3, 1856	V.
15095	Wheeler, Marshal	Engines, steam, governor for	June 10, 1856	VI.
815	Wheeler, Moses H. (See Green & Wheeler.)			
836	Wheeler, Russel, and Stephen A. Bailey	Ovens, parlor	July 8, 1856	Design.
15450	Wheeler, Russel, and Stephen A. Bailey	Stoves, coal, cylindrical	Oct. 7, 1856	Design.
15155	Wheelock, Benjamin F.	Sad-iron heaters	July 29, 1856	XVII.
371	Wheelock, Jesse D.	Bakers, heating coal	June 10, 1856	V.
14041	Whipple, Cullen	Screws, wood, machine for cutting the threads of	June 13, 1856	Reissue.
	Whipple, Cullen, assignor to New England Screw Company.	Screw machinery	Jan. 1, 1856	II.
15052	Whipple, Cullen, assignor to New England Screw Company.	Screws, making	June 3, 1856	II.
	Whipple, Cullen, assignor to New England Screw Company, assignors to Cullen Whipple.	Screws, wood, machine for cutting the threads of	Aug. 16, 1856	Extension.
14329	Whipple, Heman	Braces in carpentry, instruments for measuring the lengths of	Feb. 26, 1856	XIV.
15867	Whipple, M. D., assignor to A. B. Ely	Files, round, cutting	Oct. 7, 1856	II.
15912	Whipple, Stephen A., and Heman Whipple	Emery wheels, cleaning, machine for	Oct. 14, 1856	II.
14784	Whitaker, John T.	Harvesters, self-rakers for	April 29, 1856	I.
14264	Whitcomb, James	Switch, railroad	Feb. 12, 1856	IX.
15499	White, Francis A.	Leather, stuffing, methods of	Aug. 6, 1856	XVI.
14977	White, Harry	Shingle-machine	May 27, 1856	XIV.
15398	White, Harry	Riving equal pieces from a block, method of	July 22, 1856	XIV.

14684	White, Henry H., and Edward A. Gray	Saw, stone and marble	April 15, 1856	XV.
16157	White, Job	Wood, method of applying steam to, and of cutting scarfs from	Dec. 2, 1856	XIV.
16133	White, J. Claude, and Robert Hay	Coal, hoisting, apparatus for	Nov. 25, 1856	IX.
14123	Whitehead, E. W. (See Miller & Whitehead.)	Curtain fixtures	Jan. 15, 1856	XVII.
15751	Whitehead, E.	Harvesters, self-acting rakes for	Sept. 16, 1856	I.
16156	Whitehead, Jesse	Rakes, self-acting, for harvesting machines	Dec. 2, 1856	I.
14074	Whiteley, Abner	Candlesticks	Jan. 10, 1856	V.
341	Whiteley, Abner	Harvesters, grass, track-clearers to	Jan. 10, 1856	Reissue.
14212	Whiteley, Abner	Harvesters, grain and grass	Feb. 5, 1856	Add'l imp't.
133	Whiteley, Abner	Candlesticks	Feb. 5, 1856	XII.
14213	Whiteley, Abner	Belt-fastenings	Feb. 5, 1856	I.
14428	Whiteley, Abner	Harvesters, grain and grass	Mar. 11, 1856	Reissue.
358	Whiteley, Abner	Harvesters, grain and grass	Mar. 11, 1856	I.
14541	Whiteley, Abner	Harvesters, grain and grass	Mar. 25, 1856	V.
14622	Whiteley, Edward	Cooking by steam, boilers for	April 8, 1856	V.
15156	Whiteley, Edward	Cooking apparatus, water-heaters surrounding fire-pots in	June 17, 1856	V.
16131	Whiteley, W., jr.	Harvesters, raking attachment for	Nov. 25, 1856	I.
14379	Whiting, J. S., and O. G. Auld. (See Auld & Whiting.)	Saws, circular, method of adjusting	Mar. 4, 1856	XIV.
15714	Whitley, Andrew L.	Wind-mill	Sept. 9, 1856	XI.
15629	Whitman, Ephraim	Milking cows, implement for	Aug. 26, 1856	I.
15547	Whitman, Wm. H.	Lamps, vapor burning	Aug. 12, 1856	V.
	Whitmarsh, Samuel, assignor to Wm. I. Demorest.	Streets, sweeping and cleaning, machine for	July 21, 1856	Extension.
14080	Whorf, S. H., assignor to himself and Charles Rice.	Boots and shoes, manufacture of	Jan. 8, 1856	XVI.
14380	Whorf, S. H., and Charles Rice	Boots and shoes, application of soles to, by means of pressure and gutta-percha or other cement	Mar. 4, 1856	XVI.
15750	Wickersham, John B.	Iron-fence, posts and ties, construction of	Sept. 16, 1856	II.
558	Wickersham, John B.	Bedsteads, metallic	Dec. 23, 1856	Design.
15363	Wickersham, William	Filtering medium	July 15, 1856	XI.
	Wiener, S. (See Falkenau, M., M. Pollak, and S. Wiener.)			
14948	Wier & Starrett. (See Starrett & Wier.)	Mules, self-acting	May 27, 1856	III.
15676	Wier, Wm. W., and W. Grover	Curtain fixtures	Sept. 2, 1856	XVII.
14427	Wietrich, Ferdinand, and Conrad Hagen.	Dove-tailing machine	Mar. 11, 1856	XIV.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
14038	Wight, H. C.	Planing-machine, arrangement of feed-rollers for.	Jan. 1, 1856.	XIV.
14142	Wight, Lyman.	Spinning wheels.	Mar. 18, 1856.	III.
16077	Wight, Reuben.	Doors, weather-strips for.	Nov. 11, 1856.	IX.
14124	Wightman, H., and W. Warden.	Engines, oscillating.	Jan. 15, 1856.	VI.
15596	Wilbur, Greenleaf A.	Grapple for raising sunken bodies.	Aug. 19, 1856.	VII.
15978	Wilbur, P. A.	Nail plate, feeding.	Oct. 21, 1856.	II.
15910	Wilbur, P. A.	Nail-machines.	Oct. 14, 1856.	II.
14685	Wilcox, Geo. P., and Wm. Butler.	Phrenology, apparatus for teaching.	April 15, 1856.	XXVII.
15992	Wilcox, John.	Pens, metallic.	Oct. 28, 1856.	XXVIII.
15831	Wilcox, O. D.	Legs, artificial.	Sept. 30, 1856.	XX.
15451	Wilcox, Stephen, Jr. (See Stillman & Wilcox.)	Boots and shoes, cutting out, machines for.	July 29, 1856.	XVI.
14440	Wilder, Jas. W.	Shears, sheep.	May 6, 1856.	I.
14701	Wilder, Robert M.	Puddle-ball squeezer.	April 15, 1856.	II.
14298	Wilder, Shubael.	Furnaces for heating slugs for the use of hatters, tailors, and others.	Feb. 19, 1856.	V.
14330	Wildman, Russell.	Hats, hardening, machinery for.	Feb. 26, 1856.	III.
15108	Wiles, Thomas.	Straw-cutters.	June 10, 1856.	I.
15339	Wiley, James. (See Brown & Wiley.)	Printing presses.	Sept. 17, 1856.	Extension.
14841	Willard, Charles W. and John P.	Hammers, valve gear for steam.	Aug. 12, 1856.	VI.
14894	Willard, George, assignor to himself and N. W. C. Jameson.	Car, railroad, seats.	May 6, 1856.	X.
16081	Willard, Hosea.	Seeding-machines.	May 13, 1856.	I.
15587	Willard, John F., assignor to himself, Benjamin F. Merrill, and Thomas Phillips.	Excavator.	Nov. 11, 1856.	IX.
16106	Williams, Clarendon.	Boring artesian wells, apparatus for.	Aug. 19, 1856.	IX.
15157	Williams, C. W.	Tailors' pressing-machines.	Nov. 18, 1856.	XXI.
14895	Williams, George F., and George Payne.	Tanning, pre-, compositions.	June 17, 1856.	XVI.
14039	Williams, J. P., assignor to H. L. Williams.	Ovens of cooking ranges.	May 13, 1856.	V.
	Williams, Jacob S.	Pump for diving bell, hydropneumatic.	Jan. 1, 1856.	XI.

15588	Willie, Silas G. (See Clement & Willie.)	Iron, swaging, machine for.	Aug. 19, 1856.	II.
345	Willmarth, John T.	Sewing-machines.	Jan. 22, 1856.	Release.
346	Wilson, Allen B.	Sewing-machines.	Jan. 22, 1856.	Reissue.
15029	Wilson, Allen B.	Harvesters, grain and grass.	June 3, 1856.	I.
414	Wilson, A. B.	Sewing-machines.	Dec. 9, 1856.	Reissue.
16300	Wilson, Allen B.	Reels, head, portable.	Dec. 23, 1856.	X.
14483	Wilson, Charles.	Tunnelling rocks, machine for.	Mar. 18, 1856.	IX.
835	Wilson, Daniel.	Stoves, cooking.	Oct. 7, 1856.	Design.
15158	Wilson, George F., and George Payne.	Fats, saponifying.	June 17, 1856.	IV.
14892	Wilson, James.	Furnace for heating soldering irons.	May 13, 1856.	V.
14484	Wilson, Jas. H., Jr.	Vehicles, harnesses and thills of, safety apparatus to be applied to.	Mar. 18, 1856.	X.
	Wilson, John W., and Josiah Mumford. (See Mumford & Wilson.)	Planters, corn.	April 29, 1856.	I.
14785	Wilt, Samuel, and Geo. W. Albaugh.	Boots and shoes, composition soles to, mode of attaching.	Feb. 5, 1856.	XVI.
14216	Wimley, John M., assignor to John M. Wimley and W. H. Penrose.	Wagons, buggy.	Jan. 20, 1856.	X.
14174	Winans, Thomas.	Printing press, hand.	July 9, 1856.	XVIII.
15312	Winants, I. E., and W. H. Walton. (See Walton, W. H., assignor.)	Gates, farm, method of operating.	Aug. 26, 1856.	IX.
15631	Winder, Daniel K.	Refrigerators.	Dec. 23, 1856.	XVII.
	Winegar, Caleb.	Cans, safety, for burning fluids.	June 24, 1856.	IV.
	Wing, C. J., and Lynahon, assignors. (See Lynahon & Wing, assignors.)	Valve-gear for steam-engines.	May 27, 1856.	VI.
	Winn, I. D., and N. S. Lockwood. (See Lockwood & Winn.)	Wrenches.	Dec. 2, 1856.	II.
16320	Winship, Charles.	Coupling, car.	July 15, 1856.	X.
15206	Winslow, S. E.	Springs, surface, method of treating.	April 8, 1856.	XL.
	Winsted Auger Company. (See Curtis, Kelsey, assignor.)	Scales, weighing.	April 15, 1856.	XII.
14978	Winter, Herman.			
	Wisner, Joel. (See Bradley, Robert P., assignor.)			
16158	Witherell, Orin O.			
15355	Witherle, John B.			
14623	Wolcott, Anson.			
14702	Wolcott, R. F.			
	Wolfe, Sanders, & Warren. (See Sanderson & Vedder, assignors.)			

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
	Wolfe, Warren, & Saunders. (See Velder & Sanderson, assignors.)			
	Wombough, P. K. (See Guion, P. C., and P. K. Wombough, assignors.)			
15540	Wood, George H.	Drill, rock.	Aug. 12, 1856.	XV.
14331	Wood, Joseph.	Cars, railroad, method of excluding dust from.	Feb. 26, 1856.	X.
14265	Wood, Robert. (See Wesche, Herman E.)			
14265	Wood, Robert. (See Wesche, Herman E.)	Couplings, railroad car.	Feb. 12, 1856.	X.
14786	Wood, S. W.	Propelling boats.	April 29, 1856.	VII.
14846	Wood, S. W.	Bricks, machine, manufacture of.	May 6, 1856.	XV.
15203	Wood, Walter A.	Mowing-machines, dividing shoe for.	June 24, 1856.	I.
15264	Wood, Walter A.	Harvesters, guard-fingers for.	July 1, 1856.	I.
15405	Wood, William B.	Hoop-machine.	Oct. 7, 1856.	XIV.
14339	Wood, William P., assignor to himself and John S. Gallaher, jr.	Sawing-machine.	Feb. 26, 1856.	XIV.
345	Wood, William P., assignor to himself and John S. Gallaher, jr.	Sawing-machine.	Mar. 25, 1856.	Reissue.
15053	Wood, William P., assignor to W. P. Wood.	Mitre-box.	June 3, 1856.	XIV.
15796	Wood, William P., assignor to Samuel DeVaughan and W. P. Wood.	Reaping and mowing-machines.	Sept. 23, 1856.	I.
15790	Wood, William P., and Samuel DeVaughan.	Sawing-machines, devices in.	Sept. 23, 1856.	XIV.
14429	Woodbury, Moses.	Faucet.	Mar. 11, 1856.	XI.
142	Woodbury, Moses.	Faucet.	May 6, 1856.	Add'l imp't.
15404	Woodford, E. S., assignor to James R. Keeler.	Pins upon paper, or any other material, machine for sewing.	July 22, 1856.	II.
15313	Woodman, Horace.	Carding engines, machinery for cleaning the tops of flats of.	July 8, 1856.	III.
16321	Woodruff, Jerome B.	Sewing-machines.	Dec. 23, 1856.	III.
16160	Woodruff, Theodore T.	Car, railroad, seats and couches.	Dec. 2, 1856.	X.
16159	Woodruff, T. T.	Car, railroad, seats and couches.	Dec. 2, 1856.	X.

14381	Woodward, George.	Bolts, heading.	Mar. 4, 1856.	II.
15399	Woodward, James O.	Sawing coopers' hoops, machine for.	July 22, 1856.	XIV.
	Woodward, Thomas.	Pins, shielded, for securing shawls, diapers, &c., manner of constructing.	May 7, 1856.	Extension.
15628	Woolson, Silas.	Potato-diggers.	Aug. 26, 1856.	I.
14979	Worrall, Thomas D.	Plane-bits, method of securing.	May 27, 1856.	XIV.
16309	Worrall, Thomas D.	Planes, carpenters', method of adjusting the bits of.	Dec. 23, 1856.	XIV.
418	Worrall, Thomas D., assignor to Milfin Paul, assignor to Thos. D. Worrall, alias Thos. Worrall.	Plane, moulding, multiform.	Dec. 23, 1856.	Reissue.
16319	Worley, John.	Callender-rolls, manufacturing.	Dec. 23, 1856.	III.
15939	Worthen, W.	Sash, window, balance and fastener for.	Oct. 21, 1856.	II.
14749	Worthington, Henry R.	Valves of direct acting engines by the exhaust steam, completing the throw of the.	April 22, 1856.	VI.
15030	Worthington, Henry R.	Valve, conical, method of attaching stem to a.	June 3, 1856.	XI.
15400	Worthington, Henry R.	Valves from pressure, steam-slide, relieving.	July 22, 1856.	VI.
15263	Wright, James H.	Paper, ruling, machines for.	May 22, 1856.	Extension.
14332	Wright, John.	Faucets, filter attachment for.	July 1, 1856.	XI.
15452	Wright, John.	Metal, sheet, bending.	Feb. 26, 1856.	II.
16254	Wright, Wendell.	Meats, smoking, apparatus for.	July 29, 1856.	XVII.
15207	Wright, William.	Springs in upholstery, mode of securing.	Dec. 16, 1856.	XVII.
15208	Wright, William.	Valves, cut-off, for steam-engines, operating.	June 24, 1856.	VI.
16132	Wright, William.	Valve-checks, cut-off, for steam-engines.	June 24, 1856.	VI.
15791	Wright, Wm. M.	Engines, steam, adjustable cut-offs for.	Nov. 25, 1856.	V.
15341	Wright, Wm., and George Brown.	Furnaces, warm-air.	Sept. 23, 1856.	II.
16198	Wyant, H.	Furnace, blast.	Aug. 12, 1856.	II.
14075	Wyche, W. E.	Planters, seed.	Dec. 9, 1856.	I.
14333	Wyckoff, A., and E. R. Morrison, assignor to A. Wyckoff.	Plows, cultivating.	Jan. 8, 1856.	I.
404	Wyckoff, A., and E. R. Morrison, assignor to A. Wyckoff.	Boring-machine.	Feb. 26, 1856.	I.
			Oct. 14, 1856.	Reissue.
15589	Wyublad, Hjalmar.	Locks.	Aug. 19, 1856.	II.
15031	Yale, Linus.	Lock.	June 3, 1856.	II.
15500	Yale, Linus.	Bolt for vault and safe doors.	Aug. 5, 1856.	II.

Alphabetical List of Patentees—Continued.

No.	Name of patentee.	Invention or discovery.	Date.	Class.
15678	Yocum, Samuel H.	Boring hubs for boxes, method of.	Sept. 2, 1856.	XIV.
14035	Yost, George W. N.	Harvesters, grain, binders for.	Jan. 1, 1856.	I.
14076	Yost, George W. N.	Harvesters, corn.	Jan. 8, 1856.	I.
14266	Yost, George W. N.	Harvesters, grain and grass.	Feb. 12, 1856.	I.
140	Yost, George W. N. (See Clark & Yost.)			
14582	Yost, George W. N.	Harvesters, grain, binders for.	April 8, 1856.	Add'l imp't.
15049	Yost, George W. N.	Harvesters, grain and grass.	April 1, 1856.	I.
15050	Yost, George W. N.	Wheels, driving, for steam-draws or propellers.	June 3, 1856.	X.
15096	Yost, George W. N.	Propellers, steam, land.	June 3, 1856.	X.
14382	Yost, George W. N.	Reaping and mowing machines.	June 10, 1856.	I.
14980	Yost, William.	Scale, weighing, beams.	Mar. 4, 1856.	XII.
14980	Youtart, James T.	Harvesters, grain and grass.	May 27, 1856.	I.
14624	Young, Edwin.	Slate-frame.	April 8, 1856.	XXII.
14175	Young, George D.	Belt or band fastening.	Jan. 29, 1856.	IX.
15911	Young, Smith.	Gates, fastening for.	Oct. 14, 1856.	IX.
14989	Zeigler, George W.	Plows.	May 27, 1856.	I.
15342	Zeigler, George W., and Manasseh Grover.	Stumps, extracting, mode of.	May 20, 1856.	IX.
15401	Ziervogel, W.	Processes of separating silver from the ore.	Aug. 12, 1856.	IV.
16102	Zimmerman, C. M.	Accordeons, valves of.	July 22, 1856.	XVIII.
15453	Zimmerman, C. M.	Violins, &c., tail-pieces for.	Nov. 18, 1856.	XVIII.
	Zimmerman, Jacob.	Cultivators.	July 29, 1856.	I.

CLASSIFIED LIST OF PATENTS GRANTED DURING THE YEAR 1856, WITH THE NAMES OF PATENTEES, PLACES OF RESIDENCE, AND DATE OF PATENTS.

CLASS I.—AGRICULTURE, including instruments and operations.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14051	Bee hives.	George H. Clarke.	East Washington, N. H.	1856. Jan. 8.
14168	Bee hives.	H. G. Robertson.	Greenville, Tenn.	Jan. 29.
15457	Bee hives.	J. S. Brown, assignor to.	Washington, D. C.	July 29.
15894	Bee hives.	Joseph Kent.	Baltimore county, Md.	
15436	Binding grain, &c., machines for.	Charles Pawling.	New Pittsburg, Ohio.	Oct. 14.
14530	Butter-worker.	Washington F. Pagett.	Stone Bridge, Va.	July 29.
15350	Cattle stall.	James H. Bennett.	Bennington, Vt.	Mar. 25.
	Cheese presses. (See Class XII, letter P.)	Hiram Tarbox, 2d.	Tremont, N. Y.	July 15.
14309	Churns.	John U. Flester.	Winchester, Ohio.	Feb. 26.
14458	Churns.	Lucius Leavenworth.	Trumansburg, N. Y.	Mar. 18.
14677	Churns.	William Newbrough.	Mohican, Ohio.	April 15.
15412	Churns.	Wm. H. Burnham and B. Hibbard.	Cortland Village, N. Y.	July 29.
15661	Churns.	Loomis Lamb.	Berlin, Conn.	Sept. 2.
15741	Churns.	A. Pease.	Weston, Vt.	Sept. 16.
15757	Churns.	Franklin Thorpe.	Shelbyville, Ill.	Sept. 23.
16203	Churns.	William A. Vertrees.	Winchester, Mo.	Dec. 9.
16193	Churns.	Charles A. Shaw.	Biddeford, Me.	Dec. 9.
16210	Churns.	Goodrich Lightfoot.	Elgin, Ill.	Dec. 9.
15743	Clevis.	E. A. Palmer.	Clayville, N. Y.	Sept. 16.
14816	Clover seed, saving machines for.	Mathew Kahle.	Lexington, Va.	May 6.
14396	Corn, broom, machine for combing seed off.	George E. Burt.	Harvard, Mass.	April 8.
14374	Corn-shellers.	Jeremiah P. Smith.	Hummelstown, Pa.	Mar. 4.
14745	Corn-shellers.	A. H. Stevens.	Warsaw, N. Y.	April 22.
14771	Corn-shellers.	E. Mathers.	Morgantown, Va.	April 29.
14990	Corn-shellers.	Charles S. C. Crane, assignor to Samuel M. Tinkham.	Taunton, Mass.	May 27.
15105	Corn-shellers.	Ebenezer Morrison.	Franklin, N. H.	June 10.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentee.	Residence.	Date of patent.
15512	Corn-shellers	Calvin Adams	Oak Hill, N. Y.	Aug. 12, 1856.
15765	Corn-shellers	J. I. Johnston	Alleghany city, Pa.	Sept. 23.
15920	Corn-shellers	William Black	Alleghany city, Pa.	Oct. 21.
16191	Corn-shellers	Hamilton E. Smith	Philadelphia, Pa.	Dec. 9.
16291	Corn-shellers	Edgar M. Stevens, assignor to E. Townsend.	Boston, Mass.	Dec. 23.
16127	Corn, shelling, disk for	Jeremiah P. Smith	Hummelstown, Pa.	Nov. 25.
16177	Corn, standing, machines for cutting the stalks of	William B. Coates	Philadelphia, Pa.	Dec. 9.
15746	Cotton pickers	B. G. Shields	Marlin, Texas	Sept. 16.
15616	Cultivator	Hervey D. Gause	Freehold, N. J.	Aug. 26.
14715	Cultivators	George Eaterly	Heart Prairie, Wis.	April 22.
15453	Cultivators	Jacob Zimmerman	Oawego, Ill.	July 29.
14254	Cultivator teeth	C. H. Sayre and G. Klinck	Utica, N. Y.	Feb. 12.
15210	Drills, grain	Abraham Fravel, assignor to himself and Thomas D. Lemon.	La Porte, Ind.	June 24.
	Fertilizers, processes for preparing. (See Class IV, letter P.)			
14708	Fertilizers, sowing, machine for	Warren S. Bartle	Newark, N. Y.	April 22.
15376	Forks, shovels, and hoes, agricultural, the handles of	Reuben M. Hine	Throopville, N. Y.	Oct. 23.
15151	Harrow, revolving	Garret J. Olendorf	Middlefield, N. Y.	June 17.
14149	Harvester cutter-bars	John H. Manny	Rockford, Ill.	Jan. 22.
14768	Harvester cutter-blades, attaching to the sickle bar	Wm. H. Hovey	Springfield, Mass.	April 29.
14402	Harvester-cutters	Israel S. Love	Beloit, Wis.	Mar. 11.
14422	Harvester-cutters	Pliny Thayer	Lansingburg, N. Y.	Mar. 11.
14453	Harvester-cutters	Horace L. Hervey	Quincy, Ill.	Mar. 18.
14544	Harvester-cutters	John H. Manny, assignor to Peter H. Watson.	Rockford, Ill.	Mar. 25.
14777	Harvester-cutters	Benjamin T. Roney	Washington, D. C.	Mar. 25.
			Philadelphia, Pa.	April 29.

14790	Harvester-fingers	John Reilly	Heart Prairie, Wis.	April 29.
15013	Harvester frames	Henry F. Mann	Westville, Ind.	June 3.
15701	Harvester-grain and grass	William P. Maxson	Albion, Wis.	Sept. 9.
14330	Harvester-rakes	Owen Dorsey	Triadelphia Post Office, Md	Mar. 4.
14043	Harvester-raking apparatus	G. A. Clarke, assignor to Wm. Clarke	Philadelphia, Pa.	Jan. 1.
14693	Harvester-raking attachments	William H. Hovey	Springfield, Mass.	April 15.
14026	Harvesters	John H. Manny	Rockford, Ill.	Jan. 1.
14046	Harvesters	Lebbeus Barnes	Idip Township, N. Y.	Jan. 8.
14079	Harvesters	John Reilly, assignor to Heath, Doutsman & Reilly	Heart Prairie, Wis.	Jan. 8.
14205	Harvesters	B. F. Ray	Sullivan, Ottawa, Wis.	Jan. 8.
15146	Harvesters	J. C. & L. C. Pluche	Baltimore, Md.	Feb. 5.
15204	Harvesters	Cyril B. Wagner	Cape Vincent, N. Y.	June 17.
15236	Harvesters	John C. Heuermann and Jonathan Reeves	Philadelphia, Pa.	June 24.
15377	Harvesters	Stephen R. Hunter	Camden, N. J.	July 1.
15582	Harvesters	William Tucker	Cortlandt, N. Y.	July 22.
15638	Harvesters	Homer Atkins	Kelloggsville, Ohio	Aug. 19.
15721	Harvesters	W. H. Seymour and H. Pease, assignors to Seymour & Morgan.	Plymouth, Ill.	Sept. 2.
15722	Harvesters	W. H. Seymour and H. Pease, assignors to Seymour & Morgan.	Brockport, N. Y.	Sept. 9.
15735	Harvesters	William Gage	Brockport, N. Y.	Sept.
15855	Harvesters	Israel S. Love	Buffalo, N. Y.	Sept. 16.
15843	Harvesters	William Dripps	Beloit, Wis.	Oct. 7.
15882	Harvesters	Charles W. Glover	Coatesville, Pa.	Oct. 7.
15927	Harvesters	P. Manny	Roxbury, Conn.	Oct. 14.
16079	Harvesters	Alvin Bullock	Waddam's Grove, Ill.	Oct. 21.
16194	Harvesters	William Tinker	Busti, N. Y.	Nov. 11.
14553	Harvesters, apparatus for removing grain from	Samuel Comfort, jr.	Kelloggsville, Ohio	Dec. 9.
14769	Harvesters, automatic rakes for	Salem T. Lamb	Morrisville, Pa.	April 1.
16307	Harvesters, automatic rakes for	Samuel Comfort, jr., assignor to E. S. Renwick.	New Washington, Ind.	April 29.
15149	Harvesters, clover seed	C. B. Wheeler and A. Bascom	Morrisville, Pa.	Dec. 23.
14076	Harvesters, corn	G. W. N. Yost	Steuben, Ohio	July 29.
14344	Harvesters, corn	William M. Bonivill	Port Gibson, Miss.	Jan. 8.
14730	Harvesters, corn	R. C. Mauck and W. T. McGahey	Canden, Del.	Mar. 4.
15152	Harvesters, corn	W. S. Tilton	Rockingham, Va.	April 22.
15533	Harvesters, corn	Andrew Sprague	Boston, Mass.	June 17.
			Coldwater, Mich.	June 12.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15409	Harvesters, corn and cane, cutting apparatus of.	John W. Bateson, assignor to himself and Martin H. Batson.	Triadelphia, Md.	July 29. 1856.
15408	Harvesters, corn and cane, raking apparatus of.	John W. Bateson, assignor to himself and Martin H. Batson.	Triadelphia, Md.	July 29.
14761	Harvesters, cradling.	Milton Barlow.	Lexington, Ky.	April 29.
15265	Harvesters, cutting apparatus for.	Cyril B. Wagner.	Philadelphia, Pa.	June 21.
15677	Harvesters, cutting device for.	C. Wheeler, jr.	Poplar Ridge, N. Y.	Sept. 2.
16134	Harvesters, finger-bar arrangement for.	Joseph A. Moore and Asahel H. Patch.	Louisville, Ky.	Nov. 25.
14250	Harvesters, grain.	Job Phillips.	Harrisburg, Pa.	Feb. 12.
14556	Harvesters, grain.	Augustus Elliott.	San Francisco, Cal.	April 1.
14102	Harvesters, grain and grass.	William F. Ketchum.	Buffalo, N. Y.	Jan. 15.
14127	Harvesters, grain and grass.	G. Sanford, T. Hull, and S. Hull.	Poughkeepsie, N. Y.	Jan. 22.
14148	Harvesters, grain and grass.	John H. Manny.	Rockford, Ill.	Jan. 15.
14212	Harvesters, grain and grass.	Abner Whiteley.	Springfield, Ohio.	Feb. 5.
14266	Harvesters, grain and grass.	Geo. W. N. Yost.	Pittsburg, Pa.	Feb. 12.
14409	Harvesters, grain and grass.	B. T. Roney.	Philadelphia, Pa.	March 11.
14441	Harvesters, grain and grass.	Abner Whiteley.	Springfield, Ohio.	March 11.
14448	Harvesters, grain and grass.	Thomas D. Burrall.	Geneva, N. Y.	March 18.
14541	Harvesters, grain and grass.	Eliakim B. Forbush.	Buffalo, N. Y.	March 18.
14582	Harvesters, grain and grass.	Abner Whiteley.	Springfield, Ohio.	March 25.
14661	Harvesters, grain and grass.	Geo. W. N. Yost.	Pittsburg, Pa.	April 1.
14691	Harvesters, grain and grass.	William H. Hovey.	Springfield, Mass.	April 15.
14940	Harvesters, grain and grass.	William A. Kirby.	Buffalo, N. Y.	April 15.
15029	Harvesters, grain and grass.	James T. Yonart.	Troy, Ohio.	May 27.
15672	Harvesters, grain and grass.	Allen B. Wilson.	Waterbury, Conn.	June 3.
16057	Harvesters, grain and grass, cutting apparatus of.	O. Stoddard.	Busti, N. Y.	Sept. 2.
16097	Harvesters, grain, binder for.	Moses G. Hubbard.	Penn Yan, N. Y.	Nov. 11.
14036	Harvesters, grain, binders for.	C. A. McPhetridge.	St. Louis, Mo.	Nov. 18; antedated Oct. 25.
		Geo. W. N. Yost.	Port Gibson, Miss.	Jan. 1.

15264	Harvesters, guard-fingers for.	Walter A. Wood.	Hosick Falls, N. Y.	July 1.
15311	Harvesters, raking attachment for.	C. Wheeler, jr.	Poplar Ridge, N. Y.	July 8.
16131	Harvesters, raking attachment for.	W. Whiteley, jr.	Springfield, Ohio.	Nov. 25.
14183	Harvesters, raking attachment to.	A. H. Gayl.	Sandusky, Ohio.	Feb. 5.
15751	Harvesters, self-acting rakes for.	J. Whitehead.	Manchester, Va.	Sept. 16.
15387	Harvesters, self-raker for.	Silas G. Randall.	Rockford, Ill.	July 22.
14784	Harvesters, self-rakers for.	John T. Whitaker.	St. Charles, Ill.	April 29.
14861	Harvesters, self-raking attachments to.	Hugh Foresman.	Enora, Ohio.	May 13.
15091	Harvesters, sickle bars of, attaching teeth to.	J. C. & L. C. Pluche.	Cape Vincent, N. Y.	June 10.
15926	Harvesters, sickles for.	P. Manny.	Waddam's Grove, Ill.	Oct. 21.
16052	Harvesting grain, machines for.	George F. Foote.	Buffalo, N. Y.	Nov. 11.
15669	Harvesting machines.	Larkin L. Moore.	Petersburg, Va.	Aug. 19.
15669	Harvesting machines.	J. Y. Schelly and J. Stauffer, assignors to Wm. Watson.	St. Paul, Minn.	Sept. 2.
15659	Harvesting machines.	W. A. Kirby.	Buffalo, N. Y.	Sept. 2.
15748	Harvesting machines.	G. W. Tolhurst.	Cleveland, Ohio.	Sept. 16.
16244	Harvesting machines.	Robert J. Morrison.	Richmond, Va.	Dec. 16.
16313	Harvesting machines.	Joseph Carpenter.	Yorktown, N. Y.	Dec. 23.
16353	Harvesting machines, finger bar for.	Wm. H. Seymour, assignor to Seymour & Morgan.	Brockport, N. Y.	Dec. 16.
	Hay forks, machines for bending. (See Class II, letter F.)			
14539	Hillars, cotton.	A. W. Washburn.	Yazoo City, Miss.	March 25.
15269	Hulling and scouring grain, seed, &c., machines for.	Oliver P. Stevens.	Cleveland, Ohio.	July 1.
15985	Husking corn, machine for.	William H. Smith.	Newport, R. I.	Oct. 28.
16008	Husking corn, machine for.	Harlan P. Gerrish.	Roscaen, N. H.	Nov. 4.
15047	Husking corn, machines for.	Oren Stoddard.	Busti, N. Y.	June 3.
16023	Husking corn, machines for.	Joshua Perkins.	West Killingley, Conn.	Nov. 4.
16201	Husking corn, machines for.	John Taggart and Leonard A. Grover, assignors to Taggart, Grover, & Barker.	Roxbury, Mass.	Dec. 9.
16204	Husking corn, machines for.	Robert Bryson.	Schenectady, N. Y.	Dec. 9.
14864	Husking, thimble.	J. H. Gould.	Smith, Ohio.	May 13.
15876	Manure distributor.	J. W. Barnes.	Murfreesboro', N. C.	Oct. 14.
15629	Milking cows, implement for.	William H. Whitman.	Abington, Penn.	Aug. 26.
15265	Mowing grass and cutting grain, machines for.	Anson S. Hathaway, assignor to himself and Frederick A. Ruggles.	Columbia, Me.	July 1.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14078	Mowing-machines	Henry Pease, assignor to himself and Jas. Roby.	Brockport, N. Y.	1856. Jan. 8.
14138	Mowing-machines	Joseph S. Manning	Philadelphia, Penn.	Jan. 22.
14104	Mowing-machines	Jacob J. Mann	Westville, Ind.	Mar. 11.
14445	Mowing-machines	Samuel Comfort, Jr.	Morrisville, Penn.	Mar. 18.
14061	Mowing-machines	William F. Ketchum	Bulalo, N. Y.	May 27.
14598	Mowing-machines	Jonathan F. Barrett, assignor to Abram B. and Jonathan R. Barrett.	North Granville, N. Y.	May 13.
14574	Mowing-machines	C. M. Lufkin	Ackworth, N. H.	May 13.
15160	Mowing-machines	Cornelius Aultman and Lewis Miller, assignors to Ball, Aultman & Co.	Canton, Ohio	June 17.
15354	Mowing-machines	John W. Thompson	Greenfield, Mass.	July 15.
15597	Mowing-machines	Ephraim Ball	Canton, Ohio	Aug. 12.
16274	Mowing-machines	Andrew M. Hall	West Falmouth, Me.	Dec. 23.
14070	Mowing-machines, blades of	Gustavus Stone	Beloit, Wis.	Jan. 8.
15203	Mowing-machines, dividing shoe for	Walter A. Wood	Hosack Falls, N. Y.	June 24.
16247	Mowing and reaping-machines	Jeremiah W. Mulley	Amsterdam, N. Y.	Dec. 16.
15338	Mowing and reaping-machines, frames of	Moses G. Hubbard	Penn Yan, N. Y.	July 15.
14631	Planters, corn	E. P. Lacey	Rochester, N. Y.	April 8.
14776	Planters, corn	Shas G. Randall	Rockford, Ill.	April 29.
14785	Planters, corn	Samuel Wilt and Geo. W. Albaugh	Greencastle, Penn.	April 29.
14501	Planters, corn	Reinhold Bocklen	Jersey City, N. J.	May 6.
15322	Planters, corn	Moses Beniss	Lyme, Ohio	July 15.
15126	Planters, corn	James D. Jeffers, Joseph Sparks, and John W. Jeffers.	Philadelphia, Penn.	July 29.
15755	Planters, corn	Malender Bates	Carlton, N. Y.	Sept. 23.
14134	Planters, cotton-seed	John M. Jones, assignor to Newton Foster.	Palmyra, N. Y.	Jan. 22.
14210	Planters, cotton seed	J. L. Horn	Edgecombe, N. C.	Feb. 12.
14529	Planters, cotton-seed	A. W. Washburn	Yazoo City, Miss.	Mar. 25.
15269	Planters, cotton-seed	J. A. Stewart	Franklin, Ky.	July 1.

15610	Planters, cotton-seed	D. J. Beecher	Greenville, Miss.	Sept. 2.
15918	Planters, cotton-seed	Charles R. Bell	Washington, D. C.	Oct. 21.
14504	Planters, hand corn	William Jenks	Alexandria, Va.	Mar. 25.
15035	Planters, hand corn	Samuel L. Denney	Flemingtonville, Penn.	June 3.
15114	Planters, hand corn	George Atkins	Pittsburg, Penn.	June 17.
15616	Planters, hand corn	Cornelius Martratt	Albany, N. Y.	Aug. 26.
15696	Planters, hand corn	H. B. Hannon	Bristolville, Ohio	Sept. 9.
16135	Planters, hand corn	Thos. A. Chandler, assignor to H. Herrick and T. A. Chandler	Rockford, Ill.	Nov. 25.
14767	Planters, hand seed	Edward Hopkins	Cincinnati, Ohio	April 29.
15131	Planters, hand seed	A. C. Miller	Morgantown, Va.	July 29.
15510	Planters, hand seed	S. Herva Jones	Rockton, Ill.	Aug. 26.
15433	Planters, potato	John Moore	Quincy Point, Mass.	July 29.
14144	Planters, seed	F. Plummer	Manchester, Ind.	Jan. 22.
14235	Planters, seed	R. & W. L. Gebby	New Richland, Ohio	Feb. 12.
14465	Planters, seed	Elijah Morgan	Morgantown, Va.	Mar. 18.
15101	Planters, seed	P. B. Green and E. A. Kennedy	Waukegan, Ill.	June 10.
15106	Planters, seed	George A. Meacham	New York, N. Y.	June 24.
15182	Planters, seed	George Hall	Morgantown, Va.	June 24.
15691	Planters, seed	John Fordyce	Morgantown, Va.	Sept. 9.
15822	Planters, seed	John F. Seaman	Walcott, N. Y.	Sept. 30.
15810	Planters, seed	B. Kuhns and M. J. Haines	Dayton, Ohio	Sept. 30.
15955	Planters, seed	J. H. Shireman	East Berlin, Pa.	Oct. 21.
15974	Planters, seed	Jesse D. Harris	Perry, Ga.	Oct. 24.
16195	Planters, seed	H. Wyant	Vincennes, Ind.	Dec. 9.
16314	Planters, seed	N. C. Sherman and J. Mason	Hazle Green, Wis.	Dec. 23.
14533	Plough, cultivating	Micajah Crenshaw	Springfield, Texas	Mar. 25.
	Plough handles, &c., machine for bending. (See Class XIV.)			
14725	Plough, subsoil	Pells, Manny	Waddam's Grove, Ill.	April 22.
14013	Ploughs	George W. Cooper	Ogechee, Ga.	Jan. 1.
14014	Ploughs	B. F. Avery	Louisville, Ky.	Jan. 8.
14224	Ploughs	John Clarke, and G. W. N. Yost	Washington, D. C.	Feb. 12.
14258	Ploughs	James B. Mell	Pittsburg, Pa.	Feb. 19.
14345	Ploughs	James J. Cadenhead	Riceboro', Ga.	Feb. 19.
14989	Ploughs	George W. Zeigler	Macon county, Ala.	Mar. 4.
15187	Ploughs	N. S. Lockwood and J. D. Winn	Tiffin City, Ohio	May 27.
15344	Ploughs	John Ritch	Dayton, Ohio	June 17.
			Kingabury, N. Y.	July 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15321	Ploughs.....	Alvin Barton.....	Syracuse, N. Y.....	July 15, 1856.
15354	Ploughs.....	Benaiah C. Hoyt.....	Port Washington, Wis.....	Sept. 2.
15349	Ploughs.....	Josephus P. Harria.....	Byhalia, Miss.....	Sept. 2.
15377	Ploughs.....	Samuel A. Knox.....	Worcester, Mass.....	Oct. 14.
15377	Ploughs.....	Jacob Heckendorn.....	Elkton, Md.....	Dec. 23.
15377	Ploughs.....	Jonathan Adams.....	Eaton, Ga.....	Dec. 23.
14075	Ploughs, cultivating.....	W. E. Wyche.....	Brookville, N. C.....	Jan. 8.
14333	Ploughs, cultivating.....	William E. Wyche.....	Brookville, N. C.....	Jan. 8.
15919	Ploughs, coulters or, apparatus for cleaning.....	Edmund C. Bills, Jr.....	Brookville, N. C.....	Feb. 19.
14257	Ploughs, draining, mode of.....	A. E. and C. Marquis, and Charles Emerson.....	Perry, N. Y.....	Oct. 21.
14373	Ploughs, gaug.....	Aaron and Thomas S. Smith.....	Monticello, Ill.....	Feb. 19.
15039	Ploughs, subsoil.....	Cyrus Garrett and Thomas Cottman.....	Troy, Ill.....	Mar. 4.
14810	Potato diggers.....	Abram Hulings.....	Cincinnati, Ohio.....	June 3.
15100	Potato diggers.....	Amos L. Grinnell and John Z. Williams.....	Philadelphia, Pa.....	May 6.
15028	Potato diggers.....	S. Wollson.....	Willet, Wis.....	June 10.
16184	Potato diggers.....	William Muschl.....	Moodna, N. Y.....	Aug. 26.
14097	Pruning trees, implements for.....	W. W. Harvey.....	New York, N. Y.....	Aug. 26.
16016	Rakes for reapers, automatic.....	Pella, Manny.....	Saltville, Va.....	Jan. 15.
15601	Rakes, hay.....	Charles P. Carpenter.....	Waddam's Grove, Ill.....	Nov. 4.
15653	Rakes, hay.....	H. Heberlin.....	St. Johnsbury, Vt.....	Nov. 26.
5777	Rakes, hay.....	Isaac I. Robbins.....	Scipio, Ind.....	Sept. 2.
16025	Rakes, hay.....	Thomas R. Roach.....	Penn's Manor, Pa.....	Sept. 23.
16318	Rakes, hay.....	John J. Squire.....	West Needham, Mass.....	Nov. 4.
14321	Rakes, horse.....	Nathan Martz.....	St. Louis, Mo.....	Dec. 23.
14067	Rakes, horse hay.....	Randal Pratt.....	Brier Creek township, Pa.....	Feb. 26.
16156	Rakes, self acting, for harvesting machines.....	Jesse Whitehead.....	Marple township, Pa.....	Jan. 8.
16145	Raking apparatus for harvesters.....	S. R. Hunter.....	Manchester, Va.....	Dec. 2.
15237	Raking attachment for reapers.....	John C. Hicks.....	Cortlandt, N. Y.....	Dec. 2.
15045	Raking and loading hay, machine for.....	Joseph Smith.....	Rockaway, N. Y.....	July 1.
14535	Raking and loading hay, machines for.....	D. H. Thompson.....	Condit, Ohio.....	June 3.
			Fitchburg, Mass.....	Mar. 25.

15174	Reapers.....	Owen Dorsey.....	Triadelphia, Md.....	June 24.
15655	Reapers, raking attachment for.....	M. G. Hubbard.....	Penn Yan, N. Y.....	Sept. 2.
15096	Reaping and mowing machines.....	George W. N. Yost.....	Pittsburg, Pa.....	June 10.
15252	Reaping and mowing machines.....	John Kelly.....	Heart Prairie, Wis.....	July 1.
15796	Reaping and mowing machines.....	Wm. P. Wood, assignor to Samuel De Vaughan and W. P. Wood.....	Washington, D. C.....	Sept. 23.
16251	Reaping and mowing machines.....	Daniel C. Smith.....	Tecumseh, Mich.....	Dec. 16.
16258	Reaping and mowing machines.....	Thomas D. Burrall.....	Geneva, N. Y.....	Dec. 16.
14781	Reaping-machines.....	Pliny, Thayer.....	Lansingburg, N. Y.....	April 29.
15044	Reaping-machines.....	Jacob J. and H. F. Mana.....	Westville, Ind.....	June 3.
16183	Reaping-machines, teeth for.....	M. G. Hubbard.....	Penn Yan, N. Y.....	Dec. 9.
1673	Rice, reaping, implement for.....	W. J. McIntosh.....	Savannah, Ga.....	April 15.
14540	Scrapers, cotton.....	A. W. Washburn.....	Yazoo city, Miss.....	Mar. 25.
14513	Scythe-fastening.....	Thomas C. Ball, assignor to.....	Walpole, N. H.....	Mar. 25.
14512	Scythe-fastenings.....	Nathaniel Lamson.....	Shelburne, Mass.....	Mar. 25.
		Denison W. Green, assignor to himself and Aretas Ferry.....	Barnardstown, Mass.....	May 6.
15849	Scythes to snaths, attaching.....	David A. Goodnow.....	Baldwinville, Mass.....	Oct. 7.
15194	Seeding-machine, hand.....	Silas G. Randall.....	Rockford, Ill.....	June 24.
14073	Seeding-machines.....	John G. Snyder.....	Wheatfield, Pa.....	Jan. 8.
14284	Seeding-machines.....	Stephen Gorsuch.....	Altoma, Pa.....	Feb. 19.
14450	Seeding-machines.....	John German and C. B. Hoyt.....	Oriskany Falls, N. Y.....	Mar. 18.
14703	Seeding-machines.....	Thomas A. Risher, assignor to Thomas A. Risher and I. K. Cooper.....	Lancaster, Ohio.....	April 15.
14707	Seeding-machines.....	George I. Bidler.....	Lancaster, Ohio.....	April 22.
14894	Seeding-machines.....	Hosea Willard.....	Vergennes, Vt.....	May 13.
15104	Seeding-machines.....	C. O. Luce.....	Freeport, Ill.....	June 10.
16219	Seeding-machines.....	Moses D. Wells.....	Morgantown, Va.....	Dec. 9.
16209	Seeding-machines.....	James N. Kern.....	Morgantown, Va.....	Dec. 9.
16195	Seeds in the earth, implements for rolling.....	Anson Thompson.....	Glenn's Falls, N. Y.....	Dec. 9.
14570	Seeds or grain in the field, machine for gathering.....	Thomas E. Marable.....	Petersburg, Va.....	April 1.
14717	Separators, grain.....	Cyrus Roberts and John Cox.....	Belleville, Ill.....	Mar. 25.
15948	Shearing sheep.....	J. V. Jenkins.....	Jackson, Mich.....	Oct. 21.
14354	Shears, sheep.....	Luther B. Fisher.....	Coldwater, Mich.....	Mar. 4.
14840	Shears, sheep.....	Robert M. Wilder.....	Coldwater, Mich.....	May 6.
16264	Snath of a grain cradle, mode of securing braces in the.....	William W. Bryan.....	Schaghticoke, N. Y.....	Dec. 23.
14629	Sowing seed broadcast, machine for.....	Jesse Lincoln.....	Union Town, Pa.....	April 8.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14274	Sowing seed broadcast, machines for	Edward F. Berry	Hudson, N. H.	1856. Feb. 19.
14630	Sowing seed broadcast, machines for	Peter Lawrenson	New York, N. Y.	April 8.
14537	Sowing seed broadcast, machines for	Enos Stinson	North Craftsbury, Vt.	May 6.
16322	Sowing seed broadcast, machines for	E. K. Haynes, assignor to self and A. M. Mowe.	Hanover, N. H.	Dec. 23.
16007	Spading machine	Orinod C. Evans	Stantown, Ohio	Nov. 4.
15171	Spreaders, lime and guano	William Croasdale	Hartsville, Pa.	June 24.
15320	Straw-cutter	Warren S. Bartle and Ebenezer Vaughan	Newark, N. Y.	July 15.
15342	Straw-cutter	Oren Moses	Malone, N. Y.	July 15.
15333	Straw-cutter	Cotton Foss	Painesville, Ohio	July 15.
14116	Straw-cutters	Samuel T. Sharp	Danville, Mo.	Jan. 15.
14410	Straw-cutters	Edwin P. Russell	Manlius, N. Y.	Mar. 11.
15105	Straw-cutters	Thomas Wiles	Souersact, Ohio	June 11.
15455	Straw-cutters	J. H. Gooch	Oxford, N. C.	Aug. 5.
15674	Straw-cutters	Shelton M. Thompson	Glasgow, Ky.	Sept. 2.
15761	Straw-cutters, feed rolls of	Alexander Gordon	Rochester, N. Y.	Sept. 23.
15349	Threshing and cleaning grain in the field, machines for	George W. Swift	Oxford, Miss.	July 15.
15116	Threshing and winnowing grain, machines for	Alfred Belchambers	Ripley, Ohio	June 17.
15786	Threshing, grain, machine	Isaac S. Spencer	Gulford, Conn.	Sept. 23.
15917	Threshing, grain, and separating machines	John Barnes	Mount Morris, N. Y.	Oct. 21.
14444	Threshing-machines	Hiram Clark	Princeton, Mass.	Mar. 15.
15074	Threshing-machines	William Holmes	Brooklyn, N. Y.	June 10.
14462	Trees, felling, machine for	Ebenezer Mathers	Morgantown, Va.	Mar. 18.
14654	Vines, mode of protecting	Abel H. Grennell	Springfield, Vt.	April 15.
14565	Winnowing mills	Horace N. Goodrich	Aurora, Ill.	May 12.
15444	Yokes, ox	Miron Smith	Sandisfield, Mass.	July 29.

CLASS II.—METALLURGY, and manufacture of metals, and instruments therefor.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15037	Amalgamator	James W. Evans	New York, N. Y.	1856. June 3.
15619	Amalgamator	Alva M. Stetson	San Francisco, Cal.	Aug. 26.
14023	Amalgamator, gold	Daniel Lebee	Middletown, Ohio	Jan. 1.
15524	Amalgamator, gold-washer, and	Warren S. Pierce	North Attleborough, Mass.	Aug. 12.
15147	Auger-handles	N. C. Sanford	New Haven, Conn.	June 17.
14561	Augers, method of manufacturing	George G. Griswold	Chester, Conn.	April 1.
15656	Axes, machine for testing	Warren Hunt	East Douglass Mass.	Sept. 2.
15580	Axe-polls, making	D. P. Estep	Pittsburg, Pa.	Oct. 14.
14704	Awl-baft	Benjamin James, assignor to Roswell E. James.	Worcester, Mass.	April 15.
14695	Bars, railroad, repairing	James McLellan	Detroit, Mich.	April 15.
15657	Bars, railroad, repairing	Joseph D. Cawood	Marshall, Mich.	Sept. 9.
14876	Bits, fastening	Horace Lettington	Norwich, N. Y.	May 13.
15500	Blow-pipe, spirit. (See Class V, Letter B.)	Linus Yale	Newport, N. Y.	Aug. 5.
15729	Bolt, heading	E. & P. Coleman	Philadelphia, Pa.	Sept. 16.
14258	Bolt, machine	Timothy F. Taft	Fitchburg, Mass.	Feb. 12.
16228	Bolt, spring	William E. Copeland	Fall River, Mass.	Dec. 16.
14381	Bolts, heading	George Woodward	Brunswick, Me.	Mar. 4.
14086	Bolts, heading, machines for	H. M. Clark	New Britain, Conn.	Jan. 15.
16301	Bolts, trimming, machine for	W. Hannah, assignor to L. H. Bowen and W. Hannah.	Middlefield, N. Y.	Dec. 23.
14633	Buckles, polishing, machine for	Robert G. Fine	Sing Sing, N. Y.	April 8.
14442	Casting car wheels. (See Class X, letter W.)	William Butler	Little Falls, N. Y.	Mar. 18.
15427	Castings, chilled, making			
16115	Catch, double-acting, for reversible backs of settees. (See Class XVII, letter S.)	F. R. Langwith	New York N. Y.	July 29.
15566	Clamp for plumbers	Evan L. Evans	Providence, R. I.	Nov. 25.
	Combs, curry	Geo. Felters and J. S. McClintock	Philadelphia, Pa.	Aug. 19.
	Coupling-pipes			

Classified List of Patents issued—Continued.

No.	Inventions or discoveries	Patentees.	Residence.	Date of patent.
15512	Dies for screw-blanks.	Charles R. Gardner.	Detroit, Mich.	1856. Aug. 12.
15278	Dies for stamping or pressing sheet-metal.	Wm. M. Booth and James H. Mills.	Buffalo, N. Y.	July 8.
15080	Die stock for cutting screws.	Patrick, McGlew.	Watford, Conn.	June 10.
14534	Door-fastener.	Willard H. Smith.	New York, N. Y.	May 6.
16048	Door-fastener.	Legend Crofoot.	Syracuse, N. Y.	Nov. 11.
16282	Door-fastener.	James Letort.	Wytheville, Va.	Dec. 23.
14504	Door-fasteners.	G. H. Lindner.	Hoboken, N. J.	April 8.
14773	Door-fasteners.	Elisha P. Moulton.	Baltimore, Md.	April 29.
14112	Door-fastenings.	Reed Peck.	Cortlandville, N. Y.	Jan. 15.
15332	Door-knob.	Henry H. Elwell.	Meriden, Conn.	July 15.
15367	Door-knobs.	Jeremy W. Bliss.	Hartford, Conn.	July 22.
14595	Door-knobs, fastening.	Nathan Benham.	Hartford, Conn.	April 8.
16047	Door-knob spindles, fastening.	Almon Cooley.	Hartford, Conn.	Nov. 11.
14326	Door-spring.	David G. Smith.	Carbondale, Pa.	Feb. 26.
14691	Door-spring.	George W. Griswold.	Carbondale, Pa.	April 15.
14686	Door-spring.	Gilbert L. Bailey.	Portland, Me.	April 15.
15555	Door-spring.	John Broughton.	Chicago, Ill.	Aug. 19.
14583	Door springs.	Alvin Barton, assignor to himself, A. R. Morgan, and J. M. Parsons.	Syracuse, N. Y.	April 1.
15864	Door-springs, bracket for.	Alexander J. Walker.	New York, N. Y.	Oct. 7.
15493	Door-stay.	Anson H. Platt.	Yellow Springs, Ohio.	Aug. 5.
15912	Eave-troughs, machine for making. (See Class IX.)	Stephen A. Whipple and Heman Whipple.	Shafesburg, Vt.	Oct. 14.
14881	File-cutting machine.	James L. Norton.	Alum Bank, Pa.	May 13.
15525	Files.	George M. Ramsay.	New York, N. Y.	Aug. 12.
14189	Files, cutting.	Major H. Fisher, assignor to Joseph A. Hyde.	Sing Sing, N. Y.	Feb. 5.
16064	Files, cutting.	Charles Miller.	New York, N. Y.	Nov. 11.
	Files round cutting.	M. D. Whipple assignor to A. B. Ely.	Newton, Mass.	Oct. 7.

14575	Forge-fires.	Wm. Rodgers and Abraham Bannon.	Bellefonte, Pa.	April 1.
15571	Forging horse-shoe nails, machinery for.	Charles Parkhurst and Charles Weed.	Boston, Mass.	Aug. 19.
14280	Forging thimbles.	Geo. H. Corlies and Elisha Harris.	Providence, R. I.	Feb. 19.
15118	Forks, hay, machine for bending.	Nathan Brand.	Leonardville, N. Y.	June 17.
15541	Furnace, blast.	Wm. Wright and George Brown.	Newcastle, Eng.	Aug. 12.
14257	Furnaces, blast, fluxing.	Christian Shunk.	Slate Lick, Pa.	Aug. 12.
15907	Gunlet-handles.	G. H. Talbot.	Boston, Mass.	Oct. 14.
14316	Gold and other precious metals from foreign substances, machines for separating.	Edward N. Kent.	New York, N. Y.	Feb. 26.
14847	Gold washing, rifle for.	O. G. Anld and J. S. Whiting.	Stockton, Cal.	May 13.
14659	Hammer heads to shafts, attaching.	Charles Hammond.	Philadelphia, Pa.	Jan. 8.
14167	Hinge.	George M. Ramsay.	New York, N. Y.	Jan. 29.
14349	Hinge for shutters.	Isaac Davis.	Groton, N. Y.	Mar. 4.
16272	Hinge, spring.	John T. Garlick.	New York, N. Y.	Dec. 23.
15241	Hinges, butt, machine for grinding.	Cyrus Kenney and William Gurley.	Troy, N. Y.	July 1.
16273	Hoof expander.	C. B. and Samuel Galentine and Andrew J. Russell.	Nunday, N. Y.	Dec. 23.
14193	Hooks, ships, machines for bending.	Elisha Harris.	Providence, R. I.	Feb. 5.
14552	Horse shoe.	Nelson B. Carpenter.	New York, N. Y.	May 13.
14915	Horse shoe.	John Henderson.	Elmira, N. Y.	May 20.
15306	Horse shoe.	Sewall Short.	New London, Conn.	July 8.
16082	Iron and steel, manufacture of.	Henry Bessemer.	London, England.	Nov. 11; England, Feb. 12.
15750	Iron fence, posts and ties, construction of.	John B. Wickersham.	New York, N. Y.	Sept. 16.
16186	Iron, forging, machines for.	S. S. Putnam.	Boston, Mass.	Dec. 9.
16083	Iron ore, smelting.	Henry Bessemer.	London, England.	Nov. 18; England, Aug. 25.
15159	Iron plates, welding.	William Bertram, assignor to John W. Cochran.	Woolwich, England.	June 17; England, Dec. 21, 1854.
14412	Iron, puddling.	Richard Savary.	Steubenville, Ohio.	Mar. 11.
14114	Iron scraps, remelting.	Abiel Pevey.	Lowell, Mass.	Jan. 15.
14827	Iron shingles, cast, lugs for. (See Class IX, letter S.)	Thomas H. Powers.	Wyocena, Wis.	May 6.
	Iron, smelting, furnaces for.			
	Irons, soldering, furnace for heating. (See Class V, letter F.)			
15247	Kettle, brass, machine.	O. W. Minard.	Waterbury, Conn.	July 1.
15931	Kettle, brass, machine for making.	E. C. Blakeslee, E. Platt, and E. Jordan.	Waterbury, Conn.	Oct. 28.
14696	Kettles, brass, making.	O. W. Minard.	Waterbury, Conn.	April 15.

Classified List of Patents issued—Continued.

No.	Inventions and discoveries.	Patentees.	Residence.	Date of patent.
1457	Kettles, brass, making	Frederick J. Seymour	Waterbury, Conn.	May 13, 1856.
1572	Kettles, brass, making	O. W. Minard	Waterbury, Conn.	Sept. 23.
15931	Lock	Linus Yale	Newport, N. Y.	June 3.
15708	Lock	Henry D. Russell	Naugatuck, Conn.	Sept. 9.
14209	Lock, alarm	S. J. Trask	Gulford Centre, N. Y.	Feb. 5.
15165	Lock, alarm	Julius Com.	Yellow Springs, Ohio	June 24.
14958	Lock and key	Ezekiel M. Hendrickson	Brooklyn, N. Y.	May 27.
14178	Lock, cell	E. Kershaw, assignor to Kershaw and H. N. Cooper & Co.	Boston, Mass.	Jan. 29.
15136	Lock, door	Christian Knauer, assignor to Warwick, Atterbury, & Co.	Birmingham, Pa.	June 17.
15783	Lock for freight cars	Thomas Slaughter	Newark, N. J.	Sept. 23.
14675	Lock, hasp	M. Newman, 2d	Oak Hill, N. Y.	April 15.
14030	Lock, pad	I. J. Oldis	Wheeler, N. Y.	Jan. 1.
15270	Lock, pad	Solomon Andrews	Perth Amboy, N. J.	July 8.
16224	Lock, pad, case for	Solomon Andrews	Perth Amboy, N. J.	Dec. 16.
14616	Locks	William Maurer	New York, N. Y.	April 8.
14896	Locks	Joseph M. Lippincott	Pittsburg, Pa.	May 13.
14545	Locks	William H. Atkins	Berkshire, N. Y.	May 13.
15124	Locks	M. Erb and F. C. Goffin	Newark, N. J.	May 17.
15289	Locks	Henry Isham	New Britain, Conn.	July 1.
15459	Locks	Joseph M. Lippincott	Pittsburg, Pa.	Aug. 5.
15589	Locks	Hjalmar Wyoblad	New York, N. Y.	Aug. 19.
15800	Locks	G. W. Coppernol	Ohio, N. Y.	Sept. 30.
15062	Locks	W. H. Butler	New York, N. Y.	Oct. 28.
14618	Locks, door	Andrew Patterson	Pittsburg, Pa.	April 8.
14714	Locks, door	John B. Erb	Strasburg, Pa.	April 22.
15456	Locks, face-plate for	Thos. B. Atterbury and Wm. Warwick, assignors to Warwick, Atterbury, & Co.	Pittsburg, Pa.	July 29.
14059	Locks, pad	James Harrison, jr.	Milwaukee, Wis.	Jan. 8.
16089	Lock, spring-latch and	William A. Ives	New Haven, Conn.	Nov. 18.

15113	Metal beams	Joshua K. Ingalls, assignor to M. H. Howell	Brooklyn, N. Y.	June 10.
15286	Metal, cast, securing pearl ornaments in handles of	C. Dickinson and W. Bellamy	Newark, N. J.	July 8.
16118	Metal, lathes for planing	William W. Hubbard	Boston, Mass.	Nov. 25.
16250	Metallic slats for blinds, machine for making	John S. Sanson and William P. Farrand	Philadelphia, Pa.	Dec. 16.
16166	Metallic tubes, casting	James Smith, jr.	Norton, Mass.	Dec. 2.
15899	Metal pipe, bending, machine for	J. Perkins and W. H. Burnett	Newark, N. J.	Oct. 14.
15413	Metal pipes, lining, with gutta-percha. (See Class IV, letter G.)			
15413	Metal planers	E. C. Cleveland	Worcester, Mass.	July 29.
15379	Metal planers, cutter-stock for	Joshua Mason	Paterson, N. J.	July 22.
15538	Metal, planing	Chester Van Horn	Springfield, Mass.	Aug. 12.
14379	Metal, rolling	George H. Corliss and Elisha Harris	Providence, R. I.	Feb. 19.
14332	Metal, sheet, bending	John Wright	Plantville, Conn.	Feb. 26.
14049	Metal, sheet, bending, machine for	Reuben Brady	New York, N. Y.	Jan. 8.
15964	Metal, sheet, machine for bending	George W. Burling	Trenton, N. J.	Oct. 28.
15069	Metal, sheet, shears for	Henry C. Dole	Adrian, Mich.	June 10.
14878	Metal, sheet, working	S. B. Miller and E. W. Whitehead	Newark, N. J.	May 13.
14738	Metal, sheet, working in	Samuel E. Shepard and Orson W. Stow	Plantville, Conn.	April 22.
14916	Metal, sheet, working in	I. B. Holmes	Cincinnati, Ohio	May 20.
14115	Metals, casting	Ezra Ripley	Troy, N. Y.	Jan. 15.
16001	Metals, cutting	Robert Anderson and Aaron H. Vancleve	Trenton, N. J.	Nov. 4.
15733	Metals, granulating	John Feix	San Francisco, Cal.	Sept. 16.
15190	Metals, tool for cutting	John Mooney	Providence, R. I.	June 24.
14551	Metal tubes, seamless, making	William F. Brooks	New York, N. Y.	April 1.
15348	Metal tubes, seamless, making	John J. Speed, jr., and John A. Bailey	Detroit, Mich.	July 15.
15513	Metal ware, sheet, manufacture of	Theo. Gomme and C. E. A. Beaugrand	Paris, France	Aug. 12.
14724	Moulding, flasks for	James J. Johnston	Alleghany, Pa.	April 22.
14637	Moulding, pipe, core-bar for	John Demarest, assignor to the J. L. Mott Iron Works	Mott Haven, N. Y.	April 8.
15054	Nail-machines	Daniel Dodge	Keesville, N. Y.	June 3.
15910	Nail machines	P. A. Wilbur	New Castle, Pa.	Oct. 14.
15935	Nail-plate feeding	P. A. Wilbur	New Castle, Pa.	Oct. 21.
15515	Nail-plate feeding apparatus	Adolphus Heddaeus	Pittsburgh, Pa.	Oct. 14.
14474	Nail-plate feeding-machines	John P. Sherwood	Fort Edward, N. Y.	Aug. 12.
14011	Nut-box	Richard H. Cole	St. Louis, Mo.	Mar. 15.
14452	Nut-Machine	Robert Griffith	Alleghany, Pa.	Jan. 1.

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Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15001	Nut-machines.....	Richard H. Cole.....	St. Louis, Mo.....	June 3, 1856.
15061	Nut-machines.....	William E. Ward.....	Portchester, N. Y.....	Oct. 7.
16142	Nut-machines.....	Robert Griffiths.....	Philadelphia, Pa.....	Dec. 2.
16155	Nut-machines.....	Charles Ratcliff.....	Cincinnati, Ohio.....	Dec. 9.
15003	Nuts, making.....	Richard H. Cole.....	St. Louis, Mo.....	June 3.
15004	Nuts, metallic, machine for polishing.....	R. H. Cole and J. C. Cole.....	St. Louis, Mo.....	June 3.
16039	Nuts, &c., crushing, rollers for.....	William Henry Plumb.....	New York, N. Y.....	Nov. 4.
14132	Ore-washer.....	William Ball.....	Chicopee, Mass.....	Feb. 5.
14383	Ore-washer.....	William L. Carter.....	Marietta, Pa.....	Mar. 11.
15544	Ore-washer.....	Hezekiah Bradford, assignor to Horatio Bugert.....	New York, N. Y.....	Aug. 12.
15827	Ore-washer.....	Samuel Thomas.....	Allentown, Pa.....	Sept. 30.
14234	Pins in paper, sticking.....	Thaddeus Fowler.....	Waterbury, Conn.....	Feb. 12.
15571	Pins in paper, sticking.....	Charles Atwood, deceased, Lydia Atwood, and C. O. Crosby, administrators of.....	New York, N. Y.....	Oct. 14.
15877	Pins in paper, sticking.....	Walker B. Bartram.....	Waterbury, Conn.....	Oct. 14.
15111	Pins, japanning.....	John J. Howe and Truman Piper, assignors to Howe Manufacturing Company.....	Derby, Conn.....	June 10.
15091	Pins, machine for sticking.....	J. B. Terry.....	Hartford, Conn.....	June 10.
15112	Pins, machine for sticking.....	John J. Howe and Truman Piper, assignors to Howe Manufacturing Company.....	Derby, Conn.....	June 10.
16199	Pins, machines for sticking.....	Chas. Atwood, deceased, Lydia Atwood and C. O. Crosby, administrators of.....	New York, N. Y.....	Dec. 9.
15574	Pins, papering.....	Chas. Atwood, deceased, Lydia Atwood and C. O. Crosby, administrators of.....	New York, N. Y.....	Oct. 14.
15404	Pins upon paper or any other material, machine for sewing.....	E. S. Woodford, assignor to James R. Keeler.....	Winchester, Conn.....	July 22.
15860	Pipe fittings, gas, machine for finishing.....	Caleb C. Walworth.....	Boston, Mass.....	Oct. 7.

15926	Pipe, lead, making.....	John Robertson.....	Brooklyn, N. Y.....	Aug. 26.
14701	Puddle-ball squeezer.....	Shubael Wilder.....	Newcastle, Pa.....	April 15.
14242	Puddler's balls, elevators for.....	S. S. Jackman.....	Lock Haven, Pa.....	Feb. 12.
14166	Punching-machine.....	Rufus Porter.....	Washington, D. C.....	Jan. 29.
14866	Punching-measure.....	Edward Heath.....	Fowlesville, N. Y.....	May 13.
	Reaming and tapping gas-fittings, machine for. (See Class V, Letter G.)			
14357	Rifle-boxes.....	F. R. Ford.....	Ophir, Cal.....	Mar. 4.
14137	Riveting-machine.....	Emmons Manley.....	Marion, N. Y.....	Jan. 22.
14597	Rolling file-blanks.....	Jas. N. Aspinwall, assignor to himself and Henry E. Staff.....	Newark, N. J.....	May 13.
14552	Rolling railway-bars.....	John W. Brown.....	Savage Iron Works, Md.....	April 1.
16057	Safe, burglar proof.....	R. G. Holmes and W. H. Butler.....	New York, N. Y.....	Nov. 18.
14600	Sash-fastener.....	John J. Crooke.....	New York, N. Y.....	April 8.
15523	Sash-fastener.....	William Patton.....	Towanda, Pa.....	Aug. 12.
14028	Sash-lock.....	Joseph Marsh.....	Rochester, N. Y.....	Jan. 1.
15343	Sash-lock.....	Lucius Paige.....	Cavendish, Vt.....	July 15.
15857	Sash-lock.....	O. Redmond.....	Rochester, N. Y.....	Oct. 7.
15939	Sash, window, balance and fastener for.....	W. Worthen.....	Danville, N. H.....	Oct. 21.
	Scissors. (See Class XVII.)			
15700	Screw-cutter.....	James W. Lyon.....	Brooklyn, N. Y.....	Sept. 9.
15932	Screw-machine.....	John Moore.....	Madison, Ind.....	Oct. 21.
14041	Screw-machinery.....	Cullen Whipple, assignor to New England Screw Company.....	Providence, R. I.....	Jan. 1.
15052	Screws, making.....	Cullen Whipple, assignor to New England Screw Company.....	Providence, R. I.....	June 3.
14367	Scythe-rifles..... (See Class I.)	Eugene J. Post.....	Vienna, N. J.....	Mar. 4.
16290	Shears, sheep.....	Levi Skeels.....	Ostrander, Ohio.....	Dec. 23.
16038	Shutter-fastener.....	D. M. Lawrence.....	Cincinnati, Ohio.....	Nov. 4.
15064	Shutter-operator.....	Hiram Collins.....	Salisbury, Conn.....	June 10.
15257	Shutter-operator.....	Charles R. Edwards.....	Niagara city, N. Y.....	July 8.
15416	Shutter-operator.....	James R. Creighton.....	Boston, Mass.....	July 29.
15894	Shutters, bolts for.....	Philip Warner.....	Lancaster, Pa.....	June 10.
14912	Shutters, fastening, swing bolt for.....	John Gunner, jr.....	New York, N. Y.....	May 20.
14563	Slide-rests.....	Albert V. Hill.....	Hinsdale, N. Y.....	April 1.
	Soldering, furnace for. (See Class V, letter F.)			
14176	Soldering iron.....	Daniel Dod, assignor to himself and Henry F. Read.....	Brooklyn, N. Y.....	Jan. 29.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14573	Soldering wire ferrules	Asabel Pierpont.	New Haven, Conn.	1856. April 1.
15028	Spike-machine	C. A. McPhetridge.	St. Louis, Mo.	Oct. 21.
15085	Spike-machines	Moody Belknap	Boston, Mass.	Aug. 5.
14054	Spikes, beading	E. H. Collier	Selma, Mass.	Jan. 15.
14546	Springs, spiral, former for	Vincent D. Lent.	Chelsea, Mass.	April 1.
16214	Steel, cast, making	John Nevill, assignor to Lemuel Curtis for an undivided half, and Nevill & Curtis, by J. P. Farrar, to Damascus Steel Manufacturing Company.	New York, N. Y.	Dec. 9.
14976	Steel, compositions for working. (See Class IV, letter C.)	Franz Uchatius	Vienna, Austria.	May 27; in Austria, March 14, 1855.
14435	Steel, welding	Homer Anderson	Garrattsville, N. Y.	Mar. 15.
16151	Tap, expanding	Harley Stone and Mason D. Cole	Worcester, Mass.	Dec. 2.
15195	Teeth, rake, machine for making	Charles R. Soule	Fairfield, Vt.	June 24.
16213	Tubes, connecting	Joseph Nason	New York, N. Y.	Dec. 9.
14693	Vise	Orlando B. Florey	Yellow Springs, Ohio	April 8.
14795	Vise	Charles Buss	Marlborough, N. H.	May 6.
15051	Vise	Samuel Fahrney, assignor to Abraham Huffer and Benjamin Fahrney	Boonsboro', Md.	June 3.
15170	Vise	Horace B. Chaffee	New York, N. Y.	June 24.
15277	Vise	Hiram C. Brown	Yellow Springs, Ohio	July 8.
15583	Vise	R. W. Thickins	Brasher Iron Works, N. Y.	Aug. 19.
15-62	Vise	Caleb C. Walworth	Boston, Mass.	Oct. 7.
14192	Vise, bench	Samuel Gissinger	Alleghany, Pa.	Feb. 5.
14550	Vise, bench	Benjamin G. Ball	Nashua, N. H.	April 1.
14366	Vise, handle for	John T. Ogden	Boston, Mass.	Mar. 4.
15705	Wire, cutting and drawing	F. Noette	Brooklyn, N. Y.	Sept. 9.
14751	Wire fences, contraction and expansion in, device to allow for.	T. D. Burke, assignor to James Garrett	Chicago, Ill.	April 22.

CLASS III.—MANUFACTURES OF FIBROUS AND TEXTILE SUBSTANCES, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14322	Binding guides	James S. McCurdy	New York, N. Y.	1856. Feb. 26.
15836	Bleaching, washing and, use of the dash-wheel for.	James Wallace, jr.	Glasgow, North Britain	Sept. 30. England, June 26, 1855.
15872	Button-holes, guides for working	Otis Avery	Bethany, Pa.	Oct. 14.
16319	Calico printing machines, movement for the doctors of. (See Class XVIII, letter P.)	John Woraley	Providence, R. I.	Dec. 23.
15781	Carding engines, No. 1	A. D. Shattuck	Grafton, Mass.	Sept. 23.
15784	Carding engines, No. 2	A. D. Shattuck	Grafton, Mass.	Sept. 23.
16196	Carding engines, cleaning the top flats of	W. H. Walton	Brooklyn, N. Y.	Dec. 9.
15313	Carding engines, machinery for cleaning the top flats of	Horace Woodman	Biddeford, Me.	July 8.
14181	Carding-machines, stripping top flats of.	George Wellman	Lowell, Mass.	Mar. 15. England, Nov. 25, 1853.

16252	Winning blind rods, machine for	Thaddeus F. St. John	Le Roy, N. Y.	Dec. 16.
14249	Wrench	Elisba P. Newton	Green Island, N. Y.	Feb. 12.
14221	Wrench	William Baxter	Newark, N. J.	Feb. 12.
14243	Wrench	Ferdinand Keehnold	Bridgeport, Conn.	Feb. 12.
14424	Wrench	Erastus Tracy	Troy, N. Y.	Mar. 11.
14779	Wrench	Bradford Rowe	Albany, N. Y.	April 29.
15482	Wrench	Lorenzo D. Gilman	Troy, N. Y.	Aug. 5.
15184	Wrench for gas pipe, &c.	Gustavus A. Jenks	Worcester, Mass.	June 21.
14546	Wrenches	Halsey D. Walcott, assignor to H. D. and M. E. Walcott	Pawtucket, Mass.	Mar. 25.
14528	Wrenches	William Warwick	Pittsburg, Pa.	Mar. 25.
14571	Wrenches	Philip McMauns	Brunswick, N. Y.	April 1.
16158	Wrenches	Orin O. Witherell	New York, N. Y.	Dec. 2.

Classified List of Patents issued.—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15016	Carding-machines, wool.....	Foster Nowell.....	Lowell, Mass.....	June 3, 1856.
15065	Card teeth, for machine cards.....	John L. Tuttle.....	New York, N. Y.....	Oct. 14.
15707	Carpeting, ingrain, manufacturing.....	David B. Kerr.....	New York, N. Y.....	Sept. 23.
14555	Carpet lining, machines for making.....	John R. Harrington.....	Dayton, Ohio.....	April 1.
	Cloth, elastic, rubber, processes for making. (See Class IV, letter P.)			
16275	Clothing, card, trimming.....	E. B. Howe.....	Lowell, Mass.....	Dec. 23.
14639	Cloth, stretching, spreading rollers for.....	Jonathan J. Hillard.....	Fall River, Mass.....	April 15.
14725	Cotton cleaner.....	Jas. H. Kinyon and Jas. Hollingsworth.....	Chicago, Ill.....	April 22.
14965	Cotton gins.....	William B. Lindsay.....	New Orleans, La.....	May 27.
15381	Cotton gins.....	James B. Miles.....	Chicot, Ark.....	July 22.
15906	Cotton gins.....	John L. Tuttle.....	New York, N. Y.....	Oct. 14.
15239	Cotton gins.....	James B. Mell.....	Riceboro', Ga.....	Oct. 21.
16922	Cotton gins.....	Wilson A. Pardon.....	Jackson, Miss.....	Nov. 4.
16996	Cotton gins.....	C. A. McPhetridge.....	St. Louis, Mo.....	Nov. 18.
15994	Cotton gins and machine cards, manufacturing cylinders for.....	John L. Tuttle.....	New York, N. Y.....	Oct. 14.
15138	Cotton gins: roller, feeder for.....	L. John Mallard and Wm. S. Baker.....	Riceboro', Ga.....	June 17.
15703	Delaines, manufacturing, process of.....	John Marland.....	West Bridgewater, Mass.....	Sept. 9.
15585	Fabrics, textile, water-proofing.....	Benjamin Weigert.....	New York, N. Y.....	Aug. 19.
16293	Fibres, vegetable, preparing, for stuffing mat- tresses and cushions.....	Werner Staufen.....	Prussia.....	Dec. 23; in England, Nov. 2, 1855.
16149	Fibrous manufactures, drying cylinders for.....	Horace W. Peaslee.....	Malden Bridge, N. Y.....	Dec. 2.
14539	Hat-bodies and other articles, cloths for felted.....	William Fuzzard.....	Charlestown, Mass.....	April 1.
15508	Hat-bodies, felted.....	E. R. Barnes and Jas. B. Blakalee.....	Brookfield, Conn.....	Aug. 12.
15627	Hat-bodies, felted, machinery for.....	Joseph Thomas.....	Brooklyn, N. Y.....	Aug. 26.
14845	Hat-bodies, machinery for felted.....	James S. Taylor.....	Danbury, Conn.....	May 6.
15261	Hat-bodies, machinery for felted.....	Joseph Thomas.....	Brooklyn, N. Y.....	July 1.
15290	Hat-bodies, machinery for felted.....	William Fuzzard.....	Cambridgeport, Mass.....	July 8.
15375	Hat-bodies, machines for felted.....	Lansing E. Hopkins.....	Brooklyn, N. Y.....	July 22.

15443	Hat-bodies, machinery for forming.....	Alva B. Taylor.....	Newark, N. J.....	July 29.
15715	Hat-bodies, machinery for forming.....	D. G. Wells.....	New York, N. Y.....	Sept. 9.
15903	Hat-bodies, machinery for forming.....	James S. Taylor.....	Danbury, Conn.....	Oct. 14.
14476	Hat bodies, machinery for making.....	Alva B. Taylor.....	Newark, N. J.....	Mar. 18.
15908	Hat-bodies, machines for felted.....	Sylvester H. Gray.....	Bridgeport, Conn.....	June 3.
14521	Hat-bodies, machines for sizing.....	Albert Spencer.....	New York, N. Y.....	Mar. 25.
14969	Hat-bodies, machines for sizing.....	Samuel C. Ketchum.....	Brooklyn, N. Y.....	May 20.
15154	Hat-bodies, machines for sizing.....	Joseph Thomas.....	Brooklyn, N. Y.....	June 17.
15534	Hat-bodies, manufacture of..... (See Class IV, Letter P.)	Alva B. Taylor.....	Newark, N. J.....	Aug. 12.
15929	Hat-bodies, sizing.....	Joseph McCracken.....	Brooklyn, N. Y.....	Oct. 21.
16305	Hat-bodies, sizing, machinery for.....	S. H. Gray, assignor to Ives & Gray.....	Bridgeport, Conn.....	Dec. 23.
14862	Hat-felting machines.....	A. C. Fuller.....	Danbury, Conn.....	May 13.
14121	Hats, felting, machinery for.....	James S. Taylor.....	Danbury Conn.....	Jan. 15.
14330	Hats, hardening, machinery for.....	Russel Wildman.....	Charlestown, Mass.....	Feb. 26.
14401	Hats, ironing, machinery for.....	S. A. Kinsman and S. Field.....	Barre, Mass.....	Mar. 11.
14462	Hats, manufacture of.....	Joseph Johnson.....	New Orleans, La.....	Jan. 8.
14343	Hats, manufacturing.....	James W. Beebe.....	Brooklyn, N. Y.....	Mar. 4.
14394	Hemp and flax, preparing, machinery for.....	Edward Davy, Nancy Davy, adminis- trix of.....	Credition, England.....	Mar. 11; in England, Nov. 13, 1852.
16279	Hemp-brakes.....	Edward W. Lacy.....	Oak Park, Va.....	Dec. 23.
15166	Hemp breaker.....	R. W. Bowen.....	Marshall, Mo.....	June 24.
15498	Hemp-breaker.....	Mortwether Thompson, jr.....	St. Josephs, Mo.....	Aug. 5.
16285	Hosiery, manufacture of.....	William H. McNary.....	Brooklyn, N. Y.....	Dec. 23.
15607	Hosiery, seamless, manufacturing.....	William Goddard.....	New York, N. Y.....	Aug. 26.
15314	Knitting-machine.....	J. B. & W. Aiken, assignors to H. & J. B. Aiken.....	Franklin, N. H.....	July 8.
15435	Knitting-machines.....	John Nesmith.....	Lowell, Mass.....	July 20.
15484	Knitting machines.....	Augustus J. and Demus Goffe.....	Cohoes, N. Y.....	Aug. 5.
16297	Knitting-machines.....	Clark Tompkins.....	Troy, N. Y.....	Dec. 23.
15006	Knitting-machines, needles for.....	Rufus Ellis.....	Boston, Mass.....	June 3.
14975	Knitting-machines, rotary.....	Clark Tompkins and John Johnson.....	Troy, N. Y.....	May 27.
15492	Knitting-machines, rotary.....	Sidney W. Park and Edgar S. Ella.....	Troy, N. Y.....	Aug. 5.
14590	Looms.....	E. B. Bigelow.....	Boston, Mass.....	April 8.
14971	Looms.....	Robert Pilson and Stephen P. Heath.....	Laurel, Md.....	May 27.
15186	Looms.....	Lucius J. Knowles.....	Warren, Mass.....	June 24.
15295	Looms.....	Wm. J. Hortemann.....	Philadelphia, Pa.....	July 8.
16015	Looms.....	Lucius J. Knowles.....	Warren, Mass.....	Nov. 4.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16306	Looms.....	B. G. Dawley, assignor to Z. Allen.....	North Providence, R. I.....	Dec. 23, 1856.
16271	Looms.....	A. L. Fuller.....	Clinton, Mass.....	Dec. 23.
14746	Looms for weaving bags.....	Samuel S. Thomas.....	Lawrence, Mass.....	April 22.
15291	Looms, jacquard.....	John Goulding.....	Springfield, Mass.....	July 8; England, Nov. 22, 1854.
15717	Looms, jacquard.....	James C. Cook, assignor to Hotchkiss & Merriman Manufacturing Company. Elijah Hall.....	Waterbury, Conn.....	Sept. 9.
14237	Looms, power.....	Erastus B. Bigelow.....	Rochester, N. Y.....	Feb. 12.
14222	Looms, power.....	John Johnson.....	Boston, Mass.....	Feb. 12.
14283	Looms, power.....	J. Greenhalgh, sr.....	Troy, N. Y.....	Feb. 19.
14358	Looms, power.....	Andrew Allen.....	Waterford, Mass.....	Mar. 4.
14644	Looms, power.....	Alexander Smith and Haley Skinner.....	Wilmington, Del.....	April 15.
16037	Looms, power.....	Rensselaer Reynolds.....	West Farms, N. Y.....	Nov. 4.
14292	Looms, temples for.....	Wm. W. Wier and W. Grover.....	Stockport, N. Y.....	Feb. 19.
14958	Mules, self-acting.....	John McMullen.....	Holyoke, Mass.....	May 27.
15245	Netting-machines.....	Hervey Law.....	Baltimore, Md.....	July 1.
15738	Paper, cutting, machine for.....	Wm. Clarke.....	New York, N. Y.....	Sept. 16.
14304	Paper from straw, processes for making.....	P. H. Wait.....	Dayton, Ohio.....	May 6.
14621	Paper machines, felt-guide of.....	Israel Kinsey.....	Sandy Hill, N. Y.....	April 8.
15852	Paper-making machines, feeding pulp to.....	Joseph Kingsland, jr. (B.).....	Hoboken, N. J.....	Oct. 7.
16278	Paper pulp engines.....	Joseph Kingsland, jr.....	Franklin, N. J.....	Dec. 23.
16339	Paper pulp, grinding, machinery for.....	Joseph Kingsland, jr. (C.).....	Franklin, N. J.....	Dec. 16.
16316	Paper pulp, grinding, process of.....	William Adamson.....	Philadelphia, Penn.....	Dec. 23.
14218	Paper, sand, machinery for cutting.....	V. O. Balcom & C. H. Hill.....	Bedford, Mass.....	Feb. 12; antedated August 12, 1855.
16162	Paper stock, engines for grinding.....	Joseph N. Pits.....	Blackstone, Mass.....	Dec. 2.
14165	Paper stock, blocks and, machines for cutting.....	William R. Dutcher, assignor by intermediate assignment to Harvey Church.....	Troy, N. Y.....	Jan. 29.
14938	Rope and cordage, machinery for making.....	O. S. Hazard and Isaac Peck.....	Coventry, R. I.....	May 20.
14194	Rope, machinery for making.....	Thomas G. Boone.....	Brooklyn N. Y.....	Feb. 5.
15326	Rope-machines.....			July 15.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15623	Setae needles, filling, machinery or.....	S. F. Stanton, assignor to J. M. and S. F. Stanton.....	Manchester, N. H.....	Aug. 26.
14283	Sewing-guides.....	Seth P. Chapin.....	New York, N. Y.....	Feb. 19.
14022	Sewing-machines.....	P. L. Slayton.....	Madison, Ind.....	Jan. 1.
14141	Sewing-machines.....	John O'Neil.....	Xenia, Ohio.....	Jan. 22.
14207	Sewing-machines.....	Alfred Swingle, assignor to Elmer Townsend.....	Boston, Mass.....	Feb. 5.
14321	Sewing-machines.....	T. J. W. Robertson.....	New York, N. Y.....	Feb. 26.
14393	Sewing-machines.....	Henry R. David.....	New York, N. Y.....	Mar. 11.
14433	Sewing-machines.....	W. C. Watson, assignor to Ira W. Gregory.....	New York, N. Y.....	Mar. 11.
14475	Sewing-machines.....	Isaac M. Singer.....	New York, N. Y.....	Mar. 19.
15396	Sewing-machines.....	A. Swingle, assignor to E. Townsend.....	Boston, Mass.....	July 22.
15469	Sewing-machines.....	Sherburn C. Blodgett.....	Philadelphia, Penn.....	Aug. 5; antedated Feb. 5, 1856.
15470	Sewing-machines.....	Joseph Bond, jr.....	Philadelphia, Penn.....	Aug. 5.
15635	Sewing-machines.....	A. F. Johnson, assignor to himself and F. A. Houghton.....	Boston, Mass.....	Aug. 26.
15635	Sewing-machines.....	Charles R. Gardner.....	Detroit, Mich.....	Sept. 9.
16026	Sewing-machines.....	S. H. Roper.....	Roxbury, Mass.....	Nov. 4.
16030	Sewing-machines.....	Isaac M. Singer.....	New York, N. Y.....	Nov. 4.
16136	Sewing-machines.....	William C. Watson, assignor to Watson, Wooster, & Knight.....	New York, N. Y.....	Nov. 25.
16234	Sewing-machines.....	James E. A. Gibbs.....	Mill Point, Va.....	Dec. 16.
16237	Sewing-machines.....	Lewis Jennings.....	New York, N. Y.....	Dec. 16.
16281	Sewing-machines.....	William R. Landfear.....	Manchester, Conn.....	Dec. 23.
16321	Sewing-machines.....	Jerome B. Woodruff.....	Washington, D. C.....	Dec. 23.
16315	Sewing-machines.....	A. F. Johnson and F. A. Houghton.....	Boston, Mass.....	Dec. 23.
14956	Sewing-machines, cases for.....	William O. Grover.....	Boston, Mass.....	Dec. 23.
15402	Sewing-machines, folding guides for.....	Burrill C. Boyes, assignor to B. C. Boyes and H. Dercum.....	Philadelphia, Penn.....	May 27.
15620	Sewing-machines for binding bats.....	Isaac M. Singer.....	New York, N. Y.....	June 3.
16120	Sewing-machines, stitches for.....	A. F. Johnson.....	Boston, Mass.....	Nov. 25.
15335	Sewing-pins upon paper or any other material, machine for. (See Class II, letter P.).....	Thomas W. Taylor.....	Cannelton, Ind.....	Aug. 12.
16228	Spinning frames.....	Joel Smith.....	Northbridge, Mass.....	Nov. 4.
14182	Spinning, throstle, machine.....	Lyman Wight.....	Benton, Penn.....	Mar. 18.
15131	Spinning wheels.....	Henry S. Houghton.....	Blackstone, Mass.....	June 17.
15131	Traveller, brushes for cleaning.....			

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14558	Thread, trebling single, machinery for.....	Lucius and Ira Dimock.....	Hebron, Conn.....	1856. May 13.
14989	Thread, winding, from skeins.....	Marcus Ormsbee.....	Boston, Mass.....	May 27.
16164	Thread, covering, with wool.....	A. L. Fuller.....	Clinton, Mass.....	Dec. 2.
15308	Warps, dressing, brushes for.....	Samuel Taylor.....	Cambridge, Mass.....	July 8.
14061	Weavers' harness, machinery for making.....	George L. Jenks.....	Providence, R. I.....	Jan. 8.
16029	Weaving long warps.....	John C. Smith.....	New Hartford, Conn.....	Nov. 4.
15415	Weaving seamless bags, harness for.....	Algernon L. Cole.....	Windham, Me.....	July 29.
16248	Weaving shade-cord, machinery for.....	Thomas Nelson.....	Troy, N. Y.....	Dec. 16.
14463	Winding frames, cone tubes for..... (See Class IV, Letter C.)	John McCrone.....	Thompsonville, Conn.....	Mar. 18.
15856	Wool, cleaning, machinery for.....	Andrew W. Putnam.....	Brooklyn, N. Y.....	Oct. 7.
15268	Wool, combing, machinery for.....	Wm. H. Walton, assignor to W. H. Walton and J. E. Winants.	Brooklyn, N. Y.....	July 1.
14120	Woollen and other fabrics, printing, machinery for. (See Class XVIII, Letter P.)			
16117	Woven wire, process of painting or varnishing. (See Class IV, Letter P.)			
14815	Yarn-dressing frames.....	Abner J. Sutherland.....	Lowell, Mass.....	Jan. 15.
	Yarns, cotton, manufacturing.....	George G. Henry.....	Mobile, Ala.....	Nov. 25.
	Yarns, felted, manufacturing.....	Moses A. Johnson.....	Lowell, Mass.....	May 6.

CLASS IV.—CHEMICAL PROCESSES, MANUFACTURES, AND COMPOUNDS, including medicines, dyeing, color-making, distilling, soap and candle making, mortars, cements, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14722	Acid, phosphoric, preparing, as a substitute for other solid acids.	E. N. Horsford.....	Cambridge, Mass.....	1856. April 22.
15222	Acid, sulphuric, concentrating apparatus for.....	Wm. T. Clough.....	Newark, N. J.....	July 1.
15662	Ale and beer coolers.....	James Macintire.....	Somerville, Mass.....	Sept. 2.
15957	Alkalies, caustic, devices for putting up.....	George Thompson.....	East Tarentum, Pa.....	Oct. 21.
15804	Alloys, journal box.....	John Fidler.....	New Albany, Ind.....	Sept 30.
15934	Alum, making, preparing clay for.....	Henry Davis Pochin.....	Salford, Great Britain.....	Oct. 21; in England, January 30, 1855.
14925	Ash-leaching apparatus.....	Philip Perdue and Alex. W. Brinkerhoff.	Wyandot, Ohio.....	May 20.
15956	Bagasse furnaces. (See Class V, Letter F.)			
15983	Blacking, stove.....	William Thomas, jr.....	Hingham, Mass.....	Oct. 21.
15590	Bleaching ivory, apparatus for.....	John Phyle.....	New York, N. Y.....	Oct. 23.
	Bleaching ivory, frames for.....	A. C. Breckenridge, assignor to Julius Pratt & Co.	Meriden, Conn.....	Aug 19.
16100	Bleaching process.....	Julius A. Roth.....	Philadelphia, Pa.....	Nov. 18.
	Bleaching, washing and, use of the dash wheel for. (See Class III, Letter B.)			
14662	Candle cutting apparatus.....	John Jones.....	Brooklyn, N. Y.....	April 15.
16211	Candle dipping machine.....	C. A. McPhetridge.....	St. Louis, Mo.....	Dec. 9.
14376	Candle dipping machines.....	Vincenzo Squarza.....	New York, N. Y.....	Mar. 4.
15668	Candle moulding machine.....	John Robinson.....	New Brighton, Pa.....	Sept. 2.
15968	Candle mould machine.....	William C. Childs.....	Boston, Mass.....	Oct. 24.
16056	Candle mould machine.....	August Hengstenberg.....	Muscantine, Iowa.....	Nov. 11.
14397	Candles, making, preparation of tallow for.....	Francis Garcin.....	Philadelphia, Pa.....	Mar. 11.
15821	Candles, many-wicked.....	Benjamin D. Sanders.....	Holliday's Cove, Va.....	Sept. 30.
16208	Cement, incorporating bituminous liquids with wet earths for a.....	W. H. Johnson.....	Springfield, Ill.....	Dec. 9.
15275	Cements, roofing.....	Horace Billings.....	Beardstown, Ill.....	July 8.
16304	Charcoal burning.....	Andrew Grimes, assignor to Charles Day.	Lancaster, N. Y.....	Dec. 23.
16170	Composition, alloy.....	Timothy Brown.....	Georgetown, N. Y.....	Dec. 9.

Classified List of Patents issued—Continued.

No.	Invention or discovery.	Patentee.	Residence.	Date of patent.
14037	Compositions for breaking wool.....	Andrew H. Ward, jr.....	Boston, Mass.....	1856. Jan. 1.
14532	Compositions for stuffing leather.....	John Rose.....	Newark, N. J.....	May 6.
15161	Compositions for working steel.....	Horace Vaughn.....	Providence, R. I.....	June 17.
15551	Compositions, pre-tanning. (See Class XVI, letter T.)			
14911	Compound, plastic.....	Lewis Buckholz.....	Richmond, Va.....	Aug. 19.
15563	Compounds, artificial decoloring.....	Francis Gerau.....	New York, N. Y.....	May 20.
15520	Compounds, felting.....	Lausing E. Hopkins.....	Brooklyn, N. Y.....	Aug. 19.
15806	Compounds, paint, vehicle for.....	F. Kuhlmann.....	Lille, empire of France.....	Aug. 12.
14053	Compound wherewith to manufacture paint.....	Isaac Gattman.....	Philadelphia, Pa.....	Sept. 30.
14053	Disinfecting fecal matter.....	D. Contarot.....	New York, N. Y.....	Jan. 8.
15959	Dyeing.....	John P. Derby, assignor to Sallsbury Manufacturing Co.....	Amesbury, Mass.....	Oct. 21.
15361	Dye-stuff, vegetable, preparing a.....	Friedrich E. Schmidt.....	New York, N. Y.....	July 15.
14418	Extracts, apparatus for making.....	Abraham Steers.....	Medina, N. Y.....	Mar. 11.
15158	Fats, saponifying.....	George F. Wilson and George Payne.....	Belmont, Vauxhall, England.....	June 17.
15517	Filtering sand for cider.....	Ira Holmes.....	Leicester, N. Y.....	Aug. 12.
16129	Gas cock and swinging joint.....	Charles F. Thiene.....	Philadelphia, Pa.....	Nov. 25.
14368	Gaseous pressure, method of bottling fluids under.....	A. Quantin.....	Philadelphia, Pa.....	Mar. 4.
15973	Gas generator.....	Charles A. Howard.....	Pontiac, Mich.....	Oct. 28.
14926	Gas generators, construction of.....	Max Pattenkofer and Carl Ruland.....	Munich, Bavaria.....	May 20, 1851, Feb 24, 1851.
14045	Gas, illuminating, making.....	N. Aubin.....	Albany, N. Y.....	Jan. 8.
15267	Gas, purifiers, dry lime.....	C. F. Werner and C. Deutschmann.....	New York, N. Y.....	July 1.
15010	Gas retort bench, arrangement of a.....	John G. Hook.....	Newark, N. J.....	June 3.
14934	Gas retort cleaners.....	Samuel H. and Matthew C. Walker.....	Lancaster, Pa.....	May 20.
16075	Gas retort fastening, copper ring.....	William H. St. John.....	New York, N. Y.....	Nov. 11.
14913	Gas retort fastenings.....	John G. Hook.....	Newark, N. J.....	May 20.
14986	Gas retorts, feeding apparatus for.....	N. Aubin.....	Albany, N. Y.....	June 3.
15376	Gas stop cocks.....	James Humphrey.....	Boston Mass.....	July 22.

No.	Invention or discovery.	Patentee.	Residence.	Date of patent.
14814	Gum elastic cloth, making.....	Henry G. Tyer and John Helm.....	Ballard Vale, Mass.....	May 6; ante-dated Jan. 9.
14972	Gutta percha, apparatus for cleaning.....	James Reynolds.....	New York, N. Y.....	May 27.
15489	Gutta percha, apparatus for covering wire with.....	James Reynolds.....	New York, N. Y.....	July 29.
16215	Gutta percha cord, making.....	James Reynolds.....	New York, N. Y.....	Dec. 9.
15057	Gutta percha, "dumb jockey," the "cross" or "horns" of saddle-tree being made of. (See Class XVI, letter S.)			
14929	Gutta percha, feed-apparatus for working.....	James Reynolds.....	New York, N. Y.....	June 10.
15086	Gutta percha, lining metal pipes with.....	A. D. Puffer.....	Somerville, Mass.....	May 20.
15086	Gutta percha tubing, mandrills for making.....	James Reynolds.....	New York, N. Y.....	June 10.
15087	India-rubber belting and banding, manufacture of. (See Class XII, letter B.)			
14811	India-rubber, cleaning.....	Austin G. Day.....	Seymour, Conn.....	June 10.
15917	India-rubber cloths, elastic, repairing.....	Nathaniel Hayward.....	Colchester, Conn.....	May 6.
14057	India-rubber hose, modes of making.....	Jacob H. Howell.....	Ansonia, Conn.....	Oct. 21.
16069	India-rubber, manufacture of.....	Nathaniel Hayward.....	Colchester, Conn.....	April 15.
16269	India-rubber, process for cleaning.....	T. Sault.....	Seymour, Conn.....	Nov. 11.
15531	India-rubber thread, machines for cutting.....	Henry Davenport.....	New York, N. Y.....	Dec. 23.
15998	India-rubber, treating.....	William F. Shaw.....	Boston, Mass.....	Aug. 12.
15942	Lard-rendering kettles.....	Henry Toratrick.....	Hoboken, N. J.....	Oct. 28.
15391	Liquids used as a motive power.....	John J. Bate.....	Brooklyn, N. Y.....	Oct. 21.
15391	Lubricating car-axle and other journals. (See Class X, letter A.)	John C. FrisSalomon.....	Baltimore, Md.....	July 22.
14791	Lubricating grist-mill spindles, apparatus for.....	Clayton Brown, sr.....	Richmond, Ind.....	May 6.
16298	Lubricating spindle steps.....	Joseph Welch.....	Philadelphia, Pa.....	Dec. 23.
16390	Lubricating the sheave-plate of ship's blocks, means for. (See Class VII, letter S.)			
16390	Lubricating throstle spindles.....	George W. Doherty and Thos. G. McLaughlin.....	Crozerille, Pa.....	Sept. 9.
14236	Lubricator.....	William Gee.....	New York, N. Y.....	Feb. 12.
14352	Lubricator.....	W. E. Everett.....	New York, N. Y.....	Mar. 4.
14549	Lubricator.....	Edw. J. Baker.....	Baltimore, Md.....	April 1.
14797	Lubricator.....	Abel Braer.....	Saugateck, Conn.....	May 6.
15775	Lubricator.....	N. W. Pomeroy.....	Meriden, Conn.....	Sept. 23.
16018	Lubricator.....	James F. Monroe.....	Fitchburg, Mass.....	Nov. 4.
14163	Mastic for covering walls.....	Adolph C. Moestue.....	Geneva, Ill.....	Jan. 20.
15553	Milk, concentration of.....	Gail Borden, jr.....	Brooklyn, N. Y.....	Aug. 19.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Oil-box for axles with conical journals. (See Class XII, letter O.)			1856.
16255	Oil, coal, apparatus for	Richard Shroder, assignor to J. L. Russell, R. Shroder, and A. Anderson.	Darlington, Pa.	Dec. 16.
15643	Oil, crude, from mineral coal, distilling apparatus for.	Cummings, Cherry	Pittsburg, Pa.	Sept. 2.
15506	Oil from bitumens, preparing	L. & W. Atwood	Waltham, Mass.	Aug. 12.
15505	Oil from cannel coal, production of	L. & W. Atwood	Waltham, Mass.	Aug. 12.
14610	Oil from cotton seed, processes for extracting }	Augustus A. Hayes, assignor to George Ashman and Charles Phelps	Boston, Mass.	April 8.
15642	Oil obtained from mineral coal, purifying, apparatus for.	Cummings Cherry	Springfield, Mass.	Sept. 2.
15644	Oil, preparation of drying, from oils extracted from bituminous minerals.	Cummings Cherry	Pittsburg, Pa.	Sept. 2.
15418	Oils, lubricating, pyrogenous	Samuel Downer and Joshua Merrill	Boston, Mass.	July 29.
14042	Oils, treating	Philo Marsh, assignor to Marsh & Howland.	South Adams, Mass.	Jan. 1.
15243	Pastiles, disinfecting	Andrew Lanergan	Boston, Mass.	July 1.
15972	Powder, blasting. (See Class IX, letter B.)	J. Anthony Gauscardia	Washington, D. C.	Oct. 22.
14461	Preserving dead bodies, method of	R. McMullin	New Brunswick, N. J.	Mar. 18.
14457	Processes for making elastic rubber cloth.	Edward R. Keruan	Pittsburg, Pa.	Mar. 18.
14457	Processes for making transparent window-shades.	Edward R. Keruan	Pittsburg, Pa.	Mar. 18.
15950	Processes for silvering mirrors	Tony Petitjean	Tottenham Court Road, England.	Oct. 21.
15542	Processes of separating silver from the ore	W. Ziervogel	Treskon, Pa.	Aug. 12.
16179	Process of washing grain	Elie Joseph Halmout	Kingdom of Belgium	Dec. 9.
15953	Process of coating metals with metals	Joseph Poleux	New York, N. Y.	Oct. 21.
14320	Process of painting or varnishing woven wire.	William Lincoln	Oakham, Mass.	Feb. 26.

15594	Process of preparing linseed, &c., for pressing in extracting oil.	Charles Moore	Trenton, N. J.	Aug. 19.
16189	Process of preparing tannate of lime	Obadiah Rich	Cambridge, Mass.	Dec. 9; England, Dec. 8, 1854.
15664	Process of stiffening hat bodies	Joseph McCracken	Brooklyn, N. Y.	Sept. 2.
16111	Process of treating feldspar for a manure	Charles Bickell	Baltimore, Md.	Nov. 25.
15598	Salt, evaporation, apparatus for	William T. Clough	Newark, N. J.	Aug. 26.
15411	Salt, evaporation of, solar, apparatus for	John F. Boynton	Syracuse, N. Y.	July 29.
14813	Salt evaporators	B. L. Hood and C. P. Monroe	Albany, N. Y.	May 6.
15884	Salt evaporators	J. L. Humphrey	Syracuse, N. Y.	Oct. 14.
15975	Salts, evaporators for	J. R. Hopkins	Auburn, N. Y.	Oct. 24.
15432	Soap boiling apparatus	Campbell Morfit	Baltimore, Md.	Oct. 24.
15950	Soap mixtures	George C. Lawrence	Winchester, Mass.	Oct. 24.
15838	Soaps, rosins	Augustus Paltz	Saxonsville, Mass.	Oct. 21.
16051	Soda fountains	J. F. Boynton	Syracuse, N. Y.	Oct. 7.
15694	Sugar draining apparatus	Gustavus Fincken	Brooklyn, N. Y.	Nov. 11.
14717	Sugar, evaporating, pans for	Samuel H. Gilman	New Orleans, La.	Sept. 9.
15421	Sugar evaporators	Samuel H. Gilman	New Orleans, La.	April 22.
14129	Sugar evaporators	Samuel H. Gilman	New Orleans, La.	July 29.
	Vapor, hydrocarbon, apparatus	Ari Davis, Asahel Davis, and Charles Cunningham, assignors to A. W. Adams	Lowell, Mass.	Jan. 15.
14135	Vats, tan, arrangement of	J. B. Richardson, George W. Pettes and S. F. Sauborn	Nashua, N. H.	
	Zinc white, furnaces for. (See Class V, letter F.)	David Kennedy	Boston, Mass.	Jan. 22.
15448	Zinc white, oxide of, apparatus for purifying	Joseph Wharton	Reading, Pa.	July 29.

CLASS V.—CALORIFICS, comprising lamps, fire-places, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15155	Bakers, heating, coal.	Joseo D. Wheelock.	Mayville, Wis.	June 17, 1856.
14356	Blact, hot, apparatus.	Lafayette Blair.	Painesville, Ohio.	Mar. 11.
14575	Blow pipes.	O. G. Lawson.	Crestline, Ohio.	May 13.
15774	Blow pipes.	S. B. Palmer.	Tully, N. Y.	Sept. 23.
14403	Blow pipes, spirit.	Horatio N. Macomber.	Lynn, Mass.	Mar. 11.
	Boiler, steam, and kettles, combined. (See Class VI, letter B.)			
15633	Boiling, device for preventing liquids from, over the sides of vessels.	John Liblong, assignor to Edward Brown and James R. Case.	Waterbury, Conn.	Aug. 26.
14271	Caldrons.	Henry Newsham.	Baltimore, Md.	Feb. 12.
14074	Candle sticks.	Abner Whiteley.	Springfield, Ohio.	Jan. 8.
14641	Cans, oil.	Thos. Priestly, assignor to Daniel Holden.	Saxonsville, Mass.	April 8.
15956	Cans, oil.	James M. Thompson.	Holyoke, Mass.	Oct. 28.
15206	Cans, safety, for burning fluids.	S. E. Winslow.	Philadelphia, Pa.	June 24.
14619	Charring wood.	Sandford S. Perry.	Charles City county, Va.	April 8.
15726	Chimney cap.	W. Brownell.	Newport, R. I.	Sept. 16.
15336	Chimney cowl.	George W. Thatcher.	Philadelphia, Pa.	Aug. 12.
15916	Chimney cowl.	T. W. Chatfield.	Utica, N. Y.	Oct. 14.
15584	Chimney cowl, self-cleaning.	C. H. Watkins.	New York, N. Y.	Aug. 19.
14171	Chimney cowl.	Charles F. Thomas.	Taunton, Mass.	Jan. 29.
16246	Chimney cowl.	Patrick Mihan.	Boston, Mass.	Dec. 16.
15458	Chimney dampers.	Theodore F. Engelbrecht, assignor to himself and Thomas C. Nye.	New York, N. Y.	July 29.
15645	Chimneys, apparatus for arresting carbon in.	Hezekiah Chaso.	Lynn, Mass.	Sept. 2.
14650	Chimneys, grates and dampers for, arrangement of.	Jacob Cohen.	New York, N. Y.	April 15.
15779	Chimney tops, self-regulating draught for.	J. A. Royce.	Lee, Mass.	Sept. 23.
15519	Coal breakers. (See Class XXII, letter C.)	Cyrus F. Newland.	Buffalo, N. Y.	Aug. 12.
14226	Coal hods.	George Pierce.	New York, N. Y.	May 6.
	Cooking apparatus.			

16111	Cooking apparatus, alcohol.	Thomas G. Clinton.	Washington, D. C.	Nov. 25.
15156	Cooking apparatus, water heaters surrounding fire-pots of.	Edward Whiteley.	Boston, Mass.	June 17.
14622	Cooking by steam, boilers for.	Edward Whiteley.	Boston, Mass.	April 8.
14340	Cooking with quick lime, apparatus for.	W. W. Albro.	Binghamton, N. Y.	Mar. 4.
14510	Cooling and ventilating rooms, &c., method of.	A. S. Lyman.	New York, N. Y.	Mar. 25.
16010	Coal or draught accelerators for steamers.	P. C. Guion.	Cincinnati, Ohio.	Nov. 4.
14181	Dryers, corn.	Solomon Bernheisel.	Elliottsburg, Pa.	Feb. 5.
14494	Dryers, fruit or grain.	Charles W. Davis.	Newark city, N. J.	Mar. 25.
16259	Drying grain in the mass, apparatus for.	John C. Pedrick.	Washington, D. C.	Dec. 16.
14588	Drying wet grain, &c., machines for.	Stephen V. Appleby.	New York, N. Y.	April 8.
	Dust from railroad cars, method of excluding. (See Class X, letter C.)			
15331	Fire-backs for fire-places.	Samuel M. Echols.	Lafayette, Ala.	July 15.
15089	Fire-engines, method of applying horse-power to.	David Russell.	Lockport, N. Y.	June 10.
14447	Fire-places.	Calvin Dodge.	Pittsburg, Pa.	Mar. 18.
15392	Fire-places, fenders for.	John W. Truslow.	Lewisburg, Va.	July 15.
14292	Fires, forge. (See Class II, word "Forge.")	Lea Pusey.	Philadelphia, Pa.	Feb. 12.
15271	Fires, method of extinguishing.	Robert B. Armitage.	Philadelphia, Pa.	July 8.
15688	Fuel, artificial.	Robert Courtney.	Albany, N. Y.	Sept. 9.
14063	Fuel, wet, mode of burning.	John F. Manahan.	Lowell, Mass.	Jan. 8.
14008	Furnace, annealing.	J. Joseph Eggleton.	New York, N. Y.	May 20.
14153	Furnace for soldering.	Philo Brown.	Waterbury, Conn.	Jan. 1.
16287	Furnace grates, locomotive.	George R. Comstock.	Manheim, N. Y.	Jan. 29.
15832	Furnaces, hot-air.	John H. H. Perkins.	Utica, N. Y.	Dec. 23.
15613	Furnaces, air-heating.	Richard Wells.	Baltimore, Md.	Sept. 30.
14812	Furnaces, bagasse.	John Liddle.	New York, N. Y.	Aug. 26.
15451	Furnaces, blast, fluxing. (See Class II, letter F.)	Abraham Hager and Youngs Allyn.	Baton Rouge, La.	May 6.
		Samuel H. Gilman.	New Orleans, La.	Aug. 5.
14392	Furnaces for heating soldering irons.	James Wilson.	Brandywine, Del.	May 13.
14298	Furnaces for heating slugs for the use of hat- ters, tailors, and others.	Russel Wildman.	Charlestown, Mass.	Feb. 19.
15009	Furnaces, gas-consuming.	Jacob Green.	Philadelphia, Pa.	June 3.
15830	Furnaces for zinc white.	Samuel Wetherill.	Bethlehem, Pa.	Sept. 30.
15018	Furnaces, glass.	Samuel Richards.	Philadelphia, Pa.	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15389	Furnaces, glass.	Samuel Richards.	Philadelphia, Pa.	July 22, 1856.
14196	Furnaces, hot-air.	Samuel Macferran.	Philadelphia, Pa.	Feb. 5.
16655	Furnaces, house, method of regulating the draught of.	Samuel L. Hay and H. B. Osgood.	Reading, Mass.	Nov. 11.
16317	Furnaces, smoke-consuming.	John Case and Isaac Soules.	Amsterdam, N. Y.	Dec. 23.
14691	Furnaces, tempering.	Robert B. Fellows.	Shelburne Falls, Mass.	April 8.
15791	Furnaces, warm-air.	William M. Wright.	Pittsburg, Pa.	Sept. 23.
14674	Furnaces with fuel, apparatus for feeding.	Alex. McD. Sprague.	Mobile, Ala.	April 15.
14233	Gas and steam cooking apparatus.	John S. Gallaher, jr.	Washington, D. C.	Feb. 12.
14091	Gas-burners.	C. A. Cummings and C. Douglass.	New London, Conn.	Jan. 15.
14737	Gas-burners.	W. F. Shaw.	Boston, Mass.	April 22.
14822	Gas-burners.	James Neal.	Boston, Mass.	May 6.
16176	Gas-burners.	Job Cornell and Barrett McDougal.	New York, N. Y.	Dec. 9.
15614	Gas-burners, automatic attachment to.	A. R. Marshall.	Stratford, Conn.	Aug. 26.
15219	Gas-fittings, reaming and tapping, machine for.	Henry A. Chapin.	Springfield, Mass.	July 1.
14325	Gas, heating by, apparatus for.	Wm. F. Shaw.	Boston, Mass.	Feb. 26.
14414	Gas, heating or cooking by, apparatus for.	Wm. F. Shaw.	Boston, Mass.	Mar. 11.
15031	Gas, heating or cooking by, apparatus for.	Wm. F. Shaw.	Boston, Mass.	Nov. 4.
14770	Gas-metres, dry, construction of.	Wm. Lyon and Charles W. Dickinson.	Newark, N. J.	April 29.
16973	Gas-regulator.	W. G. Sterling.	Bridgeport, Conn.	Nov. 11.
14893	Gas-regulators.	Henry Waterman.	Hudson, N. Y.	May 13.
15028	Gas-regulators.	Marshall Wheeler.	Honesdale, Pa.	June 3.
14437	Gas, roasting and broiling by, apparatus for.	James B. Blake.	Worcester, Mass.	Mar. 18.
14142	Grate-bars.	John T. Osborn.	New Orleans, La.	Jan. 22.
14642	Heating and ventilating buildings, apparatus for.	John Sawyer, assignor to himself and Thomas Hale.	Fitchburg, Mass.	April 8.
14743	Heating boilers, steam-pressure regulating apparatus for.	George S. G. Spence.	Boston, Mass.	April 22.
14158	Heating buildings by steam, apparatus for.	Stephen J. Gold.	New Haven, Conn.	Jan. 26.
14392	Heating buildings by steam, apparatus for.	Charles Davenport.	Watertown, Mass.	Mar. 11.
14885	Heating buildings by steam, apparatus for.	A. S. Felton.	Clinton, Conn.	May 13.

14360	Heating buildings by the combination of and burning gas, air, and steam, apparatus for.	Charles H. Johnson.	Boston, Mass.	Mar. 4.
14348	Heating of buildings, regulating the arrangement of steam-tubing for.	Robert, Cornelius.	Philadelphia, Pa.	Mar. 4.
14317	Lamps.	William M. Kimball.	Rochester, N. Y.	Feb. 26.
15636	Lamps.	Peter C. Guion and Paul K. Wambaugh, assignors to Paul K. Wambaugh.	Cincinnati, Ohio.	Aug. 26.
14478	Lamps, argand, for burning rosin oil.	Isaac Van Bunschoten.	New York, N. Y.	Mar. 18.
14248	Lamps, argand, wick-holders for.	Christopher Moeller.	Newark, N. J.	Feb. 12.
14492	Lamps, Carcel, regulating the flow of oil to the wick in.	Abraham Coates.	New York, N. Y.	Mar. 25.
15724	Lamps for burning fluids.	Salmon Bidwell.	Rochester, N. Y.	Sept. 9.
14369	Lamps for burning rosin oil.	Prentice Sargent.	Newburyport, Mass.	Mar. 4.
15686	Lamps, fluid, extingisher for.	W. B. Carpenter.	Brooklyn, N. Y.	Sept. 9.
15198	Lamps, fountain.	N. Linden.	Jersey City, N. J.	June 24.
14994	Lamps, gas burning.	Solomon Andrews.	Perth Amboy, N. J.	June 3.
14727	Lamps, hydrocarbon vapor.	Alonzo M. Mace.	Springfield, Mass.	April 22.
15829	Lamps, hydrocarbon vapor.	Thomas Varney.	San Francisco, Cal.	Sept. 30.
14806	Lamps, lard.	Samuel Davis.	New Holland, Pa.	May 6.
15364	Lamps, lard.	Jeremiah S. Sensusen, assignor to himself and G. H. Merklein.	Chambersburg, Pa.	July 15.
15172	Lamps, locomotive.	Samuel E. Cleveland and H. B. Cleveland.	Buffalo, N. Y.	June 24.
14942	Lamps, locomotive and railroad.	John Stuber, assignor to John Carton.	Utica, N. Y.	May 20.
15345	Lamps, locomotive reflector.	Frederick J. Seymour.	Waterbury, Conn.	July 8.
16180	Lamps, pocket.	H. L. Hervey.	Quincy, Ill.	Dec. 9.
15547	Lamps, vapor burning.	Samuel Whitmarsh, assignor to William J. Demorest.	Northampton, Mass.	Aug. 12.
14201	Lanterns.	Francis Morandi.	Boston, Mass.	Feb. 5.
15782	Lanterns.	Sinclair Shannon.	Buffalo, N. Y.	Sept. 23.
14087	Lanterns, glasses of, removable flanch bars for securing the.	Hezekiah Crot.	Baltimore, Md.	Jan. 15.
14741	Lanterns, lamps to, method of fastening.	Emile Sirret and Wm. H. Scott.	Buffalo, N. Y.	April 22.
14698	Lanterns, submarine.	Charles M. Gould and Charles B. Lamb.	Worcester, Mass.	April 8.
14929	Marches, friction, machine for manufacturing. (See Class XXII.)	Levi S. Enos.	Olean, N. Y.	Feb. 12.
14825	Oil cans.	Jesse Olmert.	Mount Morris, Ill.	May 6.
15753	Ovens.	H. Ball.	New York, N. Y.	Sept. 23.
16143	Ovens.	John P. Hayes.	Philadelphia, Pa.	Dec. 2.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14422	Ovens, bake.....	John P. Hayes.....	Philadelphia, Pa.....	1856. July 29.
14895	Ovens of cooking ranges..... Peat, digging, machine for. (See Class IX, letter P.)	Jacob S. Williams.....	St. Louis, Mo.....	May 13.
14200	Pokers, fire.....	Rev. George R. Moore.....	Mount Joy, Pa.....	Feb. 5.
14591	Ranges, cooking.....	John Plant and Charles G. Ball.....	Washington, D. C.....	April 8.
15093	Registers and ventilators..... Safes for ships and other vessels. (See Class VII, word "Ships.")	Edward A. Tuttle.....	Williamsburg, N. Y.....	June 16.
14754	Shovel and tongs, combined.....	Samuel Huffman, assignor to Samuel Huffman and J. D. Browne.	Richmond, Va.....	April 22.
14505	Sifters, ash.....	Charles Jones.....	Brooklyn, N. Y.....	Mar. 25.
14609	Sifting coal and other articles, machines for.....	Samuel Harris.....	Springfield, Mass.....	April 8.
14567	Spark-arresters.....	Stimmel Lutz.....	Philadelphia, Pa.....	April 1.
14398	Spark-conductors for locomotive trains.....	Peter C. Guion.....	Philadelphia, Pa.....	Mar. 11.
14318	Steam, domestic, generators.....	James T. King.....	Cincinnati, Ohio.....	Mar. 11.
14312	Steam-heating apparatus, air, cock for.....	Stephen J. Gold.....	New York, N. Y.....	Feb. 26.
15495	Stove, cooking, combined, steam and hot air.....	John Shopland.....	New Haven, Conn.....	Feb. 26.
14461	Stoves.....	James B. Maybury.....	Honesdale, Pa.....	Aug. 5.
15984	Stoves and furnaces.....	S. T. Savage.....	Jeffersonville, Ind.....	Mar. 18.
16268	Stoves and furnaces.....	Theodore Cook.....	Albany, N. Y.....	Oct. 28.
14362	Stoves and furnaces for railroad cars and other purposes.....	Dennis G. Littlefield.....	Springfield, Mass.....	Dec. 23.
14467	Stoves and furnaces, sectional, fire-pots for.....	Merritt Peckham.....	Albany, N. Y.....	Mar. 4.
14648	Stoves, coal.....	William W. Binney.....	Utica, N. Y.....	Mar. 18.
14278	Stoves, cooking.....	Abner Burdham.....	Seneca Falls, N. Y.....	April 15.
15023	Stoves, cooking.....	William B. Treadwell.....	Albany, N. Y.....	Feb. 19.
15318	Stoves, cooking.....	Henry S. George, assignor to Henry S. George and George Gratton.	Albany, N. Y.....	June 3.
15952	Stoves, cooking.....	Samuel Pierce.....	Syracuse, N. Y.....	July 8.
15971	Stoves, cooking.....	J. W. H. Doubler.....	Troy, N. Y.....	Oct. 21.
			Lena, Ill.....	Oct. 28.

14720	Stoves, cooking, arrangement of dampers of.....	William E. Hayes.....	Geneva, N. Y.....	April 22.
14356	Stoves, furnaces, &c., supplementary grating for.....	B. F. Foering.....	Philadelphia, Pa.....	Mar. 4.
14588	Stoves, gas.....	John Starrett and N. J. Wier.....	Lowell, Mass.....	May 13.
14064	Stoves, gas-cooking.....	H. B. Musgrave.....	Cincinnati, Ohio.....	Jan. 8.
14940	Stoves, ventilating regulators and damper for.....	John Magee, assignor to John Magee and William J. Towne.	Lawrence, Mass.....	May 20.
	Ventilating railroad cars. (See Class X, let- ter C.)			
	Ventilating ships, etc., method of. (See Class VII, letter S.)			

CLASS VI.—STEAM AND GAS ENGINES, including boilers and furnaces therefor, and parts thereof.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15742	Boiler furnace, locomotive and steam.....	William P. Parrott.....	Boston, Mass.....	1856. Sept. 16.
14230	Boilers, incrustations of, devices for remov- ing.....	William E. Everett and M. Minthorne Thompson.	New York, N. Y.....	Feb. 12.
14408	Boilers, steam.....	Leonard Phleger.....	Tamaqua, Penn.....	Mar. 11.
14523	Boilers, steam.....	O. M. Stillman and Stephen Wilcox, jr.....	Westerly, R. I.....	Mar. 25.
14555	Boilers, steam.....	P. P. Dimpfel.....	Philadelphia, Penn.....	April 1.
14721	Boilers, steam.....	C. B. Hoard.....	Watertown, N. Y.....	April 22.
15803	Boilers, steam.....	David H. Fowler.....	New Orleans, La.....	Sept. 30.
16262	Boilers, steam.....	John Armstrong.....	New Orleans, La.....	Dec. 23.
14033	Boiler, steam, alarms.....	Thomas Stubblefield.....	Columbus, Ga.....	Jan. 1.
16092	Boilers, steam, and kettles, combined.....	A. Lapham, assignor to himself and S. Wilkes.	Brooklyn, N. Y.....	Nov. 13.
15870	Boilers, steam, arrangement of means for re- gulating the draught in.....	Pliny E. Chase.....	Philadelphia, Penn.....	Oct. 14.
15579	Boiler, steam cylinder within the, arrange- ment of.....	John S. Shapter.....	New York.....	Aug. 19.
14449	Boilers, steam, feed and blow-off, apparatus for.....	Jacob Frick.....	Philadelphia, Penn.....	Mar. 18.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14191	Boilers, steam, feed-water apparatus to.....	Thomas Firth.....	Cincinnati, Ohio.....	1856. Feb. 5.
16206	Boilers, steam, feed-water pumps for.....	Erastus W. Ellsworth.....	East Windsor Hill, Conn.....	Dec. 9.
14959	Boilers, steam, floats for.....	F. A. Hoyt.....	Boston, Mass.....	May 27.
16173	Boilers, steam, floats for.....	William S. Blake.....	Boston, Mass.....	Dec. 9.
15424	Boiler, steam, furnaces.....	E. T. Ingalls.....	Haverhill, Mass.....	July 29.
15825	Boiler, steam, grates.....	A. M. Searles.....	Cincinnati, Ohio.....	Sept. 30.
14835	Boilers, steam, heating feed-water apparatus for.....	Thomas Sloan.....	St. Louis, Mo.....	May 6.
15494	Boilers, steam, heating feed-water apparatus for.....	John R. Sees.....	New York, N. Y.....	Aug. 5.
15324	Boilers, steam, means for controlling feed-water apparatus of.....	Benjamin F. Bee.....	Wareham, Mass.....	July 15.
15617	Boilers, steam, water-gauges for.....	Lucius Paige.....	Cavendish, Vt.....	Aug. 25.
16054	Boilers, steam, water-gauges for.....	John C. Harris.....	Savannah, Ga.....	Nov. 11.
16182	Boilers, steam, water-gauges for.....	F. A. Hoyt.....	Boston, Mass.....	Dec. 9.
16130	Condensers and heaters, tubular construction of.....	Uel West and Abner Mills.....	New York, N. Y.....	Nov. 25.
14244	Condensers, steam.....	James T. King.....	New York, N. Y.....	Feb. 12.
14954	Engine governor for side-wheel ocean steamers.....	William B. Godfrey.....	Auburn, Iowa.....	May 27.
15056	Engine, hydro-steam.....	William Baxter.....	Newark, N. J.....	June 10.
14967	Engines, &c., steam, instantaneous governors for.....	Wm. W. H. Mead.....	Chestertown, N. Y.....	May 27.
14239	Engines, condensing steam, which are used for pumping.....	Birdsall Holly.....	Seneca Falls, N. Y.....	Feb. 12.
16202	Engines, hydraulic and steam, cylinder and piston of.....	John Underwood.....	Lowell, Mass.....	Dec. 9.
15122	Engines, marine and other, differential governor for.....	Charles N. Clow.....	Port Byron, N. Y.....	June 17.
14124	Engines, oscillating.....	A. Wightman and W. Warden.....	Alleghany, Pa.....	Jan. 15.
15685	Engines, steam.....	William A. Clark.....	St. Louis, Mo.....	Sept. 9.
15181	Engines, steam, adjustable cut-off for.....	Henry J. and Thomas Hawkins.....	Mobile, Ala.....	June 24.

15550	Engines, steam, adjustable cut-off for.....	Andrew Hartup and John Morrow, assignors to J. P. Haigh and A. Hartup and J. Morrow.....	Pittsburg, Pa.....	Sept. 2.
16132	Engines, steam, adjustable cut-offs for.....	William Wright.....	Hartford, Conn.....	Nov. 25.
15604	Engines, steam, condensers for.....	John T. Deuniston.....	Lyons, N. Y.....	Aug. 26.
15663	Engines, steam, condensers for.....	David Matthew.....	Philadelphia, Pa.....	Sept. 2.
14486	Engines, steam, cut-off gear for.....	Orville Leonard, assignor to O. Leonard and George H. Reynolds.....	Somerville, Mass.....	Mar. 18.
14699	Engines, steam, cut-off for.....	John S. Shaper.....	New York, N. Y.....	April 15.
15095	Engines, steam, governor for.....	Marshall Wheeler.....	Honesdale, Pa.....	June 10.
14545	Engines, steam, means for regulating variable cut-off for.....	Henry S. Hopkins, assignor to Hopkins, Hendrick, & Peckham.....	Providence, R. I.....	Mar. 25.
14204	Engines, steam, oscillating.....	Juan Patison.....	Brooklyn, N. Y.....	Feb. 5.
14778	Engines, steam, rotary.....	John B. Root.....	Brooklyn, N. Y.....	April 29.
15281	Engines, steam, rotary.....	J. M. Colman and T. Turton.....	Milwaukee, Wis.....	July 8.
15667	Engines, steam, rotary.....	John Robinson.....	New Brighton, Pa.....	Sept. 2.
15641	Engines, steam, rotary.....	P. D. M. Carmichael.....	Leroy, N. Y.....	Sept. 2.
14923	Engines, steam, surface condensers for.....	James M. Miller.....	New York, N. Y.....	May 20.
14932	Engines, steam, surface condensers for.....	Nathan Thompson, jr.....	Williamsburg, N. Y.....	May 20.
15745	Engines, steam, variable cut-off for.....	Charles H. Reynolds.....	Lewiston, Me.....	Sept. 16.
15371	Engines, steam, vibratory.....	William Darker, jr.....	West Philadelphia, Pa.....	July 22.
14082	Engines, steam, variable dial for dividing.....	William H. Brown.....	Worcester, Mass.....	Jan. 15.
14891	Fire and escape ladder.....	John Van Amringe.....	Cincinnati, Ohio.....	May 13.
15539	Hammers, steam, valve gear for.....	Charles W. and John P. Willard.....	Dorchester, Mass.....	Aug. 12.
16071	Locomotive engines, heating feed-water of, arrangement of means for.....	John R. Sees.....	New York, N. Y.....	Nov. 11.
15820	Locomotive for roads, &c.....	John Robinson.....	New Brighton, Pa.....	Sept. 30.
16220	Locomotive, method of charging the receiver of a, with compressed air from fixed stations.....	Samuel Carson, assignor to American Railway Manufacturing Company.....	New York, N. Y.; subject of Great Britain.....	Dec. 9.
14187	Locomotives, heating feed-water apparatus for.....	Peter S. Ebbert.....	Chicago, Ill.....	Feb. 5.
15235	Locomotive smoke-stacks, base piece of.....	Peter S. Ebbert.....	Chicago, Ill.....	July 1.
14081	Propellers, stern, means for supporting the propeller shaft and receiving the rudder of.....	John Beattie.....	Liverpool, England.....	Jan. 15; England, Sept. 5, 1856.
15946	Steam gauges.....	W. K. Miller.....	Canton, Ohio.....	July 1.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15053	Steam pressure gauges	Samuel W. Brown.....	Lowell, Mass.....	1856. June 10.
15259	Steam pressure indicators and regulators	William M. Storm.....	New York, N. Y.....	July 1.
15259	Steam pressure regulators	William S. Gale.....	New York, N. Y.....	July 1.
14500	Steam radiator cocks	Stephen J. Gold.....	New Haven, Conn.....	Mar. 25.
14944	Steam stamps, operating	William Ball.....	Chillicothe, Mass.....	May 27.
15815	Steam-wagon.....	John Percy.....	Albany, N. Y.....	Sept. 30.
14562	Steam-whistles, automatic, on locomotives.....	James Harrison, jr.....	Milwaukee, Wis.....	April 1.
14709	Valve, balanced slide, for steam-engines.....	Alexander Buchanan.....	New York, N. Y.....	April 22.
15208	Valve-checks, cut-off, for steam-engines.....	William Wright.....	Hartford, Conn.....	June 24.
14978	Valve-gear for steam-engines.....	Herman Winter.....	New York, N. Y.....	May 27.
16171	Valve-gear for steam-engines.....	Alfred S. Beebe.....	Fall River, Mass.....	Dec. 9.
14580	Valve-motion for oscillating engines.....	William Stephens.....	Pittsford, Pa.....	April 1.
14620	Valve-governor, for steam-engines.....	H. H. Smith.....	Cincinnati, Ohio.....	April 8.
14516	Valve-motion for oscillating engines.....	Horatio O. Perry.....	Buffalo, N. Y.....	Mar. 25.
15576	Valve-motions for steam-engines.....	Edward S. Renwick.....	New York, N. Y.....	Aug. 19.
16227	Valve-motions for steam-engines.....	John Butler.....	Dunmore, Pa.....	Dec. 16.
14225	Valves and exhaust passages of steam-engines.....	Charles W. Copeland.....	New York, N. Y.....	Feb. 12.
15207	Valves, cut-off, for steam-engines, operating.....	William Wright.....	Hartford, Conn.....	June 24.
14649	Valves, cut-off, of steam-engines, arrangement of means for operating.....	Henry E. Canfield.....	New York, N. Y.....	April 15.
15406	Valves, steam-slide, relieving from pressure.....	Henry R. Worthington.....	New York, N. Y.....	July 22.
14749	Valves of direct-acting engines by the exhaust steam, completing the throw of the.....	Henry R. Worthington.....	Brooklyn, N. Y.....	April 22.
14338	Valves of steam-engines, operating the, arrangement of means for.....	Jacob Scheitlin, assignor to J. Scheitlin and O. A. Dailey.....	Washington, D. C.....	Feb. 26.
14419	Valves of steam-engines, slide, means for re-arrangement of means for.....	Robert L. Stevens.....	Hoboken, N. J.....	Mar. 11.
	Valves of steam-hydrants, arrangement of means for operating the. (See Class XI, Letter H.)			

15025	Valves, operating, of steam-engines.....	Otis Tufts.....	Boston, Mass.....	June 3.
14605	Valves, piston, for steam-boiler regulators.....	William S. Gale.....	New York, N. Y.....	April 8.
15834	Valves, regulating, for steam-engines.....	Henry F. Shaw, assignor to H. F. and G. F. Shaw.....	Woburn, Mass.....	Sept. 30.
15120	Valves, safety.....	R. Cornelius.....	Philadelphia, Pa.....	June 17.
14963	Valves, safety, for steam-engines.....	A. B. Latta.....	Cincinnati, Ohio.....	May 27.
14611	Valves, slide, and means for operating them, arrangement of.....	Wm. M. Henderson.....	Baltimore, Md.....	April 8.
14991	Valves, slide, for steam-engines, operating.....	John F. Allen, assignor to N. L. Cole.....	New York, N. Y.....	May 27.
14010	Valves, slide, method of operating and lubricating.....	James Cochrane.....	New York, N. Y.....	Jan. 1.
14991	Valves, slide, relieving from the pressure of steam.....	William Burdon.....	Brooklyn, N. Y.....	June 3.
14125	Valves, steam, as cut-offs, means of regulating and working.....	Chas. H. Brown and Chas. Burleigh, assignors to "The Putnam Machine Co.".....	Fitchburg, Mass.....	Jan. 15.
14145	Valves, steam, in blower-engines, means for operating the.....	James P. Ross.....	Lewistown, Pa.....	Jan. 22.
14108	Valves, stop, steam.....	James McNab and Adam Carr.....	New York, N. Y.....	Jan. 15.
14906	Valves, supplemental, arrangement of, for high pressure steam-engines.....	Richard Colburn and L. W. Hanson.....	Norwich, Conn.....	May 20.
14150	Valve, throttle, of steam-engines, means for operating the.....	Albert Bisbee.....	Chelsea, Mass.....	Jan. 29.

CLASS VII.—NAVIGATION AND MARITIME IMPLEMENTS, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving-dresses, life-preservers, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14903	Boat-framer	James Beetle.....	New Bedford, Mass.....	1856. May 20.
14565	Boat, life.....	George W. La Bar.....	Jersey City, N. J.....	April 1.
15794	Boat oars	Rufus Rode, assignor to.....	Manchester Township.....	Sept. 23.
14489	Boats, detaching, from their tackle.....	John Derrig.....	York, Pa.....	Mar. 25.
15157	Boats, ice, arrangement of means attached to.....	Chas. H. Key, admin'r of S. F. Blunt, dec'd.....	Baltimore, Md.....	June 24.
16472	Boats, ice-breaking	Daniel Large.....	Philadelphia, Pa.....	Aug. 5.
		Henry and William Brown.....	Philadelphia, Pa.....	

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14843	Boats, life, propellers for.	George W. La Baw, assignor to G. W. La Baw, Jos. Colton, and Theo. Howell.	Jersey City, N. J.	1856. May 6.
15487	Boats, line-ferry, or flying-bridges, means for guiding.	William A. Jordan	Thibodeaux, La.	Aug. 5.
15473	Boats, means for attaching and detaching, to and from their tackle.	John M. Brooke	U. S. N.	Aug. 5.
15954	Boats, steam, capstans for.	John Schaffer	Manchester, Pa.	Oct. 21.
15845	Buoys	William M. Ellis	Washington, D. C.	Oct. 7.
15200	Buoy, tidal alarm	John Taggart	Roxbury, Mass.	June 24.
14758	Chain-cable hooks.	Enoch Applegate	Wilmington, Del.	April 29.
15323	Fog-bell, electro-magnetic.	Arthur Barbarin and R. F. Simms.	New Orleans, La.	July 15; England, August 17, 1855.
15605	Fog-bell, self-adjusting.	Henry L. De Zeng.	Geneva, N. Y.	Aug. 26.
15586	Grapple for raising sunken bodies	Greenleaf A. Wilbur	Skowhegan, Me.	Aug. 19.
14497	Paddle-wheels	Calvin Fletcher	Cincinnati, Ohio	Mar. 25.
15564	Paddle-wheels	Abraham Houseworth.	New York, N. Y.	Aug. 19.
15967	Paddle-wheels, buckets of, arrangement of.	Matthew A. Crooker.	New York, N. Y.	Oct. 28.
14920	Paddle-wheels, feathering	Harvey Lull.	Hoboken, N. J.	May 20.
15149	Paddle-wheels, feathering	Joseph G. Shands	St. Louis, Mo.	June 17.
16091	Propeller-shafts	A. Jouan	San Francisco, Cal.	Nov. 18.
14598	Propeller-shafts in keels, inclosing.	Aaron Arnold.	Troy, N. Y.	April 8.
14973	Propellers, hand	John Gerard Ross.	New York, N. Y.	May 27.
14786	Propelling boats.	S. W. Wood	Washington, D. C.	April 29.
16169	Sail-banks	H. M. Bonney.	New Bedford, Mass.	Dec. 9.
14094	Sails, reefing.	H. D. P. Cunningham, R. N.	Bray, Hants, England.	Jan. 15; England, November 30, 1850.
15754	Sails, top, reefing.	Isaac Boss	Brooklyn, N. Y.	Sept. 23.
14723	Sail, top, yards, suspending extra.	George Hubbard	Stonington, Conn.	April 22.
15837	Ships and boats' tackle, ringbolt for.	H. Bigelow and M. Camp.	New Haven Conn.	Oct. 7.

15624	Ships, and other vessels bilge and leakage water indicator for.	Reuben Shaler	Madison, Conn.	Aug. 96.
14113	Ships and other vessels, cargo-ports or.	Charles Perley.	New York, N. Y.	Jan. 15.
14048	Ships and other vessels, constructing the bottoms of.	Samuel W. Brown.	Lowell, Mass.	Jan. 8.
14365	Ships and other vessels, means for increasing the buoyancy of	Alex. Le Mat	New Orleans, La.	Mar. 4.
15090	Ships and other vessels, safes for.	William Montgomery Storm	New York, N. Y.	June 10.
15886	Ships' blocks, anti-friction bushing for	James Kelly.	Sag Harbor, N. J.	Oct. 14.
15817	Ships' blocks, sheave-plate of, means for lubricating the.	John M. Riley	Newark, N. J.	Sept. 30.
14377	Ships' cabins, chairs for. (See Class XVII, letter C.)	D. & G. Talcott.	Oswego, N. Y.	Mar. 4.
14983	Ships' capstans	Samuel Gaty	St. Louis, Mo.	May 27.
14986	Ships' capstans	Daniel and George Talcott	Oswego, N. Y.	May 27.
15933	Ships' capstans	Charles Perley.	New York, N. Y.	Oct. 21.
15123	Ships' capstans and windlasses.	James Emerson	Worcester, Mass.	June 17.
16059	Ships' compasses, self-registering. (See Class VIII, letter C.)	Rudolph Knecht.	New York, N. Y.	Nov. 11.
15395	Ships, &c., method of ventilating.	J. Stever	Bristol, Conn.	July 22.
15704	Ships' hanks, machines for bending. (See Class XIV, letter H.)	Christopher N. Nixon	Ramsgate, England.	Sept. 9; England, May 12, 1854.
15732	Ships' sails, reefing, upon extra yards.	Joseph S. Foster.	Salem, Mass.	Sept. 16.
16045	Ships, steering apparatus for.	Thomas Carr.	Liverpool, England.	Nov. 11.
16165	Ships, steering apparatus for.	David W. Smith.	Boston, Mass.	Dec. 2.
16238	Ships' windlass.	Peter H. Jackson.	New York, N. Y.	Dec. 16.
16000	Ships' windlass, the pawl cases of a, machinery for operating.	Christopher Amazeen.	New Castle, N. H.	Nov. 4.
15085	Signale, fog, mode of sounding whistles for.	Rufus Porter.	Washington, D. C.	June 10.
15610	Steering apparatus.	John W. Drummond	Norwalk, Conn.	Aug. 12.
14104	Steering wheel stopper.	Wm. R. Lavender and Atkins Smith	Provincetown, Mass.	Jan. 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15898	Sub-marine exploring armors.....	L. D. Phillips.....	Chicago, Ill.....	1856, Oct. 14.
15125	Tackle-blocks, strapping.....	J. B. Fayette and D. Wheeler.....	Oswego, N. Y.....	June 17.
16084	Vessels, attaching centre-boards to.....	George S. Burrows.....	Mystic river, Conn.....	Nov. 18.
15120	Vessels, fore-and-aft, rig of.....	George W. Geran.....	Brooklyn, N. Y.....	July 29.
16990	Vessels, lee-boards for.....	A. Jouan.....	San Francisco, Cal.....	Nov. 18.
15298	Vessels, life and property saving, arrangement of means for balancing and propelling.....	James Minifie.....	Baltimore, Md.....	July 8.
14487	Vessels, propelling.....	Lambert Alexandro.....	New York, N. Y.....	Mar. 25.
14226	Vessels, signals for.....	W. P. Craig and W. R. Rightor.....	Newport, Ky.....	Feb. 12.
15319	Vessels, sounding guards for.....	John Guest, U. S. N.....	Washington, D. C.....	July 8.
15850	Vessels, steam, arrangement of elastic-plate paddles for.....	Auguste Jouan.....	San Francisco, Cal.....	Oct. 7.
14035	Vessels, velocimeters for.....	Ira F. Thompson.....	New York, N. Y.....	Jan. 1.
14328	Vessels, velocimeters for.....	Ira F. Thompson.....	Westerly, R. I.....	Feb. 26.

CLASS VIII.—MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS, including clocks, chronometers, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15565	Adding numbers, machines for.....	Isaac G. Hubbs.....	New York, N. Y.....	1856, Aug. 19.
15359	Centrolineads.....	W. Jose Von Kammerhueber.....	Washington, D. C.....	July 15.
14645	Clocks, calendar.....	Edwin Allen.....	Glastonbury, Conn.....	April 15.
15637	Clocks, calendar.....	Edwin Allen.....	Glastonbury, Conn.....	Sept. 2.
14251	Compasses, ships', self-registering.....	John Prime.....	Washington, D. C.....	Feb. 12.
15017	Compasses, ships', self-registering.....	R. H. Peverly.....	Chelsea, Mass.....	June 3.
15117	Counting coin, machines for.....	M. F. Bouzanno.....	New Orleans, La.....	June 17.

16323	Counting machines.....	James A. Bazin, assignor to A. B. Ely.....	Canton, Mass.....	Dec. 23.
15608	Dial, variable, for dividing engines. (See Class VI, letter E)	George and John W. Gibbs.....	Canton, Ohio.....	Aug. 26.
14032	Dynamometers.....	Charles Robinson and Charles T. Chester.....	New York, N. Y.....	Jan. 1.
15596	Electrical, automatic, circuit breakers.....	Edward C. Shepard.....	New York, N. Y.....	Aug. 19.
16175	Electro-magnetic fog bell. (See Class VII, letter F)	James W. Campbell.....	Brooklyn, N. Y.....	Dec. 9.
14682	Electro-magnetic grain scale. (See Class XI, letter S)	Maurice Vergnes.....	New York, N. Y.....	April 15.
15491	Electro-magnetic machines.....	David Munson.....	Indianapolis, Ind.....	Aug. 5.
14598	Engines, electro-magnetic.....	Calvin Carpenter, jr.....	Providence, R. I.....	April 8.
14857	Lighting-rods.....	Elisha Dexter.....	Holmes's Hole, Mass.....	May 13.
15602	Magneto-electric machines.....	Enoch A. Crandall.....	Friendship, N. Y.....	Aug. 26.
15040	Measure, self-counting.....	Horace L. Hervey.....	Quincy, Ill.....	June 3.
15509	Measuring distances, parallax instruments for.....	Smith Beers.....	Nagatuck, Conn.....	Aug. 12.
16003	Odometers.....	Albert Carter.....	Forestville, Conn.....	Nov. 4.
15140	Odometers and counting measures.....	Joseph L. Martin.....	Baltimore, Md.....	June 17.
15356	Pendulum for time-keepers, conical, mode of regulating.....	John C. Briggs.....	Concord, N. Y.....	July 15.
16148	Pentagraphs.....	Henry Neumeier.....	Macungie, Pa.....	Dec. 2.
15183	Plotting instruments.....	Charles R. Iliff.....	Falmouth, Ky.....	June 24.
15162	Quadrants, reflecting.....	Thomas Hedcock.....	Surrey county, England.....	June 17; England March 31, 1856.
14396	Rulers, parallel.....	R. Eichemeyer.....	Yonkers, N. Y.....	Mar. 11.
16002	Sextant, equatorial, instrument called an.....	William A. Burt.....	Mount Vernon, Mich.....	Nov. 4.
14664	Telegraph, electric.....	Charles Kirchhof.....	New York, N. Y.....	April 15.
14157	Telegraphic-repeaters.....	Moses G. Farmer.....	Salem, Mass.....	Jan. 29.
14917	Telegraphs.....	David E. Hughes.....	Louisville, Ky.....	May 20.
15373	Telegraphs, electric, self-acting.....	Moses G. Farmer.....	Salem, Mass.....	July 22.
14731	Telegraphs, printing, electro-magnetic.....	A. J. Partridge.....	Southbridge, Mass.....	April 22.
14759	Telegraphs, printing, electro-magnetic.....	Henry A. Baker.....	Union, N. Y.....	April 29.
14711	Telegraphs, receiving magnets for.....	Andrew Coleman.....	Perth Amboy, N. J.....	April 22.
	Velocimeters for vessels. (See Class VII, word Vessels.)			

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Velocimeters for vessels. (See Class VII, word <i>vessels</i> .)			1856.
15251	Watches, independent seconds, movement for.	George P. Reed	Waltham, Mass.	July 1.

ANNUAL REPORT OF THE

CLASS IX.—CIVIL ENGINEERING AND ARCHITECTURE, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15257	Blasting-powder	William Silver, jr.	Wapwallopen, Pa.	1856. July 1.
16053	Blinds, slat-spring holder for	William L. Gallaudet	New York, N. Y.	Nov. 11.
15587	Boring artesian wells, apparatus for	Clarendon Williams	Franklin, Mo.	Aug. 19.
14314	Bridge, arched trussed	Horace L. Hervey	Quincy, Ill.	Feb. 26.
15373	Bridge, canal	F. G. Anderson	Chillicothe, Ohio.	Oct. 14.
14925	Bridge, draw, floating	Napoleon B. Proctor	Burlington, Vt.	May 20.
14554	Bridges	George W. O. Huygens, assignor to himself, Charles Bender, and D. F. Tiedeman.	St. Louis, Mo.	April 1.
15923	Bridges	I. Rogers	Cincinnati, Ohio.	Sept. 30.
14313	Bridges, girders for	P. C. Guion	Cincinnati, Ohio.	Feb. 26.
15048	Bridges, lattice	Lucius E. Truesdell	Warren, Mass.	June 3.
14208	Buildings, cast iron, mode of constructing	Harriet V. Terry, administratrix of Wm. D. Terry deceased.	Boston, Mass.	Feb. 5.
15002	Buildings, device in walls of, for preventing damage to goods by water in case of fire.	Thomas Estlack	Philadelphia, Pa.	June 3

14301	Cellars, coal in, machine for depositing	William Bell	Boston, Mass.	Feb. 26.
14323	Cellars, walls and floors of, mode of constructing	A. R. Moen	New York, N. Y.	Feb. 26.
14273	Cisterns, construction of	William D. Bartlett	Amesbury, Mass.	Feb. 19.
14902	Closets, water	E. Bookhout and C. H. Hewlett	New York, N. Y.	May 20.
16133	Coal, hoisting, apparatus for	J. Claude White and Robert Hay	Tuckerville, Pa.	Nov. 25.
14107	Coal-hole covers, safety	F. H. Moore	Boston, Mass.	Jan. 15.
14359	Coal-holes, guard for	George C. Jenks	Boston, Mass.	Mar. 4.
15300	Coal, raising and dumping, apparatus for	Ephraim Morris	Bergen, N. J.	July 8.
15434	Coal scuttles	James Myers, jr.	New York, N. Y.	July 29.
15317	Dams, mode of constructing	Waldo P. Craig, assignor to W. P. Craig and W. R. Rightor.	Newport, Ky.	July 8.
14117	Ditching machines	T. J. Stratton	Waterloo, N. Y.	Jan. 15.
14047	Doors, double, mode of hanging	Charles E. Brown	New York, N. Y.	Jan. 8.
15465	Doors, weather strip for	James H. Banta	Piermont, N. Y.	Aug. 5.
16077	Doors, weather strips for	Reuben Wight	Westfield, N. Y.	Nov. 11.
16046	Draining machines	John Cole and A. Lettelle O. Wall	De Witt, Ill.	Nov. 11.
14925	Eave troughs, machine for making	O. E. Mallory	Castile, N. Y.	Jan. 1.
14762	Excavating and moving earth, machine for	Asa W. Cady	Sullivan, N. Y.	April 29.
14068	Excavating machines	J. J. Savage	New York, N. Y.	Jan. 8.
14933	Excavating scoops	John Taggart	Roxbury, Mass.	May 20.
15102	Excavator, rotary	Daniel Judd	Hinsdale, N. Y.	June 10.
14966	Excavators	Charles A. Mann, jr.	Pike, N. Y.	May 27.
15813	Excavators	S. G. L. Morrow	Linn, Mo.	Sept. 30.
15875	Excavators	James Bourbin	San Francisco, Cal.	Oct. 14.
16081	Excavators	John F. Willey, assignor to himself, Benjamin F. Merrill, and Thomas Phillips.	Fredonia, N. Y.	Nov. 11.
15561	Fence, farm, for rolling ground	Ephraim D. Foss	Mainville, Ohio	Aug. 19.
14518	Fence, field	J. B. Reymann	Salem, Ind.	Mar. 25.
14581	Fence, field	S. G. Tufts	Mainville, Ohio	April 1.
15188	Fence, field	Benjamin F. Lyon	Pleasantville, Pa.	June 24.
16286	Fence, field, portable	James G. Hunt	Reading, Ohio	Dec. 16.
16285	Fence, field, portable	W. B. Burnett	Phelps, N. Y.	Dec. 23.
16181	Fence for stock-pen, portable prairie	Thomas Hoge	Waynesburg, Pa.	Dec. 9.
15812	Fence, portable	G. R. McIlroy	Oakdale, Ind.	Sept. 30.
14152	Fences, field	Thomas J. Carleton and Stephen Post	York, Ohio	Jan. 29.
14519	Fences, field, portable	James Rowe	Tampa Bay, Florida	Mar. 25.
16172	Fences, portable, yielding-joint for	Robert J. Brown	Perry, Pa.	Dec. 9.
16187	Gate, approach-opening	William G. Phillips	Newport, Del.	Dec. 9.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14851	Gate, farm	Charles N. Cole	Pleasant Valley, N. Y.	1856.
15213	Gate, farm	George Taylor, assignor to H. Ogborn and George W. Stigleman.	Richmond, Ind.	May 13. June 24.
16243	Gate, railroad for cattle-guard	Joseph T. McIntyre	New Castle, Del.	Dec. 16.
14826	Gates, doors, &c., method of hanging	Samuel Oberholzer	Terre Hill, Pa.	May 6.
14689	Gates, farm, method of hanging and elevating or depressing	J. Francis Downing	Eric, Pa.	April 15.
14131	Gates, farm, method of opening and closing	J. A. Ayres	Hartford, Conn.	Jan. 22.
15881	Gates, farm, method of opening and closing	Dennis E. Fenn	Tallmadge, Ohio	Oct. 14.
15631	Gates, farm, method of operating	Caleb Winegar	Union Springs, N. Y.	Aug. 26.
15318	Gates, farm, method of raising, lowering, and operating	C. Hunter and N. Isham	Norwalk, Ohio	Aug. 12.
14351	Gates, farm, self-acting	Elon Dunbar	Philadelphia, Pa.	Mar. 4.
15911	Gates, fastening for	Smith Young	Milton, N. Y.	Oct. 14.
14387	Gates, lock, valves for	William Butler	Little Falls, N. Y.	Mar. 11.
14456	Grating, illuminating	Joshua K. Ingalls	Williamsburg, N. Y.	Mar. 18.
14355	Houses, portable	Daniel Fitzgerald	New York, N. Y.	Mar. 4.
14952	Houses, portable, mode of constructing	Daniel Fitzgerald	New York, N. Y.	May 27.
15201	Houses, ware, safety hatches for	Wm. H. Thompson and Eustis P. Morgan.	Biddleford, Me.	June 24.
14854	Lathing surface, continuous sheet-metal	John B. Cornell	New York, N. Y.	May 13.
14092	Lock-gate valves	De Witt C. Cumings	Fulton, N. Y.	Jan. 15.
	Mouldings, curved, method of cutting. (See Class XIV, letter M.)			
15776	Pavement, cast iron	George M. Ramsay	New York, N. Y.	Sept. 23.
14384	Pavement, cast-iron, mode of constructing	Pelotiah M. Hutton	Troy, N. Y.	Mar. 4.
15479	Pavement, metal	Solomon B. Ellithorp	New York, N. Y.	Aug. 5.
14736	Pavements, cast-iron	Asa P. Robinson	New York, N. Y.	April 22.
14054	Paving, street, machines	Thomas Davidson, jr.	Kensington, Pa.	Jan. 8.
14716	Peat, digging, machine for	Abraham Fitts	Worcester, Mass.	April 22.
14502	Pile driver	J. W. Hoard	Providence, R. I.	Mar. 25.
15099	Platform supporters	Charles E. Flagg	Shelburne, Mass.	June 10.

14580	Post driver	Junius M. Sampson	Wayneville, Ill.	Mar. 25.
14868	Railroad bars, lock-joint for	James R. Hilliard	Paterson, N. J.	May 13.
	Railroad bars, repairing. (See Class II, let- ter B.)			
	Railroad bars, repairing. (See Class II, let- ter B.)			
14370	Railroad platform scales. (See Class XII, letter S.)	William J. Holman	Indianapolis, Ind.	May 13.
14886	Railroads, compound rail for	Samuel Richards	Philadelphia, Pa.	May 13.
	Railroads, snow plough for			
	Railway bars, rolling. (See Class II, under "Rolling.")			
14267	Roofing, cements. (See Class IV, Letter C.)	C. C. Hoff, assignor to E. P. Russell	Albany, N. Y.	Feb. 12.
15988	Roofing, mastic, construction of	William H. Trisler and John Stewart	Fairview, Pa.	Oct. 23.
	Roofs, sheet-metal, coverings for, mode of securing			
15476	Sash supporter	Charles H. Dana	West Lebanon, N. H.	Aug. 5.
15557	Sash supporter	Charles S. Bruff	Baltimore, Md.	Aug. 19.
15390	Scaffold for shingling roofs	J. W. Rodeter	Abingdon, Va.	July 22.
14764	Scaffolding	John M. Dearborn	Boston, Mass.	April 29.
14156	Scaffolds	Charles Foster	Philadelphia, Pa.	Jan. 29.
14809	Scrapper, road	John Gustine and J. M. Rankin	Lewistown, Ill.	May 6.
14817	Scrapers, dumping	Mathew S. Kahle	Lexington, Va.	May 6.
14050	Scuttle, coal, covers	Ira Chase, jr.	Boston, Mass.	Jan. 8.
14185	Shingles, cast-iron, lugs for	John Cook	Westmoreland, N. Y.	Feb. 5.
14798	Shutters, double panel	Charles S. Bruff	Baltimore, Md.	May 6.
14021	Smoke houses	Moses W. S. Kendall	Cincinnati, Ohio	Jan. 1.
15647	Street sprinkler	John F. Driggs	New York, N. Y.	Sept. 2.
14341	Streets, sweeping, machine for	Timothy Alden	Boston, Mass.	Mar. 4.
14512	Streets, sweeping, machine for	Joseph Miller	Georgetown, Mass.	Mar. 25.
15283	Streets, sweeping, machine for	D. H. Rickards	Brooklyn, N. Y.	July 1.
15710	Streets, sweeping, machine for	Robert A. Smith	Tiffin, Ohio	Sept. 9.
14651	Stump extractor	J. B. Creighton	Fitchburg, Mass.	April 15.
14830	Stumps, extracting, machine for	Solomon W. Ruggles	Clyde, Ohio	May 6.
14937	Stumps, extracting, mode of	Geo. W. Zeigler and Manasseh Grover	Orange, Mass.	May 20.
15537	Stumps, extracting, mode of	W. O. Thompson and L. Harrington	Philadelphia, Pa.	Aug. 12.
15566	Sweeping gutters, machine for	William H. King, assignor to Wm. H. King and Isaac Hyneman.		Aug. 19.
14264	Switch, railroad	James Whitcomb	Detroit, Mich.	Feb. 12.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14180	Tile, drain, machine. (See Class XV, Letter F.)	Charles H. Bush	Fall River, Mass.	Feb. 5.
14755	Trap, bell, atench.	Ira Merrill, assignor to Ira Merrill and Arthur Maxwell.	Shelburne Falls, Mass.	April 22.
14483	Tunnelling rocks, machine for	Charles Wilson	Springfield, Mass.	Mar. 18.
14281	Vault covers	John B. Cornell	New York, N. Y.	Feb. 19.
14080	Vault covers	William D. Titus	Brooklyn, N. Y.	April 15.
16161	Vault covers	Thomas Floyd, assignor to Thos. Floyd and Geo. H. Merklin.	Chambersburg, Pa.	Dec. 2.
15474	Water closets	William S. Carr.	New York, N. Y.	Aug. 5.
15758	Window blinds, the slats of, mode of adjusting	B. E. English	Hartford, Conn.	Sept. 23.
15000	Window frames	John Casey	New York, N. Y.	June 3.
15578	Window sash	Francis E. Sessions	Worcester, Mass.	Aug. 19.
14744	Windows, &c., weather-strip and lock for	Alfred Speer	Passaic, N. J.	April 22.
15447	Window sash, hanging, mode of.	Cromwell P. Weaver	Philadelphia, Pa.	July 29.
15528	Window sashes, spring pulleys for	John Shopland	Honesdale, Pa.	Aug. 12.

CLASS X.—LAND CONVEYANCE, comprising carriages, cars, and other vehicles used on roads, and parts thereof.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14345	Axle-arms, akin for.	John M. Burke	Danville, N. Y.	Mar. 4.
16153	Axle-box	William H. Saunders	Hastings, N. Y.	Dec. 2.
14579	Axle-boxes for carriages	Ezra M. Stratton	New York, N. Y.	April 1.
16099	Axle, car, and other journals, lubricating.	P. E. Prout	Orleans, France	Nov. 18; France, April 15, 1853.

14239	Axle, railroad car.	P. G. Gardiner.	New York, N. Y.	Feb. 12.
16113	Axles, boxes and journals for	David Cumming	Sorrel Horse, Penn.	Nov. 25.
14415	Axles, boxes for	Alfred E. Smith	ronxville, N. Y.	Mar. 11.
14639	Axles, boxes for	Julius Bevin, assignor to himself and Samuel N. Stillman.	nadilla Forks, N. Y.	April 8.
14953	Axles, carriage, securing nuts to	Kingston Goddard	Philadelphia, Penn.	May 27.
14747	Axles, divided, for railroad cars	Richard Vose	New York, N. Y.	April 22.
14096	Axles, mode of attaching thills to	Allen Green	Providence, R. I.	Jan. 15.
15169	Axles, mode of securing shafts to	William Cox	Doylestown, Penn.	June 24.
14468	Axles, railroad car, boxes of	David R. Perkinpine	Philadelphia, Penn.	Mar. 18.
14500	Axles, railroad, journal box for	William B. Gage	Louisville, Ky.	April 1.
14291	Axles, shafts to, mode of applying	Charles S. Pitman	Swampscot, Mass.	Feb. 19.
14417	Axles, thills to, mode of securing	Soverel Matthias	Orange, N. Y.	Mar. 11.
16294	Axletrees, mode of connecting shafts with	Alfred E. Smith	Bronxville, N. Y.	Dec. 23.
15217	Brake for wagons	D. Franklin Breed	Fulton, N. Y.	July 1.
14681	Brake, railroad	Benjamin T. Trimmer	Parma, N. Y.	April 15.
14385	Brake, railroad car	V. Barnes	Washington, D. C.	Mar. 11.
14640	Brake, railroad car	R. M. Evans, assignor to R. M. Evans and Charles S. Gale.	Laconia, N. H.	April 8.
16011	Brake, railroad car	Dennis Harrigan	Winchester, Mass.	Nov. 4.
16004	Brake, railroad car	William G. Creamer	New York, N. Y.	Nov. 4.
16042	Brakes, bumper, for railroad cars	Francis Armstrong	New Orleans, La.	Nov. 11.
15038	Brakes, railroad car	Mahlon S. Frost	Detroit, Mich.	June 3.
14515	Brakes, railroad car, levers of	Lucius Paige	Cavendish, Vt.	Mar. 25.
14766	Buggies, joint-bodied	Edwin J. Green and Moses H. Wheeler	Cedarville, N. Y.	April 29.
15909	Car, railroad, coupling	John C. Ward	Charleston, S. C.	Oct. 14.
15997	Car, railroad, coupling	D. Lynahon and C. J. Wing, assignor to D. Lynahon.	Buffalo, N. Y.	Oct. 28.
14083	Car, railroad, extension	Joseph S. Brown	Lowell, Mass.	Jan. 15.
14841	Car, railroad, seats	George Willard, assignor to himself and N. W. C. Janeson.	Boston, Mass.	May 6.
16160	Car, railroad, seats and couches	Theodore T. Woodruff	Alton, Ill.	Dec. 2.
16159	Car, railroad, seats and couches	Theodore T. Woodruff	Alton, Ill.	Dec. 2.
15233	Carriage, &c., axletrees, method of turning	John Hennon	Brighton, Penn.	July 1.
14443	Carriage-coupling	Thomas Chope	Detroit, Mich.	Mar. 18.
14607	Carriage-coupling	William Greenleaf	Greenfield, Ohio	April 8.
15345	Carriage, pleasure, three-wheeled	Cyrus W. Saladee	Columbus, Ohio	July 15.
15991	Carriages	Reuben W. Benedict	Brant, N. Y.	June 10.
19323	Carriages	Daniel Freeman	Burford, Canada	Oct. 21.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14395	Carriages, apparatus to prevent horses in, from falling.	Robert D. Dwyer	Richmond, Va.	1856. Mar. 11.
14391	Carriage-seat, adjustable.	David N. Flanders	South Royalton, Vt.	Feb. 12.
14931	Carriage shaft-coupling.	James D. Sarven	Columbia, Tenn.	May 20.
15979	Carriages, perch couplings for.	William S. Lord	Pulaski, Tenn.	Oct. 28.
14197	Carriage-springs.	Richard Montgomery	New York, N. Y.	Feb. 5.
15126	Carriage-springs.	John U. Fiester	Winchester, Ohio.	June 17.
15914	Carriage-springs, brace for.	Thomas Dutton, assignor to I. R. Evans	Washington, D. C.	Oct. 14.
15234	Carriage-springs, mode of adjusting.	M. G. Hubbard	Penn Yan, N. Y.	July 1.
15189	Carriages, running gear of.	Richard Murdoch	Baltimore, Md.	June 24.
15297	Carriages, steam, wheel for.	A. B. Latta	Cincinnati, Ohio.	July 8.
15667	Carriages, thorough braces for.	Frederick A. Jewett	Abington, Mass.	Aug. 19.
15071	Carriages, three-wheeled, for children.	John H. Gould	New York, N. Y.	June 10.
16122	Carriages, turning circles for.	George Kenny	Milford, N. H.	Nov. 25.
14400	Carriage tops.	Henry Hayes	Quincy, Ill.	Mar. 11.
14736	Carriage tops, apparatus for raising and lowering.	Alanson Quigley	Sheldrake, N. Y.	April 22.
15725	Carriage tops, mode of adjusting.	C. W. Saladee	Columbus, Ohio.	Sept. 2.
14066	Cars, dirt, machine for loading.	Charles Phillips	Detroit, Mich.	Jan. 8.
14364	Car seats, railroad.	George T. McLaughlin	Boston, Mass.	Mar. 4.
15698	Car springs, metallic.	Danforth Johnson	Chicago, Ill.	Sept. 9.
15669	Cars, railroad, coiled springs for.	Carlos French	Seymour, Conn.	Oct. 7.
15690	Cars, railroad, collision apparatus for.	John Kulinski	Charleston, S. C.	Sept. 9.
15633	Cars, railroad, disconnecting and applying brakes.	Joab Buck, assignor to Joab Buck, H. S. Buck, J. W. Kimball, and D. H. Thompson.	Fitchburg, Mass.	Sept. 30.
15581	Cars, railroad, head-rest to be used in.	William B. Slaughter	Chicago, Ill.	Aug. 19.
14154	Cars, railroad, machine for replacing.	H. N. Degraw	Piermont, N. Y.	Jan. 29.
14331	Cars, railroad, method of excluding dust from.	Joseph Wood	Jersey City, N. J.	Feb. 26.
14991	Cars, railroad, replaceable axle box for.	William D. Arnett	Cincinnati, Ohio.	May 27.
14014	Cars, railroad, safety guard for.	John G. Crocker	Utica, N. Y.	Jan. 1.

14665	Cars, railroad, safety platforms between.	James Kline, Jr., and Simon V. Kline	Chicago, Ill.	April 15.
14508	Cars, railroad, spring platform for.	Charles H. Lewis	Malden, Mass.	Mar. 25.
15839	Cars, railroad, uncoupling bumper, arrangement for.	William O. George	Richmond, Va.	Oct. 7
14139	Cars, railroad, ventilating.	W. H. Medcalf	Baltimore, Md.	Jan. 22.
14945	Car window.	James Beedle	New Bedford, Mass.	Jan. 27.
16147	Chairs, railroad.	James H. Morley	St. Louis, Mo.	Dec. 2; antedated June 2, 1856.
15355	Coupling, car.	John B. Witherle	Upton, Mass.	July 15.
14311	Coupling for the joints of fellows.	S. A. Garrison and D. C. Morey	Chelsea, Mass.	Feb. 26.
14985	Coupling for vehicles.	H. Miner, H. M. Stevens, and Wm. H. Saunders	New York, N. Y.	May 27.
16230	Coupling, railroad car.	Charles Flanders	Charlestown, Mass.	Dec. 16.
14256	Coupling, safety-spring.	Edwin F. Shoenberger	Marietta, Pa.	Feb. 12.
15351	Coupling, shaft, detachable.	Peter Teal	Philadelphia, Pa.	July 15.
14965	Couplings, railroad car.	S. W. Wood	Washington, D. C.	Feb. 12.
16044	Drag, steam.	George Bradley	Paterson, N. J.	Nov. 11.
14602	Felloes, dressing, machine for. (See Class XIV, Letter F.) Felloes, machine for manufacturing. (See Class XIV, Letter F.) Felloes, machine for sawing. (See Class XIV, Letter P.) Felloes, planing, machine for. (See Class XIV, Letter P.) Felloes, sawing, machine for. (See Class XIV, Letter S.) Hubs, boring, tool for. (See Class XIV, Letter B.)	S. & W. H. Book	Rushville, Ohio	May 6.
14407	Hubs, carriage.	Henry Nicum	Uniontown, Pa.	Mar. 11.
14310	Hubs, carriage, box for.	Alfred C. Garratt	Roxbury, Mass.	Feb. 26.
14294	Hubs for carriages.	Joseph Smith	Sunbury, Ohio	Feb. 19.
15770	Hubs of wheels, securing spokes in the.	Robert Moore	Westport, Ind.	Sept. 23.
14371	Hubs to axles, mode of attaching.	Horace B. Simonds	West Hartford, Vt.	Mar. 4.
15818	Hubs to axles, mode of attaching.	John M. Riley	Newark, N. J.	Sept. 30.
15769	Omnibus.	D. O. Macomber	New York, N. Y.	Sept. 23.
14470	Omnibus registers.	James Rodgers	New York, N. Y.	Mar. 18.
14652	Omnibus registers.	Levi Cromwell	Baltimore, Md.	April 15.
15054	Propeller, steam land.	Geo. W. N. Yost	Pittsburg, Pa.	June 3.
15636	Railroad-chairs, elastic bearings for.	D. L. Davis	Dedham, Mass.	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15480	Railroad-signals, compressed air, mechanism for.	John W. Fowble	Cincinnati, Ohio.	1856. Aug. 5.
16005	Railroad station indicators.	Edwin A. Davis	Crawfordsville, Ind.	Nov. 4.
14169	Railroad track, machine for clearing snow from.	Riley Root and Samuel G. Holyoke	Galesburg, Ill.	Jan. 29.
16300	Rests, head, portable.	Allen B. Wilson	Waterbury, Conn.	Dec. 23.
15991	Shaft-tugs.	William Wentz	Geneva, N. Y.	Oct. 28.
15737	Sleighs, shafts to, mode of attaching.	George Henney	Milford, N. H.	Sept. 16.
15558	Tire, clamping and upsetting.	O. L. Cowles and A. L. Deming	Tecumsha Township, Mich.	Aug. 19.
15214	Tire on wheels, mode of securing.	William A. Ashe	New York, N. Y.	July 1.
15272	Tire, upsetting, machine for.	Henry Barringer	Barry, Ill.	July 8.
15908	Vehicles, arrangement of the thills of.	Noah Warlick	La Fayette, Ala.	Oct. 14.
14653	Vehicles, attaching thills and poles to.	A. J. Gibson	Clinton, Mass.	April 15.
14454	Vehicles, harnesses and thills of, safety apparatus to be applied to.	James H. Wilson, jr.	Nashville, Tenn.	Mar. 18.
15692	Vehicles, mode of attaching horses to.	George H. Gray	Clinton, Miss.	Sept. 9.
15288	Vehicles, mode of attaching shafts to.	Francis J. Flowers	Brooklyn, N. Y.	July 8.
15179	Vehicles, mode of detaching horses from.	Francis M. English	Hopkinsville, Ky.	June 24.
15191	Vehicles, running gear of.	Henry Phelps	White Hall, N. C.	June 24.
15103	Vehicles, shafts of, mode of attaching horses to.	George B. Kaighn	Philadelphia, Pa.	June 10.
14190	Vehicles, three-wheeled.	Elisha S. French	Binghampton, N. Y.	Feb. 5.
15987	Wagon, dumping.	William B. Twiford	Hornstown, Va.	Oct. 28.
14304	Wagons.	Benjamin B. Bundy	Walton, N. Y.	Feb. 26.
16460	Wagons.	Henry Kruse	New Orleans, La.	Nov. 11.
14174	Wagons, buggy.	Thomas Winans	Baltimore, Md.	Jan. 29.
14831	Wagons, extension.	E. D. Rosencrantz	New York, N. Y.	May 6.
15885	Wagons, side-spar, arrangement of springs for.	M. G. Hubbard	Penn Yan, N. Y.	Oct. 14.
14794	Wagon-tongue.	J. T. Baughman	Frazeysburg, Ohio	May 6.
15109	Wheels, car, casting.	Lucien H. Allen, assignor to L. H. Allen and E. M. Ivens.	Tamaqua, Pa.	June 10.

CLASS XI.—HYDRAULICS AND PNEUMATICS, including water-wheels, windmills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14526	Cisterns, construction of. (See Class IX, letter C.)	William Thomas, assignor to Abner Van Horn.	New York, N. Y.	1856. Mar. 25.
14628	Cocks, basin.	Charles Harrison	New York, N. Y.	April 8.
15771	Engine, air.	Thomas McDonough	Middletown, Conn.	Sept. 23.
14922	Engine, hydraulic.	Augustin Miller	Grafton, Va.	May 20.
14690	Engines, air.	John Ericson	New York, N. Y.	April 15.
14089	Engines, fire, method of operating.	John P. Philo and George Cowing	Seneca Falls, N. Y.	Jan. 15.
14429	Faucet.	Moses Woodbury	Boston, Mass.	Mar. 11.
15459	Faucet.	Joseph Goodridge, assignor to Boston Faucet Company.	Boston, Mass.	July 29.
15719	Faucet.	Joseph Goodridge, assignor to Boston Faucet Company.	Boston, Mass.	Sept. 9.
16043	Faucet, anti-frost.	Frederick A. Bartholomew	New York, N. Y.	Nov. 11.

15759	Wheels, carriage, machine for painting.	S. B. Fuller	Worthington, Mass.	Sept. 23.
14434	Wheels, carriage, method of boxing.	Charles Schmidt	Union, Mo.	Mar. 11.
15049	Wheels, driving, for steam-drags or propellers.	George W. N. Yost	Pittsburg, Pa.	June 3.
15554	Wheels for carriages.	Thomas Brownfield	George's Township, Pa.	Aug. 19.
15339	Wheels, railroad car.	A. C. Ketchum	New York, N. Y.	July 15.
15935	Wheels, railroad car, cast-iron.	John M. Siquorney	Watertown, N. Y.	Oct. 21.
15092	Wheels, railway car, constructing.	William R. Thompson	Cleveland, Ohio	June 10.
15670	Whiffletree for detaching horses from carriages.	N. N. Selby	Fairview, Pa.	Sept. 2.
15460	Whiffletrees, (No. 1)	George Kenny, assignor to Geo. Kenny and Geo. N. Davis.	Milford, N. H.	July 29.
15461	Whiffletrees, (No. 2)	George Kenny, assignor to Geo. Kenny and Geo. N. Davis.	Milford, N. H.	July 29.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16233	Faucet, filtering.....	George H. Fox, and Henry J. Siller.....	Boston, Mass.....	Dec. 16, 1856.
14734	Faucet, measuring.....	Edwin A. Palmer.....	East Cambridge, Mass.....	April 22.
15263	Faucets, filter attachment for.....	James H. Wright.....	Paris, N. Y.....	July 1.
15431	Faucets, method of inserting, into fluids under pressure.	Patrick Mihan.....	New York, N. Y.....	July 29.
15027	Filter.....	Chapman Warner.....	Boston, Mass.....	June 3.
15646	Filter.....	David N. B. Coffin, Jr.....	Green Point, N. Y.....	Sept. 2.
15363	Filtering medium.....	William Wickersham.....	Newton, Mass.....	July 15.
14692	Fluid-metre, diaphragm.....	R. L. Hawes.....	Boston, Mass.....	April 15.
14684	Fluid-meters, device for operating by hand.....	William Mason.....	Worcester, Mass.....	April 23.
14582	Fluids, method of drawing from bottles.....	J. W. Fox.....	Warren, Mass.....	Dec. 23.
15553	Fluids, measuring, method of, while drawing.....	Samuel Krauser.....	Durhamville, N. Y.....	May 27.
15177	Fluids, method of cooling and drawing from casks, &c.....	F. Espensclade.....	Reading, Pa.....	Oct. 7.
15385	Fluids under pressure, method of tapping.....	James P. S. Otterson.....	Williamsport, Pa.....	June 24.
15716	Gases, waste, steam, &c., method of drawing from manufacturing enclosures.	Robert F. Brower, assignor to S. A. and J. L. Brower.....	Nashua, N. H.....	July 22.
15256	Gates, balance, for flumes in water-power.....	Daniel Robinson.....	Bloomfield, N. J.....	Sept. 9.
14602	Gates, flood.....	George W. Flinders.....	Knoxville, Pa.....	July 1.
15446	Hose coupling.....	L. M. Ferry, assignor to James T. Ames.....	Lynn, Mass.....	July 8.
14091	Hydrant.....	C. J. Cowperthwaite.....	Chicopee, Mass.....	April 8.
14557	Hydrant.....	Henry English.....	Philadelphia, Pa.....	Oct. 7.
14805	Hydrant.....	C. J. Cowperthwaite.....	Philadelphia, Pa.....	Jan. 15.
14962	Hydrants, steam, arrangement of means for operating the valves of.....	Charles K. Landis.....	Baltimore, Md.....	April 1.
14592	Hydrants, waste, attachment for.....	Edward J. Baker.....	Philadelphia, Pa.....	May 6.
14712	Hydrants, waste, device for.....	John Culver.....	Philadelphia, Pa.....	May 27.
16061	Hydrants, waste, valves for.....	Robert Lawson.....	Baltimore, Md.....	April 8.
14335	Hydraulic metre.....	John S. Barden, assignor to himself and Aaron W. Rockwood.....	Baltimore, Md.....	April 22.

15712	Hydraulic puppet-valves, mode of suspending.....	George Trott, R. H. Coles, and Wm. A. Clark.....	St. Louis, Mo.....	Sept. 9.
16019	Metre, diaphragm, fluid.....	J. H. D. rington and W. Piper.....	New York, N. Y.....	Nov. 11.
14629	Pump.....	James Neal and Charles W. Emery.....	Boston, Mass.....	Jan. 1.
14024	Pump.....	Charles N. Lewis.....	Seneca Falls, N. Y.....	Jan. 1.
15573	Pump.....	W. T. and J. Barnes.....	Buffalo, N. Y.....	Oct. 14.
14584	Pump, cattle.....	Thomas H. Powers.....	Wyocena, Wis.....	May 13.
14576	Pump, feeding, method of varying the stroke of, for steam-engines.....	John R. Sees.....	New York, N. Y.....	April 1.
14039	Pump for diving bells, hydro-pneumatic.....	George Williamson.....	Brooklyn, N. Y.....	Jan. 1.
15173	Pumping, condensing steam engines which are used for. (See Class VI, letter E.)	Stephen D. Carpenter.....	Madison, Wis.....	June 24.
14146	Pumps, rotary.....	Edward N. Dickerson and Elisha K. Root.....	Hartford, Conn.....	Feb. 5.
15588	Pumps.....	Edwin T. Ligon.....	Richmond, Va.....	Oct. 14.
15322	Pumps.....	John P. Cowing.....	Seneca Falls, N. Y.....	Oct. 21.
16229	Pumps.....	Jabez Coney.....	Boston, Mass.....	Dec. 16.
14372	Pumps, air escapes for.....	William Smith.....	Norwalk, Ohio.....	Mar. 4.
15524	Pumps, chain.....	John Robinson.....	New Brighton, Pa.....	Nov. 4.
15070	Pumps, double-acting steam, method of effecting uniform pressure upon the pumping piston of.....	R. B. Gorsuch.....	New York, N. Y.....	June 10.
15134	Pumps, double-acting, valve for.....	John C. King.....	Belvidere, N. J.....	June 17.
14626	Pumps, method of operating by wind wheels.....	Jacob W. Goodwin, and Moses C. Hawkins.....	Edenborough, Pa.....	April 8.
14599	Pumps, rotary.....	Thomas Crane.....	Fort Atkinson, Wis.....	April 8.
15059	Pumps, rotary.....	John Broughton.....	Chicago, Ill.....	June 10.
15221	Pumps, rotary.....	Charles N. Clow.....	Port Byron, N. Y.....	July 1.
15274	Pumps, rotary.....	James A. Bazin.....	Canton, Mass.....	July 8.
15280	Pumps, rotary.....	Charles N. Clow.....	Port Byron, N. Y.....	July 8.
15211	Pumps, steam, method of operating steam valves of.....	Remy Henry, assignor to James Smith.....	Melrose, N. Y.....	June 24.
15227	Pumps, steam, method of operating valves of.....	Robert H. Fletcher.....	Brooklyn, N. Y.....	July 1.
16154	Siphon a clasp.....	Henry M. Walker.....	Watertown, Conn.....	Dec. 2.
16178	Siphon rams, arrangement of valves, &c., in.....	Erasmus W. Ellsworth.....	East Windsor Hill, Conn.....	Dec. 9.
14923	Springs, surface, method of treating.....	Amos Wadcutt.....	East Bloomfield, N. Y.....	April 8.
14317	Valve, automatic thermo-hydro-olao pneumatic.....	Earl Parker and William Reynolds.....	East Hartford, Conn.....	April 8.
15030	Valve, conical, method of attaching stem to a.....	Henry R. Worthington.....	Brooklyn, N. Y.....	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15192	Valve, elastic, tubular.	Franklin Peale.	Philadelphia, Pa.	1856. June 24.
15960	Valve, puppet.	R. P. Bradley.	Cuyahoga Falls, Ohio.	Oct. 25.
14627	Valves, arrangement of, for hydraulic engines.	John D. Heston.	Dixon, Ill.	April 8.
14646	Water, mechanism by which cattle raise, for themselves.	J. A. Ayres.	Hartford, Conn.	April 15.
14525	Water-meter.	A. J. Sweeney.	Wheeling, Va.	Mar. 25.
14921	Water-meter.	Nathan B. Marsh.	Cincinnati, Ohio.	May 20.
15397	Water, method of applying one stream of, to assist in raising another.	Charles J. P. Atrial.	Roxbury, Conn.	Aug. 26.
16235	Water-mill, portable.	John Heller.	East Lampeter, Pa.	Dec. 9.
14535	Water-wheel.	John Haselme.	Goffstown, N. H.	Mar. 25.
15175	Water-wheel.	Wilbur M. Davis.	Carmel, Me.	June 24.
15309	Water-wheel.	John Tyler.	West Lebanon, N. H.	July 8.
19977	Water-wheel.	G. E. W. Herbert.	Cohocton, N. Y.	Oct. 28.
14882	Water-wheel, reacting.	George W. Pittock, John B. Stott, and Galen Richmond.	Troy, N. Y.	May 13.
15384	Water-wheel, reacting.	A. Monroe.	Worcester, Mass.	July 22.
15463	Water-wheels, gates for, method of operating.	John C. Shorey, assignor to himself and A. J. Webster.	Rochester, N. H.	July 29.
16027	Water-wheels, method of starting and stopping.	David M. Tyler.	Lisle, N. Y.	Nov. 4.
15273	Wells, water from, method of drawing.	H. B. Barber.	Scott, N. Y.	July 8.
15970	Wheel, current.	Plumer Chesley.	Candia, N. H.	Oct. 24.
16110	Wheel, Fourneyron turbine.	Stephen K. Baldwin.	Gilford, N. H.	Nov. 25.
14793	Wheels, turbine, guides or chutes for, construction of.	Joseph Bastion.	Theresa, N. Y.	May 6.
14015	Wind-mill.	Benjamin Fenn.	Hartford, Ohio.	Jan. 1.
15714	Wind-mill.	Ephraim Whitman.	Abington, Mass.	Sept. 9.
15709	Wind-mill.	John R. St. John.	Lockport, N. Y.	Sept. 9.
15805	Wind-mill.	Marcus Fribee.	Rensselaerville, N. Y.	Sept. 30.
16257	Wind-mills.	Solomon W. Ruggles, assignor to Silas Ruggles.	Fitchburg, Mass.	Dec. 16.

CLASS XII.—LEVER, SCREW, AND OTHER MECHANICAL POWER, as applied to pressing, weighing, raising, and moving weights.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15142	Bands, non elastic, for bales of cotton and other fibrous materials.	D. McCoub.	Memphis, Tenn.	1856. June 17.
14213	Belt fastenings.	Abner Whiteley.	Springfield, Ohio.	Feb. 5.
14329	Belt fastenings.	John H. Cheever.	Boston, Mass.	Mar. 11.
14175	Belt or band fastenings.	George D. Young.	Plymouth, Mass.	Jan. 29.
15795	Belt punch.	A. Simpson, assignor to S. H. F. Bingham.	Worcester, Mass.	Sept. 23.
16222	Cant hook adjustable, for moving logs, &c.	Mark Alcott.	Hancock, N. H.	Dec. 16.
16283	Crane, blacksmith's.	William Maher.	Black, Ky.	Dec. 23.
14927	Elevator for cotton, sugarcane, &c.	E. Price.	W. Geo. proof, La.	May 20.
	Gearing, link, for horse powers. (See Class XIII. letter H.)			
14282	Grapple for raising stone.	Marcus M. Cass and Lawson R. Bigelow.	Watkins, N. Y.	Feb. 19.
14671	Hoisting coal, apparatus for.	George Martz.	Pottsville, Pa.	April 15.
14666	Hoisting cranes.	George W. La Bar.	Jersey City, N. J.	April 15.
1 233	Jack, lifting.	Harvey Gray.	Bristol, Conn.	Dec. 16.
14170	Jacks, screw.	Henry F. Shaw.	South Boston, Mass.	Jan. 29.
	Lubricating grist-mill spindles, apparatus for. (See Class IV.)			

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
	Lubricating slide-valves, method of operating and. (See Class VI, letter V.)			1856.
	Lubricating spindle-steps. (See Class IV.)			
	Lubricating thrushle-splindles (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
	Lubricator. (See Class IV.)			
14261	Oil-box for axles with conical journals.	William D. Titus	Brooklyn, N. Y.	Feb. 12.
15145	Packer, flour, clutch for	John T. Noye	Buffalo, N. Y.	June 17.
14065	Presses, cheese	William C. Pancost	Geneva, Ohio	Jan. 8.
14095	Presses, cotton	Caleb S. Hunt	Bridgewater, Mass.	Jan. 15.
15936	Presses, cotton	Wm. F. and Chas. J. Provost	Selma, Ala.	Oct. 21.
14493	Presses for punching	Geo. H. Corlis and Elisha Harris	Providence, R. I.	Mar. 25.
14031	Presses, hay and cotton	Joseph Peery	Passadumkeag, Me.	Jan. 1.
14663	Presses, power, chain for	Simon Ingersoll	Green Point, N. Y.	April 15.
14009	Presses, hay and cotton	Nathan Chapman	Myatie river, Conn.	Jan. 1.
14733	Scale, grain, electro-magnetic	Nathan M. Phillips	New York, N. Y.	April 22.
14119	Scales, platform	Francis M. Strong and Thomas Ross	Vergennes, Vt.	Jan. 15.
16246	Scales, R. R. platform, arrangement of	Lea Peery	Downingtown, Pa.	Dec. 23.
14198	Scales, weighing	S. S. Mills and M. Bissell	Charleston, S. C.	Feb. 5.
14481	Scales, weighing	James Kelly	Sag Harbor, N. Y.	Mar. 4.
14702	Scales, weighing	R. F. Wolcott	Claremont, N. H.	April 15.
16302	Scale, weighing	E. Sampson, assignor to the "Vergennes Scale Manufacturing Co"	Vergennes, Vt.	Dec. 23.
14382	Scale, weighing, beams	William Yost	Goshen, Ohio	Mar. 4.
14159	Shafts, &c., universal joint for connecting	Jonas Hinkley	Huron, Ohio	Jan. 29.
14210	Shafts, wrought iron, making	Otis Tuffe	Boston, Mass.	Feb. 5.
14939	Weighing cart	James W. Marth, assignor to himself and Lewis Rotherwell	Burlington, N. J.	May 20.
14657	Weighing machines, grain	W. H. Bramble	Cincinnati, Ohio	April 15; antedtd, April 8.

CLASS. XIII.—GRINDING-MILLS AND MILL-GEARING, including grain-mills, mechanical movements, horse-power, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14199	Bolts, flour	S. C. Mendenhall	Richmond, Ind.	1856.
15455	Bolts, flour	S. C. Mendenhall and J. Conner	Richmond, Ind.	Feb. 5.
15697	Gear, reversing	George Juengst	New York, N. Y.	July 29.
15630	Grain cleaner and separator	Richard Ward	Edinburg, Ind.	Sept. 9.
16088	Grain, cleaning, machines for	Chase B. Horton	Elmira, N. Y.	Aug. 26.
15785	Grain separators	H. E. Smith	Philadelphia, Pa.	Nov. 18.
15579	Grain separators and conveyors	Joel W. Cornack and F. C. Walker	Quincy, Ill.	Sept. 23.
16103	Grain separators and conveyors	J. Lyndall, assignor to C. Roberts	Belleville, Ill.	Oct. 14.
15180	Grindstones, hanging	David Hinman	Berea, Ohio	Nov. 18.
14547	Horse-power, method of applying to fire-engines. (See Class V, letter F.)	Richard Hunt	Freeport, Ind.	June 24.
15296	Horse-power, reversible	Philip H. Kells	Hudson, N. Y.	Mar. 25.
14750	Horse-power, link-gearing for	Thomas D. Burk, assignor to J. C. Miller and C. A. Fowler	Chicago, Ill.	July 8.
15693	Horse-power, links of	A. W. Gray	Middletown, Vt.	April 22.
16040	Mill, cider	Benjamin Mackerley	New Petersburg, Ohio	Sept. 9.
16261	Mill, cider	Harry Abbott	Huron, N. Y.	Nov. 4.
15255	Mill, corn and cob	Cyrus Roberts	Belleville, Ill.	Dec. 23.
15060	Mill, flour, cutting	Jonathan Burdge	Cincinnati, Ohio	July 1.
16249	Mill-grinding	Thomas B. Stout	Keyport, N. J.	June 10.
15680	Mill, metallic hemispherical, grinding dress of	A. Atwood	Troy, N. Y.	Dec. 16.
14227	Mills, &c., feed-gates for, method of regulating	Clement Dare	Cincinnati, Ohio	Sept. 9.
15488	Mills, corn and cob	Jacob O. Joyce	Cincinnati, Ohio	Feb. 12.
14132	Mills, flouring	Thomas Crane	Cincinnati, Ohio	August 5, 1856; ante-dated Feb. 5, 1856.
14179	Mills, flouring	Joseph Weiss	Fort Atkinson, Wis.	Jan. 22.
14164	Mills, grinding	Larius Paige	Bordentown, N. J.	Jan. 29.
15841	Mills, snut	Joel W. Cornuck	Cavendish, Vt.	Jan. 29.
15868	Mill stone dress	W. P. Coleman	Quincy, Ill.	Oct. 7.
16074	Mill stone dress	Thomas B. Stout	New Orleans, La.	Oct. 7.
15346	Mill-stones, adjustment of	J. G. Siemers	Keyport, N. J.	Nov. 11.
			St. Louis, Mo.	July 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14128	Mill-stones, hanging.....	David Marsh, assignor to T. B. Stout.....	Bridgport, Ct.	1856. Jan. 15.
14109	Mill-stones, machines for dressing.....	J. A. Cody and David Marsh.....	Keyport, N. J.	Jan. 15.
14839	Mill-stones, machines for dressing.....	R. D. Nesmith.....	Ch. Village, N. H.	Jan. 15.
15250	Mill-stones, swinging spout for feeding.....	S. W. & R. M. Draper.....	South Dedham, Mass.	May 13.
16155	Motion, converting rotary into reciprocating.....	M. & C. Painter.....	Owings' Mills, Md.	July 1.
14508	Motion, converting reciprocating into rotary, method of.....	Albin Warth.....	New York, N. Y.	Dec. 2.
16303	Motion, converting reciprocating into rotary.....	Robert Maffit.....	Bradford, Pa.	April 1.
14473	Rolls, connecting, adjusting the brasses of.....	Samuel Glasinger and John W. Kelberg, assignors to D. A. Morris.....	Allegheny city, Pa.	Dec. 23.
15254	Smut machines.....	John R. Seas.....	New York, N. Y.	Mar. 18.
15442	Smut machines.....	R. M. Dempsey.....	Indianapolis, Ind.	July 8.
15978	Smut machines.....	G. H. Starbuck and L. D. Gilman.....	Troy, N. Y.	July 29.
		Harvey B. Ingham.....	Campdown, Pa.	Oct. 28.

CLASS XIV.—LUMBER, including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stove, carpenter's and cooper's implements.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14752	Auger..... (See Class II, letter A.)	Kelsey Curtis, assignor to Winsted Auger Company.....	Winchester, Conn.	1856. April 22.
14829	Barrel-heads, machine for manufacturing.....	N. W. Robinson.....	Keesville, N. Y.	May 6.
15763	Bed-pins, manufacturing, device in machines for.....	Henry Gross.....	Tiffin, Ohio.	Sept. 23.

14511	Bench, carpenter's.....	J. W. Mahan.....	Lexington, Ill.	Mar. 25.
15739	Bench, carpenter's.....	J. W. Mahan.....	Lexington, Ill.	Sept. 16.
14390	Bench, clamp.....	Clinton W. Clapp.....	Wappinger's Falls, N. Y.	Mar. 11.
14569	Bits for boring feloes and tenoning spokes.....	Horatio McGrath.....	Lexington, Ill.	April 1.
14005	Boring and mortising machine.....	Henry Hayes.....	Meigs' Creek, Ohio.	Jan. 15.
15652	Boring and mortising machine.....	George N. Stearns.....	Quincy, Ill.	Sept. 2.
14416	Boring and mortising machine.....	G. H. Stevens.....	Syracuse, N. Y.	Mar. 11.
16101	Boring and mortising machine.....	F. and A. Brown.....	Lowell, Wis.	Nov. 18.
14223	Boring and turning wood, machine for.....	Samuel H. Vocum.....	New York, N. Y.	Feb. 12.
15678	Boring hubs for boxes, method of.....	H. L. Mooney and W. B. Carter.....	Shelbyville, Ind.	Sept. 2.
14968	Boring hubs, tool for.....	James Temple.....	Astoria, Ill.	May 27.
14327	Boring machine.....	Samuel Klahr.....	Birmingham, Pa.	Feb. 26.
16241	Boring machines.....	Wm. Samuels and George L. Stansbury.....	Reamstown, Pa.	Dec. 16.
15022	Boring machines, adjustment in.....	Israel W. Ward.....	Jackson, Ind.	June 3.
14479	Braces in carpentry, instruments for measuring the lengths of.....	Heman Whipple.....	Birmingham, Pa.	Mar. 18.
14329	Calipers for measuring irregular forms.....	E. T. Miller.....	South Shaftesbury, Vt.	Feb. 16.
14984	Chairs, manufacturing.....	Edward Q. Smith.....	Charlestown, Mass.	May 27.
15330	Clamp for planing ships.....	Solon Staples.....	Cincinnati, Ohio.	Aug. 12.
14522	Clamp, floor.....	H. W. Oliver.....	Bath, Maine	Mar. 25.
14676	Clothes-pins, machinery for making. (See Class XVII.)	Ari Davis and Asahel Davis.....	Whitneyville, Conn.	April 15.
14307	Dove-tailing machine.....	Edwin Wight.....	Lowell, Mass.	Feb. 26.
14427	Dove-tailing machine.....	Lysander A. Orcutt.....	Philadelphia, Pa.	Mar. 11.
15301	Feloes, dressing, machine for.....	W. M. Bullock.....	Albany, N. Y.	July 8.
15727	Feloes, machine for manufacturing.....	A. B. Richmond.....	Marcy, Ind.	Sept. 16.
14957	Forms, ellipsoidal, method of turning.....	G. W. Walton and H. Edgerton.....	Meadville, Pa.	May 27.
15445	Forms, irregular, machine for cutting.....	Henry D. Stover and J. W. Bicknell.....	Wilmington, Del.	July 29.
14431	Forms, irregular, machine for cutting.....	Charles Spofford.....	Boston, Mass.	Mar. 11.
15559	Forms, irregular, method of operating cutters in their head for.....	John Tear.....	West Amherst, Mass.	Oct. 7.
15153	Forms, ornamental, method of turning.....	P. C. Cambridge, jr.....	Chicago, Ill.	June 17.
15327	Formers, tapering, method of turning.....	H. E. Salisbury.....	North Enfield, N. H.	July 15.
15196	Gauges, carpenters'.....	Joel Bryant.....	Platea, Pa.	June 24.
15556	Gimlet handles. (See class II.)	George W. Holmes, assignor to James C. Marble.....	Brooklyn, N. Y.	Aug. 19.
14753	Hoop-machine.....	Joseph & Sylvester Sawyer.....	Backfield, Me.	April 22.
14833	Hoop-machine.....		Fitchburg, Mass.	May 6.

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Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15740	Hoop-machine	J. & S. Sawyer.....	Fitchburg, Mass.....	1856. Sept. 23.
15765	Hoop-machine	William B. Wood.....	Fitchburg, Mass.....	Oct. 7.
15768	Hoops, notching, machine for.....	Daniel Lamson.....	East Weymouth, Mass.....	Sept. 23.
16225	Hoops, wooden, method of planing and tapering.....	Clark H. Brown.....	Forest Port, N. Y.....	Dec. 16.
14571	Knives to cutter-heads, method of securing.....	W. D. Hooker.....	Dedham, Mass.....	May 13.
15045	Last holders, revolving.....	Josiah Mumford.....	Clarksburg, Ohio.....	June 3.
14617	Lasts, securing and releasing blocks of.....	Andrew J. Barnhart.....	Hartfield, N. Y.....	April 15.
14126	Lath machine.....	John L. Brown, assignor to himself and Charles Learned.....	Indianapolis, Ind.....	Jan. 15.
14499	Lath machine.....	Jesse Gilman.....	Nashua, N. H.....	Mar. 25.
14027	Lath sawing machines, bed for.....	Thomas R. Markillie.....	Winchester, Ill.....	Jan. 1.
14578	Lathie.....	Henry C. Spalding.....	New York, N. Y.....	April 1.
14757	Lathie.....	Albert H. Brown, assignor to Tingley & Veile.....	Albany, N. Y.....	April 29.
14941	Lathe attachment for turning irregular forms.....	Milton Roberts, assignor to M. Roberts, Isaac Roberts, and Isaac N. Felch.....	Belfast, Me.....	May 20.
16108	Lathe for cutting fluted mouldings.....	J. Anderson, J. McLaren, and J. Bryant.....	New York, N. Y.....	Nov. 25.
14632	Lathes, chuck for.....	Michael Neckerman.....	Pittsburg, Pa.....	April 8.
14599	Lathes, cutter-head for.....	Milton Roberts, assignor to Milton Roberts and Isaac N. Felch.....	Belfast, Me.....	May 13.
16192	Lathes for irregular forms.....	Lemuel Smith.....	Plymouth, Conn.....	Dec. 9.
16105	Lumber feeding rollers, parallel yielding of, device for governing the.....	Josiah B. Penroy.....	Chicago, Ill.....	Nov. 18.
15053	Mitre box.....	William P. Wood, assignor to Samuel D. Vaughan and William P. Wood.....	Washington, D. C.....	June 3.
16020	Mortising chisel to its mandrel, joint for mounting a.....	Joseph R. Perry.....	Port Clinton, Pa.....	Nov. 4.
14071	Mortising machine.....	William Stoddard.....	Lowell, Mass.....	Jan. 8.
14106	Mortising machine.....	J. A. Merriman.....	Hinsdale, Mass.....	Jan. 15.
14564	Mortising machine.....	Edward Joslin.....	Keene, N. H.....	April 1.
15467	Mortising machine.....	T. R. Bailey.....	Lockport, N. Y.....	Aug. 5.
14169	Mortising tool.....	Hazard Knowles.....	New York, N. Y.....	Jan. 29.

14454	Mortising tool.....	A. C. Hitchcock and C. H. Amidon.....	Greenfield, Mass.....	Mar. 18.
16198	Mouldings, curved, method of cutting.....	John J. Westerfield.....	New Brunswick, N. J.....	Dec. 9.
14302	Pitman.....	Andrew Blackie and Walter Clark.....	St. Clair, Mich.....	Feb. 26.
14436	Plane, bench.....	Lewis C. Ashley.....	Troy, N. Y.....	Mar. 18.
14979	Plane bits, method of securing.....	Thomas D. Worrall.....	Boston, Mass.....	May 27.
14228	Planer, rotary, for fellows.....	C. H. Denison.....	Green Rivers, Vt.....	Feb. 12.
14363	Planes, bench.....	Ebenezer Mathers.....	Morgantown, Va.....	Mar. 4.
16309	Planes, carpenter's, method of adjusting the bits of.....	Thomas D. Worrall.....	Lowell, Mass.....	Dec. 23.
14423	Plane stock.....	John B. Thomas.....	Cincinnati, Ohio.....	Mar. 11.
16163	Planing, bramah, wheel.....	Edwin Jones.....	Greenfield, Mass.....	Dec. 2.
14694	Planing fellows, machine for.....	A. W. Fox.....	Athens, Penn.....	April 8.
14455	Planing knives, rotary, arrangement of.....	Dan'l N. Hurlbert.....	Utica, N. Y.....	Mar. 18.
14480	Planing machine.....	C. B. Morse.....	Rhinebeck, N. Y.....	May 13.
15403	Planing machine.....	Asahel Lockwood, assignor to L. B. Flinders.....	Chicago, Ill.....	July 22.
16185	Planing machine.....	Hudson Osgood.....	Waterville, Maine.....	Dec. 9.
14039	Planing machines, arrangement of feed-rollers for.....	H. C. Wight.....	Worcester, Mass.....	Jan. 1.
15129	Planing machines, certain devices in.....	Valentine Houck.....	Buffalo, N. Y.....	June 17.
14263	Planing machines, cutter-heads for.....	Loison D. Towne.....	Worcester, Mass.....	Feb. 12.
15365	Planing machines, cutter-heads for.....	Lewis M. Berry.....	Boston, Mass.....	July 22.
14272	Planing machines, feed-rollers of, gearing for.....	Chas. Burleigh, assignor to Putnam Machine Company.....	Fitchburg, Mass.....	Feb. 12.
16144	Planing machines, method of clamping cutters in cutter heads for.....	Jonathan P. Grosvenor.....	Boston, Mass.....	Dec. 2.
14130	Plough-handles, &c., machine for bending.....	Benjamin F. Avery.....	Louisville, Ky.....	Jan. 22.
15382	Polishing machine.....	John Moore.....	Gardiner, Maine.....	July 22.
15690	Ratters, laying out, instrument for.....	LeGrand Crofoot.....	Syracuse, N. Y.....	Aug. 26.
15398	Riving equal pieces from a block, method of.....	Harry White.....	Oncida Castle, N. Y.....	July 22.
15163	Saw for sawing machines, self-setting or self-raking.....	Aza Arnold.....	Washington, D. C.....	June 24.
15718	Saw-gunner.....	L. A. Dole, assignor to Dole, Silver & Felch.....	Salem, Ohio.....	Sept. 9.
15811	Saw-gummers.....	S. J. Lewis and W. Alston.....	Bordentown, N. J.....	Sept. 30.
14863	Saw, hand.....	Jackson Gorham.....	Bairdstown, Ga.....	May 13.
15399	Sawing coopers' hoops, machine for.....	James O. Woodward.....	Taunton, Mass.....	July 22.
15216	Sawing fellows, machine for.....	David Bowen.....	Wadesville, Va.....	July 1.
14339	Sawing machine.....	Wm. P. Wood, assignor to W. P. Wood and Jno. S. Gallaher, jr.....	Washington, D. C.....	Feb. 26.
14757	Sawing machine.....	Thomas J. Alexander.....	Westerville, Ohio.....	April 29.
15026	Sawing machine.....	H. S. Vrooman.....	Logansport, Ind.....	June 3.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15012	Sawing machine.....	William D. Leavitt.....	Cincinnati, Ohio.....	1856.
15438	Sawing machine.....	T. T. Prosser.....	Oconomowoc, Wis.....	June 3.
15414	Sawing machinery.....	A. S. T. Copeland.....	Pittsburg, Pa.....	July 29.
15700	Sawing machines, device in.....	Wm. P. Wood and Sam'l D. Vaughan.....	Washington, D. C.....	Sept. 23.
15078	Sawing-mills, head blocks of, method of operating.....	Joseph Kurtzman.....	Lancaster, Ohio.....	June 10.
15680	Sawing-mills, method of feeding.....	C. and G. S. Dikes.....	Allowaystown, N. J.....	Sept. 9.
15559	Sawing-mills, method of operating velocity of feed for.....	R. Eickemeyer.....	Yonkers, N. Y.....	Aug. 19.
16034	Sawing-mills, self-acting head and tail blocks for.....	A. S. Walbridge.....	Burlington, Vt.....	Nov. 4, 1856; Canada, July 20, 1853.
15330	Sawing-mills, self-setting tail block for.....	Joel Dawson.....	Barnesville, Ohio.....	July 15.
14305	Saw-mill.....	Nathan T. Coffin.....	Knightsdown, Ind.....	Feb. 26.
14909	Saw-mill blocks, method of operating.....	Bela Gardner.....	Florence, Mass.....	May 20.
14844	Saw-mill dogs.....	Geo. W. Hill, assignor to Francis Lyon and Geo. W. Hill.....	Waverly, N. Y.....	May 6.
15803	Saw-mill pitmen, adjustable stirrups for.....	Samuel C. Norcross.....	Dixfield, Me.....	Oct. 14.
14206	Saw-mills.....	John S. Snider.....	Lancaster, Ohio.....	Feb. 5.
14700	Saw-mills, head and tail blocks for.....	E. H. Stearns.....	Cincinnati, Ohio.....	April 15.
14943	Saw-mills, head blocks of, method of operating.....	Lucius B. Adams.....	Smithfield, Pa.....	May 27.
15062	Saw-mills, head blocks of, method of operating.....	John M. Carlisle.....	Williamston Springs, S. C.....	June 10.
14172	Saw-plates, teeth to, method of attaching.....	P. B. Tyler.....	Springfield, Mass.....	Jan. 29.
15304	Saws, circular and other, method of grinding.....	Orrin Rice.....	Cincinnati, Ohio.....	July 8.
14950	Saws, circular, grinding.....	William Clemson.....	East Woburn, Mass.....	May 27.
14957	Saws, circular, guard for.....	Henry Gross.....	Tiffin, Ohio.....	May 27.
15130	Saws, circular, mechanism for adjusting, obliquely to their arbors.....	George Hutton.....	New York, N. Y.....	June 17.
14379	Saws, circular, method of adjusting.....	Andrew L. Whitley.....	St. Louis, Mo.....	March 4.
14705	Saws, circular, method of adjusting, for concave or convex work.....	James M. Kern, assignor to Isaac Scott and E. P. Fitch.....	Morgantown, Va.....	April 15.
14268	Saws, circular, method of concaving.....	James M. Kern, assignor to Enoch P. Fitch and Isaac Scott.....	Morgantown, Va.....	Feb. 12.

15268	Saws, circular, method of driving.....	John Broughton.....	Chicago, Ill.....	July 22.
14241	Saws, circular, method of hanging and adjusting.....	Westel W. Hurlbut.....	Utica, N. Y.....	Feb. 12.
14188	Saw-set.....	John G. Ernst.....	York, Pa.....	Feb. 5.
14936	Saw-set.....	Edward S. Watson.....	Chenango Forks, N. Y.....	May 20.
15007	Saw-set.....	Benjamin Gilpatrick.....	Lowell, Mass.....	June 3.
15119	Saw-set.....	Lebhuus Brooks.....	Great Falls, N. H.....	June 17.
15679	Saw-set.....	Wyllis Avery.....	Salisbury Centre, N. Y.....	Sept. 9.
15731	Saw-set.....	Abraham Casey.....	New York, N. Y.....	Sept. 16.
14055	Saws, filing.....	Jacob Erdlo.....	West Bloomfield, N. Y.....	Jan. 8.
15940	Saws, filing and setting.....	H. R. Howlett, assignor to himself and A. W. Goodell.....	New York, N. Y.....	Oct. 21.
15773	Saws, grinding, machine for.....	A. S. Nippes.....	Lower Merion, Pa.....	Sept. 23.
16223	Saws, grinding, machine for.....	Emmanuel Andrews.....	Elmira, N. Y.....	Dec. 16.
14413	Saws, mulley, method of straining.....	Theodore Sharp.....	North Greenbush, N. Y.....	Mar. 11.
14480	Saw-spindles, circular, method of suspending.....	Hiram Wells.....	Florence, Mass.....	Mar. 18.
14785	Saws, reciprocating, method of adjusting.....	J. Z. A. Wagner.....	Philadelphia, Pa.....	Mar. 18.
14930	Saws, reciprocating, method of hanging.....	John Robinson.....	New Brighton, Pa.....	May 20.
15890	Saws, reciprocating, method of hanging.....	John H. Moore.....	West Troy, N. Y.....	Oct. 14.
16062	Saws, reciprocating, method of hanging.....	George D. Lund.....	Yonkers, N. Y.....	Nov. 4.
16295	Saws, reciprocating, method of hanging.....	John Stowell.....	Charlestown, Mass.....	Dec. 23.
15220	Saws, wood, method of framing and straining.....	E. S. Clapp.....	Montague, Mass.....	July 1.
15082	Saw-teeth, circular, method of repairing.....	M. L. Parry.....	Galveston, Texas.....	June 10.
14101	Shingle machine.....	A. Kendall.....	Cleveland, Ohio.....	Jan. 15.
14103	Shingle machine.....	Samuel M. King.....	Lancaster, Pa.....	Jan. 15.
14347	Shingle machine.....	Ransom Cliford.....	Lowell, Mass.....	Mar. 4.
14765	Shingle machine.....	John B. Evans.....	Greencastle, Ind.....	April 29.
14914	Shingle machine.....	Edward Hedley.....	Shelby, N. Y.....	May 20.
14977	Shingle machine.....	Harry White.....	Oneida Castle, N. Y.....	May 27.
15081	Shingle machine.....	Jason Palmer.....	Jamesstown, N. Y.....	June 10.
15302	Shingle machine.....	Adrian V. B. Orr.....	Lancaster, Pa.....	July 8.
15749	Shingle machine.....	D. D. Tupper.....	Boston, Mass.....	Sept. 16.
15747	Shingle machine.....	P. O. Sherwin.....	Jamesstown, N. Y.....	Sept. 16.
14792	Shingle machine, rotary.....	C. F. Beverly.....	Lancaster, Ohio.....	May 6.
15728	Shingle machines, feed motion for.....	John Broughton.....	Chicago, Ill.....	Sept. 16.
15756	Shingles, feeding and sawing, method of.....	George Crane.....	Fairfield, Iowa.....	Sept. 23.
15720	Shingling bracket.....	L. A. Goodsell, assignor to L. A. Goodsell and D. H. Holt.....	Hartford, Conn.....	Sept. 9.
16121	Spokes by hand, machine to aid in making.....	Edward Juler.....	Sharon, Ohio.....	Nov. 25.
14718	Spokes, driving, machine for.....	Christian Haas and John C. Noll.....	Chicago, Ill.....	April 22.
14018	Spoke-shave.....	Elijah Holmes.....	Lynn, Mass.....	Jan. 1.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14635	Spoke-shave	Martin Snow	North Bridgewater, Mass.	1856.
14446	Spools, manufacturing, machine for	A. D. Waymouth	Fitchburg, Mass.	April 8.
15557	Slave jointer	A. H. Crozier	Oswego, N. Y.	July 29.
16395	Slave jointer	B. McKee	Accotink, Va.	Sept. 23.
15285	Slave joints	J. K. Derby	Jaunestown, N. Y.	Nov. 18.
14299	Slave machine	George W. Livermore, assignor to Livermore Manufacturing Co.	Cambridge, Mass.	July 8.
15429	Slave machine	John McVurtry	Lexington, Ky.	Feb. 19.
15223	Slave machinery, certain improved devices in	Charles Hoyt	West Aurora, Ill.	July 29.
14136	Sticks to polygonal forms, machine for dressing	Joseph W. Killam	East Wilton, N. H.	Jan. 22.
16041	Tenoning, etc., tool for	Alfred Tippet	Washington, D. C.	Nov. 4.
15572	Tenoning machine	John Potter	Ellicottsville, N. Y.	Aug. 19.
14289	Tenoning window blinds, machine for	John H. Palmer	Elmira, N. Y.	Aug. 19.
14220	Tonguing and grooving tapering boards, method of	B. J. Barber	Ballston Spa, N. Y.	Feb. 12.
14173	Tree-nail machines, device in	Elbridge Webber	Gardiner, Me.	Jan. 29.
	Trees, felling, machine for. (See Class 1, letter T.)			
15913	Trees, felling, method of	Simon Ingersoll, assignor to Farmers and Mechanics' Manufacturing Co.	Green Point, N. Y.	Oct. 14.
15178	Trees, felling, method of, by saws	George C. Elhsam	New York, N. Y.	Oct. 14.
15310	Turning machine	Elbridge Webber	Gardiner, Me.	June 24.
16308	Veneers from the log, machine for cutting	Joseph H. Goodell	Bridgeport, Conn.	July 8.
14357	Wheelwright machines	Chauncey H. Guard, assignor to John A. Seroggs and himself.	Brownville, N. Y.	Dec. 23.
14557	Wheelwright machines	John Sisson	Williamston, S. C.	Feb. 26.
15293	Wheelwrights' machine	Abijah D. Stowall, assignor to John A. Place.	Fulton, N. Y.	April 1.
15901	Wheelwrights' machine	John Sisson	Williamston, S. C.	Aug. 19.
15079	Wheelwrights' machinery	A. S. Macomber	Bennington, Vt.	Oct. 14.
15944	Wood, bending, method of	Thomas Blanchard	Boston, Mass.	June 10.
15851	Wood, bending, method of	Edwin and Artemus and Cheney Kilburn.	Burlington, Vt.	Oct. 21.

15441	Wood, carving, certain improved devices in ..	Nelson Ruger	West Farms, N. Y.	July 29.
14472	Wood, designs on, mode of producing	Philip Schwickardt	Brooklyn, N. Y.	Mar. 11.
14636	Wood, machine for bending	Edward J. Updegraff	York, Pa.	April 8.
15457	Wood, method of applying steam to and of cutting scarfs from	Job White	Bellast, Ala.	Dec. 2.
14405	Wood, method of bending	John C. Morris	Cincinnati, Ohio.	Mar. 11.
14807	Wood, splitting, machine for	Charles Day and Alanson D. Brown.	Lancaster, N. Y.	May 6.

CLASS XV.—STONE AND CLAY MANUFACTURES, including machines for pottery, glass-making, brick-making, dressing and preparing stone, cements, and other building materials.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16174	Brick, hollow, or building blocks, machines for pressing	M. and J. H. Buck, and F. A. Cushman.	Lebanon, N. H.	1856. Dec. 9.
15293	Brick-machines	James A. Hamer	Reading, Pa.	July 1.
14100	Brick-machines	R. W. Jones	Greencastle, Ind.	Jan. 15.
14155	Brick-machines	L. T. Delassize	New Orleans, La.	Jan. 29.
14713	Brick-machines	P. S. Devlan	Reading, Pa.	April 22.
14873	Brick-machines	Edmund Kingsland	New York, N. Y.	May 13.
14947	Brick-machines	Martin Buck, Jas. H. Buck, and Francis A. Cushman.	Lebanon, N. H.	May 27.
15276	Brick-machines	E. Branan and R. Peterson	Greencastle, Ind.	July 8.
15546	Brick-machines	Isaac Harman, assignor to Isaac Harman and Wm. Bickel.	Tamaqua, Pa.	Aug. 12.
15618	Brick-machines	H. B. Ramsey	Indianapolis, Ind.	Aug. 26.
15766	Brick-machines	William A. Jordan	Thibodeaux, La.	Sept. 23.
15798	Brick-machines	Henry B. Ad.	Greencastle, Ind.	Sept. 30.
15905	Brick-machines	Joseph A. Hall	Greencastle, Ind.	Sept. 30.
15863	Brick-machines	G. L. Washburn and F. H. Bellows.	Worcester, Mass.	Oct. 7.
15945	Brick-machines, rotary	George Cragle	Philadelphia, Pa.	June 3.
14471	Brick-press	John Boynton	East Hartford, Conn.	Aug. 5.
15778	Brick-press, hydraulic	Ethan Rogers	Cleveland, Ohio.	Sept. 23.
14012	Brick-presses	John B. Colten	Reading, Pa.	Jan. 1.
14195	Brick-presses	Harvey J. Hughes	Davenport, Iowa.	Feb. 5.
15135	Brick-presses	Lewis Kirk	Reading, Pa.	June 17.

Classified List of Patents issued—Continued.

No	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14052	Bricks, building, form of	Edgar Conkling	Cincinnati, Ohio.	1856. Jan. 1.
14846	Bricks, machine, manufacture of	S. W. Wood	Washington, D. C.	May 6.
15329	Brick, unburnt, machine for striking	Mareus P. Crapo	Bucksport, Cal.	July 15.
15374	Building blocks from clay, &c., machine for moulding and pressing	Ambrose and George M. Foster	New York, N. Y., and Fairhaven, Conn.	July 22.
15197	Clay, mixing, pug-mill for	Carl F. Schlickeyson	Berlin, Prussia.	June 24, 1856; Eng-land, Feb. 24, 1856.
15540	Drill, rock	George H. Wood	Green Bay, Wis.	Aug. 12.
16146	Drilling, rock machine for	Mastin and John P. Gore	St. Louis, Mo.	Dec. 2.
15595	Drills, rock	Wm. M. Barton, assignor to Wm. M. and Robert M. Barton	Russellville, Tenn.	Aug. 19.
15665	Glass, black bottle, manufacture of	John F. McCully	Gonzales county, Texas	Sept. 2.
15548	Glass fountain lamps, mould for pressing. Glass furnaces. (See Class V, letter F.) Glass furnaces. (See Class V, letter F.)	Henry W. Adams	New York, N. Y.	Aug. 19.
14838	Glass, molten, ladling of	Wm. P. Walter and Jacob Green	Philadelphia, Pa.	May 6.
16085	Glass, polishing, machines for	Phineas Burgess	New York, N. Y.	Nov. 18.
14911	Kilns, lime	Job Sands	Sand's Mills, N. Y.	Mar. 11.
15549	Kilns, lime	Levi Averill	Elmira, N. Y.	Aug. 19.
16023	Marble and stone, machine for sawing	George I. Wardwell	Hatley, Canada West.	Nov. 4.
14296	Marble in obelisk form, machines for sawing	Philip Schrag and W. J. Von Kammer-lueber.	Washington, D. C.	Feb. 19.
14532	Marble in obelisk form, machines for sawing	John A. Bailey	Detroit, Mich.	Mar. 25.
14336	Marble in obelisk form, machines for sawing	Issachar A. Heald	Springfield, Mass.	Mar. 25.
14658	Marble in obelisk form, machines for sawing	I. E. Haviland	Galveston, Texas.	April 15.
14729	Marble in obelisk form, machines for sawing	James Miller	Buffalo, N. Y.	April 22.
14342	Marble in taper form, machines for sawing	Christopher Anazeen	New Castle, N. H.	Mar. 4.
14471	Marble in taper form, machines for sawing	C. A. Schultz	Chicago, Ill.	Mar. 18.
14277	Marble, machines for sawing	Wallis and George Bull	Tonawanda, Pa.	Mar. 19.
15792	Marble monuments, sawing tapering	Alonza Webster and D. K. Bennett.	Montpelier, Vt.	Sept. 23.
14177	Marble, mouldings on, machines for cutting	Hiram L. Houghton, assignor to Abel H. Greenell.	Springfield, Vt.	Jan. 29.
14072	Marble obelisks, machines for sawing	Abraham Straub	Milton, Pa.	Jan. 8.

14688	Marble obelisks, sawing, adjusting the angle in machines for	Lebbius Brooke	Great Falls, N. H.	April 15.
15814	Marble, sawing, in taper form, machine for	M. M. Manly	South Dorset, Vt.	Sept. 30.
14839	Marble-sawing machine	A. F. Ward	Louisville, Ky.	May 6.
15024	Marble-sawing machine	John A. Toll	Sugar Ridge, Ohio.	June 3.
15015	Marble-sawing machine	Robert Myers	Factory Point, Vt.	June 3.
15115	Marble-sawing machine	Cyrus Avery	Tunkhannock, Pa.	June 17.
15242	Marble-sawing machine	Henry Lawrence	New York, N. Y.	July 1.
15328	Marble-sawing machine	Ira Carter	Malone, N. Y.	July 15.
15383	Marble-sawing machine	John M. Mott, jr.	Lansingburg, N. Y.	July 22.
14995	Marble-sawing machines	Josiah Ashenfelder	Philadelphia, Pa.	June 3.
15713	Marble-sawing machines	Jose Toll	Locust Grove, Ohio.	Sept. 9.
15419	Marble, sawing, machines for	Lewis S. Fisher	Waynesboro', Pa.	July 29.
16086	Marble, sawing, machines for	William D. Gallaher	Bridgewater, Pa.	Nov. 18.
14823	Marble, sawing, machines for, in kerfs of varying angles	Samuel Nickelson	Pulaski, Tenn.	May 6.
14613	Mortar, machines for mixing lime and sand for	Henry W. Hunt and John Sands	Peekskill, N. Y.	April 8.
15847	Mortar, mixing, machines for	Benjamin F. Field	Beloit, Wis.	Oct. 7.
15230	Sawing stone, machine for	John Grayson	Queensstown, Md.	July 1.
14656	Saws, marble, straining	William B. Hatch	Elmira, N. Y.	April 15.
14684	Saw, stone and marble	Henry H. White and Edward A. Gray	East Poultney, Vt.	April 15.
15526	Stone, artificial	St. Julien Ravenel	Charleston, S. C.	Aug. 12.
14824	Stone, artificial, preparing	Robert Neisch	New York, N. Y.	May 6.
15335	Stone-dressing machine	A. M. George	New York, N. Y.	July 15.
15591	Stone, drilling and dressing, machines for	William M. Barton, assignor to William M. Barton and Robert M. Barton.	Russellville, Tenn.	Aug. 19.
14495	Stone-drilling machines	Josephus Echols	Columbus, Ga.	Mar. 25.
15410	Stone, grapple for raising. (See Class XII, letter G.)	Henry I. Behrens	New York, N. Y.	July 29.
15380	Stone in taper form, machines for sawing	Matthew J. McBride	Logansport, Ind.	July 22.
15280	Stone or marble, sawing, machine for	Charles Frost and A. W. Webster	Waterbury, Conn.	July 8.
15892	Stone, quarrying and cutting, machine for	John North	Middletown, Conn.	Oct. 14.
15299	Stone, sawing	C. A. Mills	Dubuque, Iowa.	July 8.
16036	Stone sawing-mill	T. Maycock, assignor to himself and H. Rice.	Buffalo, N. Y.	Nov. 4.
16021	Tile, drain, machine	L. D. Phillips	Chicago, Ill.	Nov. 4.
16139	Towels	Edwin Bennett	Baltimore, Md.	Dec. 2.
14537	Vessels, earthen, for hermetical sealing purposes. Vessels, pots, &c., earthen, mould for	Philip Schrag	Washington, D. C.	Mar. 25.
	Walls, mastic, for covering. (See Class IV, letter M.)			

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16126	Boots and shoe soles, edges of, "edge keys" for making and polishing.	George C. Todd	Lynn, Mass.	1856. Nov. 25.
14432	Boots and shoe soles, manufacture of	Lorenzo Stratton, assignor to himself and Luther Hill.	Feltonville, Mass.	Mar. 11.
14353	Boot crimps.	George Fetter	Philadelphia, Pa.	Mar. 4.
16123	Boot legs, machine for turning	M. C. Chamberlin and W. Filkins.	Wyoming, N. Y.	Nov. 25.
14380	Boots and shoes, application of soles to, by means of pressure, and gutta percha or other cements.	S. H. Whorf and Charles Rice.	Roxbury and Boston, Mass.	Mar. 4.
14216	Boots and shoes, composition soles to, mode of attaching.	John M. Wimley, assignor to John M. Wimley and W. H. Penrose.	Philadelphia, Pa.	Feb. 5.
15451	Boots and shoes, cutting out, machines for	James W. Wilder	Boston, Mass.	July 29.
15762	Boots and shoes, heels of, metallic braces for	George W. Griswold	Carbondale, Pa.	Sept. 23.
14080	Boots and shoes, manufacture of	S. H. Whorf, assignor to himself and Charles Rice.	Roxbury, Mass.	Jan. 8.
14060	Boots and shoes, peg cutters for	Samuel R. Jones	Baltimore, Md.	Jan. 8.
14269	Boots and shoes, pegging	Alfred Swingle, assignor to Elmer Townsend.	Boston, Mass.	Feb. 12.
14020	Boots and shoes, pegging, machines for	Waterman B. Johnson	Sandwich, N. H.	Jan. 1.
14370	Boots and shoes, pegging, machines for	George Schuh and Phineas L. Slayton.	Madison, Ind.	Mar. 4.
15866	Boots and shoes, pinners for lasting	B. F. Sturtevant, assignor to E. Townsend.	Skowhegan, Me.	Oct. 7.
14140	Boots and shoes, soles and heels of, machine for hammering leather for.	Jean Pierre Molliere	Lyons, France.	Jan. 22; France, July 22, 1853.
14426	Boots and shoes, soles of, machine for cutting out and "skiving" the, and also for cutting the "brands" therein.	William Wells and Mellen Bray.	Turner, Me.	Mar. 11.
14951	Boot-trees.	Charles T. Farnes	Milford, Mass.	May 27.
14856	Bridle-bits	Benjamin I. Day	York, Ind.	May 13.
15107	Collars, horse, machines for stuffing	H. G. Robertson	Greenville, Tenn.	June 10.
16107	Collars, horse, machines for stuffing	Joseph Albright	Greenville, Tenn.	Nov. 25.
14803	Collars, horse, mould press for	Melvin C. Chamberlin	Sheldon, N. Y.	May 6.
15789	Gauges, leather edge.	G. G. Townsend	Rochester, N. Y.	Sept. 23.
14469	Harness buckles	Nathan Post	East Cleveland, Ohio.	Mar. 18.

Harnesses and thills of vehicles, apparatus to be applied to. (See Class X, letter V.)

14477	Harness for shoeing horses.	William P. Thomas	Hillsboro', Ind.	Mar. 18.
15993	Harness, plough, back-band hook for.	Noah Warlick	Lafayette, Ala.	Oct. 28.
15057	Harness trace couplings	Charles K. Bradford	Lynn, Mass.	June 10.
16114	Leather and morocco, polishing, machines for.	William Craun	Brooklyn, N. Y.	Nov. 25.
15816	Leather, finishing, machines for.	Joseph Pyle	Wilmington, Del.	Sept. 30.
14606	Leather, polishing, machines for.	William P. Gamble	Philadelphia, Pa.	April 8.
15121	Leather, sheets of, making, from carrier's shavings or "buffings."	Charles F. Crockett	Newark, N. J.	June 17.
14211	Leather, softening, machines for.	John B. Wentworth	Lynn, Mass.	Feb. 5.
15807	Leather, softening, machines for.	John Greeleaf	Lowell, Mass.	Sept. 30.
14430	Leather splitting machines	Elisha Pratt, assignor to E. Pratt & H. P. Upton, assignors to E. Pratt and T. P. Pingree.	Salem, Mass.	March 11.
16205	Leather, stamping, machine for, combined with a rolling machine.	Frederick Berry	Harrisburg, Pa.	Dec. 9.
14698	Leather straps, &c., machines for raising and creasing.	George W. Pruyn	Mexico, N. Y.	April 15.
14499	Leather, stuffing, compositions for. (See Class IV, letter C.)	Francis A. White	Roxbury, Mass.	August 5.
14821	Morocco, machines for figuring and polishing.	Eugene L. Norton	Charlestown, Mass.	May 6.
14534	Morocco, tools for figuring	Samuel Green	Lynn, Mass.	March 25.
15462	Pegging jacks	Alfred Swingle, assignor to Elmer Townsend	Boston, Mass.	July 29.
14406	Pegging jacks	Alfred Bailey	Amesbury, Mass.	July 29.
15055	Pegging machines, hand.	William W. Batchelder	New York, N. Y.	June 10.
15575	Saddles, cart.	H. A. Rains	Nashville, Tenn.	Aug. 19.
15681	Saddles, ladies' riding.	Henry Adams	New York, N. Y.	Sept. 9.
15392	Saddles, riding	Jno. C. Fr. Salomon and Geo. E. Cooper.	Baltimore, Md.	July 22.
15744	Saddles, riding	Pascal Plant	Chicago, Ill.	Sept. 16.
16132	Saddle-tree, "dumb jockey," the "cross" or "horns," &c., being made of gutta-percha.	Richard Trussell	Brooklyn, N. Y.	Nov. 4.
14438	Saddle-trees, mode of attaching pads to.	Samuel Blackwell	Middlesex, England.	March 18, 1856; Eng-land, March 9, 1853.
15077	Shoe bindings, manufacture of leather.	James Ives	Mount Carmel, Conn.	June 10.
14040	Shoemakers' edge planes.	J. Turner, Jr., assignor to W. Covell.	Charlestown, Mass.	Jan. 1.
15176	Shoemakers' head blocks, pegging jacks, or.	Issac A. Dunham	North Bridgewater, Mass.	June 24.
14799	Shoe pegs, machine for pointing.	Thomas D. Bailey	Lowell, Mass.	May 6.
16280	Shoes, india rubber, catch for.	Jesse Ladd	Holderness, N. Y.	Dec. 23.
16013	Tan liquor to hides, order of applying	Nathaniel Hayward	Colchester, Conn.	Nov. 4.
15896	Tanning	S. W. Pingree	Methuen, Mass.	Oct. 14.
14399	Tanning apparatus	R. Gould	Whitewater, Wis.	March 11.
14375		Abraham Steers	Medina, N. Y.	March 4.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15303	Tanning hides.....	Samuel W. Pingree.....	Methuen, Mass.....	July 8, 1856.
15157	Tanning pre-compositions.....	J. P. Williams, assignor to H. L. Williams.....	Salem, Mass.....	June 17.
15736	Tanning, preparation of hides for.....	George W. Hatch.....	Princeton, Ill.....	Sept. 16.
15844	Tan vats, construction of hide frames in.....	Elias A. Eliason.....	Georgetown, D. C.....	Oct. 7.
15826	Trunks.....	S. F. Summers.....	St. Louis, Mo.....	Sept. 30.
16125	Trunks, travelling.....	Samuel W. Phelps.....	Cincinnati, Ohio.....	Nov. 25.
14879	Trunks, wardrobe..... (See Class IV.)	W. J. McCracken.....	Rochester, N. Y.....	May 13.

CLASS XVII.—HOUSEHOLD FURNITURE, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather-dressing, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15603	Apple parers.....	Charles P. Carter.....	Ware, Mass.....	Aug. 26.
15625	Apple parers.....	Marvin Smith.....	New Haven, Conn.....	Aug. 26.
15224	Apples, cutting and coring, machines for.....	Cook Darling.....	Utica, N. Y.....	July 1.
14775	Apples, paring, machines for.....	Ephraim L. Pratt.....	Philadelphia, Pa.....	April 29.
14800	Apples, paring, machines for.....	John D. Browne.....	Cincinnati, Ohio.....	May 6.
15133	Apples, paring, machines for.....	Horatio Keyes.....	Leominster, Mass.....	June 17.
15148	Apples, paring, machines for.....	S. D. Seagrave.....	Worcester, Mass.....	June 17.
16104	Apples, paring, machines for.....	C. P. Carter, assignor to Leonard Harrington.....	Ware, Mass.....	Nov. 18.
16240	Apples, paring, machines for.....	H. Keyes.....	Leominster, Mass.....	Dec. 16.
16080	Apples, potatoes, &c., machines for paring ..	Ephraim L. Pratt, assignor to L. Harrington.....	Philadelphia, Pa.....	Nov. 11.
16067	Apples, slicing, machines for.....	Ephraim L. Pratt.....	Philadelphia, Pa.....	Nov. 11.

16150	Baby walker and jumper.....	E. Y. Robbins.....	Cincinnati, Ohio.....	Dec. 2.
15127	Baskets, cake and fruit, silver-plated.....	R. Gleason, jr.....	Dorchester, Mass.....	June 17.
15900	Bed-bottoms, spring.....	Charles Schroeder.....	New York, N. Y.....	Oct. 14.
16310	Bed-bottoms, spring.....	Elkan Adler.....	New York, N. Y.....	Dec. 23.
14574	Beds, straw and husk, instrument for stirring.....	Calvin A. Richardson.....	Waterville, Maine.....	April 1.
15249	Bedstead.....	Ansel Moon.....	Bristol, Wis.....	July 1.
15609	Bedstead.....	Elias Howe, jr.....	Brooklyn, N. Y.....	Aug. 26.
14660	Bedstead fastenings.....	William Hinman.....	Elkhart, Ind.....	April 15.
16276	Bedstead fastenings.....	Spencer Lewis.....	Tiffin City, Ohio.....	Nov. 18.
15076	Bedstead fastenings.....	Sandy Harris.....	Philadelphia, Pa.....	Dec. 23.
15235	Bedsteads.....	William Huddleston.....	South Berwick, Maine.....	June 10.
15532	Bedsteads.....	Silas Huddleston.....	Cottage Grove, Ind.....	July 1.
15621	Bedsteads.....	John H. Belter.....	New York, N. Y.....	Aug. 19.
15618	Bedsteads.....	Jacob J. Smith and Jonathan H. Fugh.....	Philadelphia, Pa.....	Aug. 26.
14668	Bedsteads, metallic.....	C. H. Gould.....	Concord, N. H.....	Sept. 2.
15658	Bedstead, spring.....	Marshall Lefferts.....	New York, N. Y.....	April 15.
15209	Bedsteads, spring-bottoms for.....	W. H. Kimball and A. J. French, assignors to themselves and A. H. Noyes.....	Lynn, Mass.....	Sept. 2.
14514	Bedsteads, wardrobe, combined with other furniture.....	Alvah Foote, assignor to himself, Ira Russell, A. B. R. Sprague, and Henry Phelps.....	North Blandford, Mass.....	June 24.
14593	Bells, pressure.....	H. R. and J. L. Plimpton.....	Westfield, Mass.....	Mar. 25.
15573	Bristle separator.....	Jason Barton.....	Middle Haddam, Conn.....	April 8.
14883	Brooms and brushes.....	Adonijah Randel.....	New York, N. Y.....	Aug. 19.
15702	Brushes, wooden part of, machine for manufacturing the.....	Thomas H. Powers.....	Nyocena, Wis.....	May 13.
16126	Cans and vessels, apparatus for exhausting air from and hermetically sealing.....	Thomas Mitchell.....	Lausburgh, N. Y.....	Sept. 9.
14439	Cans, preserve, hermetically sealing.....	A. M. Purnell.....	Washington, D. C.....	Nov. 25.
14245	Cans, preserve, hermetically sealing.....	Charles Branwhite.....	New York, N. Y.....	Mar. 18.
15478	Carpet fastenings.....	Charles F. Russell.....	St. Louis, Mo.....	June 10.
16036	Carpet fastenings.....	R. W. Lewis.....	Honesdale, Pa.....	Feb. 12.
15611	Caster, ball, for trunks and furniture.....	S. R. C. Denison.....	Rochester, N. Y.....	Aug. 5.
15916	Casters, bottle.....	William S. Pratt, assignor to J. S. C. Thursty.....	Brooklyn, N. Y.....	Nov. 4.
15902	Caster-wheels, for furniture, finishing.....	Judson Knight.....	Newark city, N. J.....	Aug. 26.
15475	Chairs.....	Edward Gleason.....	Dorchester, Mass.....	Oct. 21.
15021	Chairs and other articles, elastic bottoms for.....	P. B. Tyler.....	Springfield, Mass.....	Oct. 14.
14507	Chairs, fan rocking.....	James Fernald.....	Boston, Mass.....	July 22.
14506	Chairs, fan rocking.....	Lysander Spooner.....	Montgomery, Ala.....	June 3.
		Benjamin M. Lewy.....	New York, N. Y.....	Mar. 25.
		Konrad Kiefer.....	New York, N. Y.....	Mar. 25.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries	Patentees	Residence.	Date of patent.
14880	Chairs for ships' cabins.	William Thomas.	Hingham, Mass.	May 13. 1856.
15031	Chairs, head-rests for.	C. A. Mills.	Dubuque, Iowa.	Oct. 21.
14872	Chairs, invalid.	Daniel S. James.	New Market, Va.	May 13.
15073	Chairs, invalid.	C. L. Taillant.	New York, N. Y.	Sept. 2.
14877	Chairs, portable.	Zebulon Lyford.	Lowell, Mass.	May 13.
16006	Chairs, rocking.	Martin Eberhard.	Philadelphia, Pa.	Nov. 4.
14262	Clothes-clamps.	W. H. Towers.	Philadelphia, Pa.	Feb. 12.
16065	Clothes-dryers.	Samuel Morrill.	Andover, N. H.	Nov. 11.
14110	Clothes-pins, machine for making.	Ephraim Parker.	Burlington, Iowa.	Jan. 15.
14466	Clothes-pins, machine for making.	George W. Parker.	Fitzwilliam, N. H.	Mar. 18.
15543	Clothes, wringing.	Robert P. Bradley, assignor to Joel Wisner.	Cuyahoga Falls, Ohio.	Aug. 12.
14334	Coffee pots.	Jacob M. Webb.	East Aurora, N. Y.	Feb. 26.
14718	Coffee pots.	Henry Walsh, assignor to H. Walsh and M. P. Espy.	Somerville, Tenn.	April 22.
15535	Corn, green, from the cob, separating.	William B. Coates.	Philadelphia, Pa.	Sept. 30.
14555	Corn, green, from the cob, machine for cutting.	Benjamin Taylor.	Philadelphia, Pa.	May 13.
14259	Corn, green, instrument or grating.	F. C. Treadwell, jr.	Philadelphia, Pa.	Feb. 12.
14889	Crackers, moulding, machines for preparing dough for.	Lewis White.	New York, N. Y.	May 13.
14123	Curtain fixtures.	James Stephens.	Hartford, Conn.	Jan. 15.
15258	Curtain fixtures.	Purches Miles.	New York, N. Y.	July 1.
15615	Curtain fixtures.	Ferdinand Winterich and Conrad Hagen.	Hartford, Conn.	Aug. 26.
15076	Curtain fixtures.	Socrates M. Ridgeway.	New York, N. Y.	Sept. 2.
15254	Dough, making and kneading, machines for.	Ralph Collier.	St. Michael's, Md.	July 1.
16267	Egg-beaters, rotary.	Sherburne C. Blodgett.	Baltimore, Md.	Dec. 23.
14275	Forks.	G. W. Hyatt.	Philadelphia, Pa.	Feb. 19.
16058	Forks for handling heated plates.	Joseph Parisette.	Auburn, N. Y.	Nov. 11.
15083	Freezers, ice cream.	John L. Brabyn.	Indianapolis, Ind.	June 10.
15550	Furniture polish.	George Blanchard.	New York, N. Y.	Aug. 19.
15325	Graters, nutmeg.	William Bennett.	New York, N. Y.	July 15.
15390	Gridiron.		New York, N. Y.	Sept. 30.

15982	Hook, suspensor, combined, and insect insulator.	Joseph C. Moulton.	Fitchburg, Mass.	Oct. 28.
15562	Knife cleaners.	William W. Hopkins.	Chesterfield Factory, N. H.	Aug. 19.
14788	Knives, cleaning, machines for.	A. C. Ketchum, assignor to Edward B. Olcott.	New York, N. Y.	April 29.
15266	Macaroni servor.	Albert L. Lincoln, assignor to Albert L. Lincoln and Charles M. Foss.	Boston, Mass.	July 1.
14901	Meat, cutting, machines for.	Gustavus V. Brecht.	St. Louis, Mo.	May 20.
15248	Meat, mincing, machine for.	Oren Moses.	Malone, N. Y.	July 1.
15452	Meats, smoking, apparatus for.	John Wright.	Wilmington, Del.	July 29.
15352	Mop heads.	Hiram Thompson and Richard Q. Tison.	Lebanon, N. H.	July 15.
16137	Mop heads.	Frederic Allen.	Worcester, Mass.	Dec. 2.
15592	Mosquito canopy.	Levi J. Henry, assignor to Benjamin J. Hart.	New York, N. Y.	Aug. 19.
16236	Pans, bake.	William Beach.	Philadelphia, Pa.	Dec. 16.
15829	Pillows and bolsters into their cases, improvement for putting.	David B. Tiffany.	Xenia, Ohio.	Sept. 30.
15128	Pitchers, molasses.	Henry W. Goodrich.	Boston, Mass.	June 17.
15231	Pitchers, refrigerating.	Franklin D. Hall.	Philadelphia, Pa.	July 1.
14974	Preserve vessels, self-sealing.	William J. Stevenson.	New York, N. Y.	May 27.
15132	Refrigerators.	Samuel Hickok.	Buffalo, N. Y.	June 17.
15345	Refrigerators.	Thaddeus Fairbanks, assignor to John C. Schooley.	St. Johnsbury, Vt.	Aug. 12.
16320	Refrigerators.	Charles Winship.	New Haven, Conn.	Dec. 23.
13450	Sad iron heaters.	Benjamin F. Wheelock.	Mayville, Wis.	July 29.
14219	Scissors.	John Allender.	New London, Conn.	Feb. 12.
14672	Settees, reversible backs of, double acting catch for.	B. F. McCreary.	New York, N. Y.	April 15.
15143	Smoothering irons.	Oscar F. Morrill.	Boston, Mass.	June 17.
15165	Smoothering irons.	Leander W. Boynton.	Worcester, Mass.	June 24.
15723	Smoothering irons, furnaco.	John Taggart, assignor to John Taggart and Vernon Brown.	Roxbury, Mass.	Sept. 9.
14796	Smoothering irons, self-heating.	G. W. Bishop.	Brooklyn, N. Y.	May 6.
15801	Smoothering irons, self-heating.	William D. Cummings.	Washington, Ky.	Sept. 30.
16254	Springs in upholstery, mode of securing.	Wendell Wright.	New York, N. Y.	Dec. 16.
15943	Table and bedsteads, combined.	Charles Baum.	Philadelphia, Pa.	Oct. 21.
15675	Table, centre, oracular wheel on. (See Class XXII, letter O.)	A. Watson.	Falmouth, Ky.	Sept. 2.
14093	Tables, self-waiting.	E. A. Curley.	Westport, Conn.	Jan. 15.
15407	Tables, portable folding.	C. D. Barnitz.	Baltimore, Md.	July 29.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15340	Vegetable cutters.....	George W. Childs.....	Liberty, Pa.....	1856.
14297	Vegetables for preservation, machines for preparing.	Masa Branch Southwick.....	Parish of St. Hilaire, Canada East.....	Oct. 7. England, 1853.
16078	Wardrobe trunks. (See Class XVI, letter T.)	Jacob Geiss and Jacob Brozius.....	Belleville, Ill.....	Sept. 15, 1853.
14111	Wash-boards.....	Ira S. Parker.....	Sharon, Vt.....	Nov. 11.
14638	Wash-boards.....	Royal Hatch, assignor to Henry C. Hatch	Stafford, Vt.....	Jan. 15.
14869	Wash-boards, machinery for manufacturing (B)	J. B. Holmes.....	Cincinnati, Ohio.....	April 8.
15353	Washing machine.....	H. H. Torrey.....	Buffalo Grove, Ill.....	May 13.
15363	Washing machine.....	Daniel N. Allard.....	Rokeby, Ohio.....	July 15.
15580	Washing machine.....	John S. Shepler.....	Beaver, Pa.....	Aug. 12.
14391	Washing machines.....	Edward B. Clements and Silas G. Willie.....	Barnet, Vt.....	Aug. 19.
14818	Washing machines.....	James T. King.....	New York, N. Y.....	Mar. 11.
15033	Washing machines.....	Solon Bishop.....	Homer, N. Y.....	May 6.
15034	Washing machines.....	John T. Bever.....	Haynesville, Mo.....	June 3.
15043	Washing machines.....	John McChesney.....	Louisville, Ky.....	June 3.
15199	Washing machines.....	V. R. Stewart.....	Weedport, N. Y.....	June 24.
15084	Washing machines.....	J. F. Brown.....	Columbus, Ga.....	Sept. 9.
15711	Washing machines.....	R. Smith.....	Towanda, N. Y.....	Sept. 14.
15805	Washing machines.....	Jacob Purkey.....	York, Pa.....	Oct. 14.
15958	Washing machines.....	C. N. Tyler, assignor to H. Fardin.....	Washington, D. C.....	Oct. 21.
15949	Washing machines.....	James M. Kern.....	Morgantown, Va.....	Oct. 21.
15945	Washing machines.....	Albert A. Dailey.....	Willson, N. Y.....	Oct. 21.
15981	Washing machines.....	Josiah Mumford and John W. Wilson.....	Clarksburg, Ohio.....	Oct. 28.
15989	Washing machines.....	Moses D. Wells.....	Morgantown, Va.....	Oct. 28.
16068	Washing machines.....	Ira Reynolds.....	Republic, N. Y.....	Nov. 11.
16190	Washing machines.....	Isaac S. Roland.....	West Earl, Pa.....	Dec. 9.
14498	Water coolers and filters.....	John S. Galaher, jr.....	Washington, D. C.....	Mar. 25.
14162	Window-shades, stenciling, apparatus for making. (See Class IV, letter P.)	Daniel Lloyd.....	New York, N. Y.....	Jan. 29.
14217	Writing desks.....	Charles H. Bergman.....	New York, N. Y.....	Feb. 5.

CLASS XVIII.—ARTS, POLITE, FINE, AND ORNAMENTAL, including music, painting, sculpture, engraving, books, paper, printing, binding, jewelry, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15311	Accordeons.....	Anthony Fass.....	Philadelphia, Pa.....	1856.
15401	Accordeons, valves of.....	C. M. Zimmerman.....	Philadelphia, Pa.....	Aug. 12.
14069	Bank notes, &c., from being counterfeited, method of preventing.	C. D. Seropyan.....	New Haven, Conn.....	July 22.
15186	Bank notes, bills, &c., blanks for.....	Peter Hannay.....	Washington, D. C.....	Jan. 8.
16297	Books, &c., machine for paging.....	R. L. Hawes.....	Worcester, Mass.....	Aug. 5.
15282	Books, rounding and backing, machine for.....	John E. Coffin.....	Westbrook, Mo.....	Dec. 9.
15212	Breastpins, shield to protect.....	John H. Phillips, assignor to Leigh R. Holmead.....	Washington, D. C.....	July 8.
14202	Daguerreotype cases, hinges of, fastening for the.	Samuel Peck.....	Hew Haven, Conn.....	June 24.
14122	Daguerreotype plates, box for coating.....	Joseph H. Tompkins.....	Buffalo, N. Y.....	Feb. 5.
	Designs on wood, mode of producing. (See Class XIV, Letter W.)			Jan. 15.
16141	Electrotype plates, mode of backing.....	William Filmer and Edward Bookout.....	New York, N. Y.....	Dec. 2.
15185	Envelope.....	Robert T. Knight.....	Philadelphia, Pa.....	June 24.
15475	Envelope.....	William B. Coates.....	Philadelphia, Pa.....	Aug. 5.
14614	Envelopes, construction of.....	Robert T. Knight.....	Philadelphia, Pa.....	April 8.
14643	Envelopes, machine for making.....	William H. Low.....	Albany, N. Y.....	April 8.
14625	Envelopes, machine for making.....	William W. Cotton.....	New York, N. Y.....	April 8.
15532	Glass, method of lettering and ornamenting.	Jerome B. Shaw.....	Pittsburg, Pa.....	Aug. 12; antedated
14378	Guitars.....	William B. Tilton.....	New York, N. Y.....	Apr. 24.
14451	Inkstand.....	R. Gleason, jr.....	Dorchester, Mass.....	Mar. 4.
15527	Inkstands to desks, mode of attaching.....	L. R. Satterlee.....	Rochester, N. Y.....	Mar. 18.
15969	Jewelry, method of fastening.....	John B. Coppinger.....	New York, N. Y.....	Aug. 12.
14306	Knife and pencil case, combined.....	Richard Cross.....	Attleborough, Mass.....	Oct. 28.
15283	Lettering index, tool for.....	Edwin Crawley.....	Cincinnati, Ohio.....	Feb. 26.
15919	Melodeons.....	Josiah A. Rollins.....	Buffalo, N. Y.....	July 8.
15014	Melodeons.....	W. N. Manning.....	Rockport, Mass.....	June 3.
15218	Melodeons.....	Jeremiah Carhart.....	New York, N. Y.....	June 3.
16094	Melodeons.....	Lafayette Louis.....	Boston, Mass.....	July 1.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16296	Melodeons, reed boards for, machine for manufacturing.	G. O. Spences.....	Elmira, N. Y.....	Dec. 23. 1856.
15316	Melodeons, &c., base damper for.....	Riley Burditt, assignor to Jacob Es ey and Hartsell P. Green.	Brattleboro', Vt.....	July 8.
15061	Melodeons, reed boards for, machine for manufacturing.	Jeremiah Carhart.....	New York, N. Y.....	June 10.
14501	Miniature case.....	Halvor Halvorson, assignor to Slocum and Watkinson	Boston, Mass.....	Mar. 25.
16909	Musical instruments, automatic.....	Hiram Groves.....	New York, N. Y.....	Nov. 4.
14955	Musical instruments, reed.....	Emmons Hamlin, assignor to Hamlin and Mason.	Boston, Mass.....	May 27.
15921	Musical instruments, reed for.....	J. C. Briggs.....	Woodbury, Conn.....	Oct. 21.
14970	Musical notation.....	Philetus Phillips.....	Middletown Point, N. J.....	May 27.
15937	Musical notation.....	Abbey S. Smith.....	Rochester, N. Y.....	Oct. 21.
14935	Musical notation.....	Thomas Ward.....	Birmingham, Pa.....	May 20.
14992	Organs, parlor.....	Thomas Sands, assignor to Thomas Sands and John P. Lindsay.	Chelsea, Mass.....	May 27.
15066	Painted cloth, machine for rubbing and polishing.	Daniel Cushing.....	Wheeling, Va.....	June 10.
15065	Paint, machine or coating cloth with.....	Daniel Cushing.....	Wheeling, Va.....	June 10.
14260	Paper, &c., folding machine for.....	Thomas Thompson.....	Niverville, N. Y.....	Feb. 12.
15232	Paper clip.....	John L. Harvey and C. A. Mills.....	Dubuque, Iowa.....	July 1.
16256	Paper, cutting and folding, machine for.....	Charles Moore, assignor to himself, Wm. G. Sheldon, and Lorenzo B. Chandler.	Hartford, Conn.....	Dec. 16.
14697	Paper, folding, machine for.....	John North.....	Middletown, Conn.....	April 15.
15842	Paper, folding, machine for.....	Cyrus Chambers, jr.....	Kennett Square, Pa.....	Oct. 7.
16266	Paper, folding, machinery for.....	C. O. Crosby.....	New Haven, Conn.....	Dec. 23.
15228	Paper pulp, making boxes of, method of.....	A. French and C. Frost.....	Waterbury, Conn.....	July 1.
14303	Paper, wall, machine for edging.....	Henry J. Brunner.....	Nazareth, Pa.....	Feb. 26.
	Pearl ornaments, securing, in handles of cast metal. (See Class 11, letter M.)			
14760	Pen and pencil case.....	Edward Baptis.....	Hoboken, N. J.....	April 29.
15660	Pen and pencil case.....	John H. Knapp.....	New York, N. Y.....	Sept. 2.
14276	Pen, fountain.....	Henry A. Brown and James Wiley.....	Brooklyn, N. Y.....	Feb. 19.
14125	Pen, fountain.....	A. F. Warren and C. M. H. Warren.....	Brooklyn, N. Y.....	Mar. 11.

15417	Pen, fountain.....	Austin G. Day.....	Seymour, Conn.....	July 29.
15622	Pen, fountain.....	Nelson B. Slayton.....	Madison, Ind.....	Aug. 26.
16259	Pen, fountain.....	A. F. Warren.....	Brooklyn, N. Y.....	Dec. 23.
15657	Pen, fountain, ruling.....	Charles Ketcham.....	Penn Yan, N. Y.....	Sept. 2.
15490	Pen-holder.....	T. Kenton Lyon.....	Richmond, Va.....	Aug. 5.
14286	Pen-holder, flexible.....	Francis I. Klein.....	New York, N. Y.....	Feb. 19.
15223	Pen, metallic.....	Alphonso Crayley.....	Brooklyn, N. Y.....	July 1.
14203	Pen, metallic.....	Myer Phineas.....	New York, N. Y.....	Feb. 5.
15992	Pen, metallic.....	John Wilcox.....	New York, N. Y.....	Oct. 28.
16242	Photographic baths.....	William and William H. Lewis.....	Philadelphia, Pa.....	Dec. 16.
15854	Photographic cameras, plate-holder for.....	W. and W. H. Lewis, assignors to Malonzo J. Drummond.	New York, N. Y.....	Oct. 7.
14679	Photographic impressions, preparation of oil ground to receive.....	Joel H. Tatum.....	Baltimore, Md.....	April 15.
15809	Photographic instruments.....	D. J. Kellogg.....	Rochester, N. Y.....	Sept. 30.
15924	Photographic pictures, bituminous ground for.....	V. M. Griswold.....	Lancaster, Ohio.....	Oct. 21.
15336	Photographic pictures, collodion for.....	Victor M. Griswold.....	Lancaster, Ohio.....	July 15.
15341	Photographic pictures, mode of tinting.....	Giles Langdell and Marcus A. Root.....	Philadelphia, Pa.....	July 15.
14946	Photographic pictures on glass.....	A. Bisbee and T. Day.....	Columbus, Ohio.....	May 27.
15497	Photographic pictures on glass, mode of coloring.....	D. B. and H. B. Spooner.....	Springfield, Mass.....	Aug. 5.
14300	Photographic pictures on japanned surfaces {	H. L. Smith, assignor to.....	Gambier, Ohio.....	Feb. 19.
14184	Photographic plate vise.....	William Neff and Peter Neff, jr.....	Cincinnati, Ohio.....	Feb. 5.
14509	Piano-forte action.....	Levi Chapman.....	New York, N. Y.....	Mar. 25.
14998	Piano-forte action.....	N. M. Lowe (formerly N. L. Murphy).....	Boston, Mass.....	June 3.
14918	Piano legs, attachments for.....	Joseph Becker.....	New York, N. Y.....	May 27.
14383	Pianos, grand, construction of.....	William Clark.....	New York, N. Y.....	Mar. 4.
15915	Picture cases, hinge for.....	Daniel F. Haasz.....	Philadelphia, Pa.....	Oct. 14.
		Alfred P. Critchlow, assignor to A. P. Critchlow & Co.	Florence, Mass.....	Oct. 14.
15068	Pocket-book.....	J. C. Dickinson and Robert Bate.....	Hudson, Mich.....	June 10.
15150	Polishing machine. (See Class XIV, letter P.)	James Shaw.....	Providence, R. I.....	June 17.
14246	Portfolio.....	Edward Lindner and Conrad Hoffman.....	New York, N. Y.....	Feb. 12.
15891	Porte-monnaies.....	John L. Mason.....	Germantown, Pa.....	Oct. 14.
14867	Porte-monnaies and pocket-books, fastening for.....	James Hewson.....	Newark, N. J.....	May 13.
15011	Press, copying.....	Christian Knauer.....	Pittsburg, Pa.....	June 3.
16245	Press for printing hat linings.....	William Moultrie.....	New York, N. Y.....	Dec. 16.
14238	Press, hand, for stamping letters, &c.....	Anson Hatch.....	Forestville, Conn.....	Feb. 12.
15358	Printers' composing stick.....	Oliver F. Grover.....	Middletown, Conn.....	July 15.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14542	Printing cylinder	Justus Webster and Samuel H. Folsom.	Lowell, Mass.	1856.
14295	Printing from engraved plates, machine for.	James F. Starrett.	New York, N. Y.	Mar. 25.
15161	Printing instruments for the blind	A. Ely Beach.	Stratford, Conn.	Feb. 19.
14919	Printing machine	John M. Jones.	Palmyra, N. Y.	June 24.
14907	Printing machine	John H. Cooper.	Palmyra, N. Y.	May 20.
14214	Printing machines, calico, movement for the doctors of.	John Standing, assignor to himself and James Baxendale.	Philadelphia, Penn.	May 20.
14789	Printing, machines for enclosing and	Saml. W. Love, assignor to himself and Jacob M. Beck.	Fall River, Mass.	Feb. 5.
14016	Printing press	George P. Gordon.	Philadelphia, Penn.	April 20.
14558	Printing press	George F. Folsom.	New York, N. Y.	Jan. 1.
15137	Printing press	Thomas and Alfred Parkes.	Roxbury, Mass.	April 1.
15477	Printing press	William H. Danforth.	Brooklyn, N. Y.	July 29.
15740	Printing press	A. and B. Newbury.	Salem, Mass.	Aug. 5.
16109	Printing presses	F. L. Bailey.	Windham Centre, N. Y.	Sept. 16.
16221	Printing presses	Sargent, Charles G., and Abram Keach, assignors to Abram Keach and Caleb M. Marvel.	Boston, Mass.	Nov. 25.
16263	Printing presses	G. H. Babcock.	Lowell, Mass.	Dec. 9.
16128	Printing presses, feeding paper to	Moses S. Beach.	Westerley, R. I.	Dec. 23.
16168	Printing presses, feeding paper to, machine for.	David Baldwin.	Brooklyn, N. Y.	Dec. 2.
16311	Printing presses, feeding paper to, machine for.	Moses S. Beach.	Godwinville, N. J.	Dec. 9.
14084	Printing presses, machine for feeding sheets of paper to.	Samuel I. Chapman.	Brooklyn, N. Y.	Dec. 23.
15639	Printing press, feeding sheets of paper to, machine for.	David Babson.	Charleston, S. C.	Jan. 15.
15312	Printing press, hand	Daniel K. Winder.	Groton, Conn.	Sept. 2.
16270	Printing press, hand	Platt Evens, jr.	Cincinnati, Ohio.	July 8.
15428	Printing press, portable	Samuel W. Lowe, assignor to Samuel Lowe and W. F. Scheible.	Cincinnati, Ohio.	Dec. 23.
	Printing telegraph, electro-magnetic. (See Class VIII, letter T.)		Philadelphia, Penn.	July 29.

14772	Printing telegraph, electro-magnetic. (See Class VIII, letter T.)	John McInnes	Braintree, Mass.	April 29.
15574	Printing woollen and other fabrics, machine for.	Edwin A. Russell.	Hookset, N. H.	Aug. 19.
15764	Stamp, hand	Charles W. Hackett.	Elmyra, N. Y.	Sept. 23.
16167	Stamp, hand	Nathan Ames, assignor to Boston Hand-Stamp Company.	Saugus, Mass.	Dec. 2.
14548	Stamp, self-inking	Nathan Ames.	Saugus, Mass.	April 1.
14670	Stencilling window-shades, apparatus for. (See Class XVII, letter W.)	William Loyd.	Philadelphia, Pa.	April 15.
15386	Type-casting machines, valve for	Edward Pelouze, jr.	Philadelphia, Pa.	July 22.
15340	Type, composing and distributing, machine for.	Julius J. Koenig.	Chicago, Ill.	July 15.
15501	Types, securing, on rotary beds	Richard M. Hoo.	New York, N. Y.	Aug. 5.
16102	Violins, &c., tail-piece for	C. M. Zimmerman.	Philadelphia, Pa.	Nov. 18.
14860	Violins, bow for	Samuel F. French.	Franklin, Vt.	May 13.
14056	Watch-key	Morris Falkenaw, Morris Pollak, and Solomon Wiener.	Hoboken, N. J.	Jan. 8.
15073	Watchmakers, tools for	William Hart.	Maysville, Wis.	June 10.

CLASS XIX.—FIRE-ARMS AND IMPLEMENTS OF WAR, and parts thereof, including the manufacture of shot and gunpowder.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15315	Blastic compound. (See Class IV, letter C.)	Chas. E. Barnes, assignor to C. E. Barnes and M. W. Oliver.	Lowell, Mass.	1856.
14215	Cannon automatic	Charles C. Terrel, assignor to Charles C. Terrel and S. Crawford.	Shullsburg, W. s.	July 8.
15357	Cannon, many-chambered breech-loading	Josiah Dodge.	Dummerston, Vt.	Feb. 5.
14830	Cannon, mode of charging	Jesse S. Butterfield and Simcon Marshall.	Philadelphia, Penn.	July 15.
15141	Cartridge opener	Edward Maynard.	Washington, D. C.	May 13.
15707	Cartridges	Julius Riedel.	Pleasant Hill, Ky.	June 17.
15936	Cartridges	G. W. Morse.	East Baton Rouge, La.	Sept. 9.
				Oct. 28.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15369	Cartridges, fixed.....	George Buckel and Edward Dorsch.....	Monroe, Mich.....	July 22, 1856.
14077	Fire-arms.....	James H. Merrill.....	Baltimore, Md.....	Jan. 8.
14095	Fire-arms.....	Joseph C. Day.....	Hackettstown, N. J.....	Jan. 15.
14667	Fire-arms.....	Palmer Lancaster.....	Burr Oak, Mich.....	April 15.
14774	Fire-arms.....	Frederick Newberry.....	Albany, N. Y.....	April 29.
14905	Fire-arms.....	Samuel Colt.....	Hartford, Conn.....	May 20, 1856; England, March 3, 1853.
15032	Fire-arms.....	Frederick B. E. Beaumont.....	Upper Woodhall, Barnsley, county of York, England.....	June 3, 1856; England, Feb. 20, 1855.
15041	Fire arms.....	George Kesling.....	Lebanon, Ohio.....	June 3.
15141	Fire-arms.....	Henry S. North.....	Middletown, Conn.....	June 17.
15202	Fire-arms.....	James Warner.....	Springfield, Mass.....	June 24.
15167	Fire-arms.....	Forlyce Beals.....	New Haven, Conn.....	June 24.
15292	Fire-arms.....	James E. Halsey.....	New York, N. Y.....	July 8.
15347	Fire-arms.....	George H. Soule.....	Jersey City, N. J.....	July 15.
15521	Fire-arms.....	Frederick D. Newbury, assignor to R. V. Dewitt, jr.....	Albany, N. Y.....	Aug. 12.
15522	Fire-arms.....	Abner N. Newton.....	Richmond, Ind.....	Aug. 12.
15516	Fire-arms.....	Frederick W. Hoffman.....	New York, N. Y.....	Aug. 12.
15734	Fire-arms.....	E. H. Graham.....	Manchester, N. H.....	Sept. 16.
15797	Fire-arms.....	Joseph Adams.....	Cleveland, Ohio.....	Sept. 30.
15935	Fire-arms.....	Dr. Alexandre Le Mat.....	New Orleans, La.....	Oct. 21.
16124	Fire-arms.....	Dr. Alexandre Le Mat.....	New Orleans, La.....	Nov. 25.
14057	Fire-arms, breech-loading.....	L. H. Gibbs.....	New York, N. Y.....	Jan. 8.
14253	Fire-arms, breech-loading.....	Wm. H. Robertson and Geo. W. Simpson.....	Hartford, Conn.....	Feb. 12.
14491	Fire-arms, breech-loading.....	A. E. Burnside.....	Bristol, R. I.....	Mar. 25.
14554	Fire-arms, breech-loading.....	Hezekiah Conant.....	Hartford, Conn.....	April 1.
14780	Fire-arms, breech-loading.....	Simon F. Stanton.....	Manchester, N. H.....	April 29.
14919	Fire-arms, breech-loading.....	Nathan S. Clement.....	Worcester, Mass.....	May 27.
15072	Fire-arms, breech-loading.....	Henry Gross.....	Tiffin, Ohio.....	June 10.
15240	Fire-arms, breech-loading.....	B. F. Joslyn.....	Worcester, Mass.....	July 1.
15307	Fire-arms, breech-loading.....	William Mt. Storm.....	New York, N. Y.....	July 8.
15496	Fire-arms, breech-loading.....	Gilbert Smith.....	Buttermilk Falls, N. Y.....	Aug. 5.

15990	Fire-arms, breech-loading.....	T. A. Washington.....	U. S. Army.....	Oct. 28.
15995	Fire-arms, breech-loading.....	G. W. Morse.....	East Baton Rouge, La.....	Oct. 28.
16070	Fire-arms, breech-loading.....	Gustave Scharfe.....	New York, N. Y.....	Nov. 11.
16288	Fire-arms, breech-loading.....	H. Schroeder, L. Salowski, and William Schmidt.....	Bloomington, Ill.....	Dec. 23.
14147	Fire-arms, cartridges of, primers for.....	Horace Smith and Daniel B. Wesson, assignors to the Volcanic Repeating Arms Company.....	New Haven, Conn.....	Jan. 22.
15262	Fire-arms, magazine hammer for.....	James N. Ward.....	U. S. Army.....	July 1.
14319	Fire-arms, percussion locks for.....	John H. B. Latrobe.....	Baltimore, Md.....	Feb. 26.
14742	Fire-arms, projectiles for.....	Thomas Smith.....	Pittsburg, Penn.....	April 22.
14017	Fire-arms, repeating.....	Benjamin Grooms.....	Carmichael's, Pa.....	Jan. 1.
14820	Fire-arms, repeating.....	George Leonard.....	Shrewsbury, Mass.....	May 6.
15110	Fire-arms, repeating.....	Alexander Hall, assignor to Alexander Hall and James C. Caldwell.....	New York, N. Y.....	June 10.
15388	Fire-arms, repeating.....	C. S. Pettengill.....	New Haven, Conn.....	July 22.
14034	Fire-arms, repeating magazine.....	John C. Smith.....	Camden, N. J.....	Jan. 1.
14118	Fire-arms, revolving.....	Eben T. Starr.....	New York, N. Y.....	Jan. 15.
14420	Fire-arms, revolving.....	Wm. Mt. Storm.....	New York, N. Y.....	Mar. 11.
14436	Fire-arms, revolving.....	F. Newbury.....	Albany, N. Y.....	Mar. 11.
14710	Fire-arms, revolving.....	Gustav Ad. Blittkowski and Frederick Wm. Hoffman.....	New York, N. Y.....	April 22.
15397	Fire-arms, trigger protector for.....	Bernard H. Westerhood.....	Philadelphia, Pa.....	July 22.
14819	Guns, breech-loading.....	Edward Lindner.....	New York, N. Y.....	May 6.
16911	Guns, breech-loading.....	C. Sharps.....	Philadelphia, Pa.....	Nov. 11.
15244	Gun carriage.....	John Laurens.....	Charleston, S. C.....	July 1.
14388	Guns, shot.....	G. A. Blittkowski and F. W. Hoffman.....	New York, N. Y.....	Mar. 25.
14597	Guns, needle.....	Edwin P. Monroe.....	Monroe, Mich.....	April 8.
14514	Locks, gun.....	G. W. Bishop.....	Charlestown, Mass.....	Mar. 25.
15652	Ordnance, breech-loading.....	James Chattaway.....	Brooklyn, N. Y.....	Sept. 9.
15063	Percussion caps, water-proof.....	James Chattaway.....	Springfield, Mass.....	June 10.
15370	Percussion tape-priming.....	Charles T. James.....	Springfield, Mass.....	July 22.
14315	Projectiles.....	N. Scholfield.....	Providence, R. I.....	Feb. 26.
15577	Projectiles for fire-arms.....	William Taggart.....	Norwich, Conn.....	Aug. 19.
16976	Projectiles for fire-arms.....	John B. Read.....	Haverhill, Mass.....	Nov. 11.
15939	Projectiles for ordnance.....	Ethan Allen.....	Tuscaloosa, Ala.....	Oct. 28.
15474	Projectiles, hollow, moulds for.....	John Lippincott.....	Worcester, Mass.....	July 29.
14460	Projectiles, percussion.....	A. B. Smith and Wm. Weaver.....	Pittsburg, Pa.....	Mar. 18.
15529	Projectiles, throwing, machine for.....	R. H. Isham.....	Clinton, Pa.....	Aug. 12.
15425	Rifle shot, mode of patching.....	William W. Hubbell.....	Greenwich, Conn.....	July 29.
14503	Shells, explosive.....		Philadelphia, Pa.....	or.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15769	Shells, explosive.	A. M. George.	Nashua, N. H.	Sept. 23, 1856.
14133	Shells, explosive, eccentric.	Wm. W. Hubbell.	Philadelphia, Pa.	Jan. 22.
15075	Shot and shell, sabot for rotating.	Wm. W. Hubbell.	Philadelphia, Pa.	June 10.
14151	Shot pouches.	Joseph T. Capewell.	Woodbury, Conn.	Jan. 29.
15651	Shot pouches, charges for.	John M. Hatlaway.	New York, N. Y.	Sept. 2.

CLASS XX.—SURGICAL AND MEDICAL INSTRUMENTS, including trusses, dental instruments, bathing apparatus, &c.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15626	Cupping.	Loyall Tillotson.	Thompson, Ohio.	Aug. 26, 1856.
15508	Cupping instruments.	Sherman McLean.	Reynolds's Basin, N. Y.	Aug. 19.
14739	Emissions, nocturnal, rings to prevent.	L. D. Sibley.	Northampton, Mass.	April 22.
15215	Forceps, dental.	Hazin J. Batchelder.	West Fairlee, Vt.	July 1.
15730	Forceps, dentist's.	John G. Coates.	Big Lick, Va.	Sept. 16.
14085	Genital organs, apparatus for curing varicocele, sterility, impotency, and other diseases of the.	John Cheever.	Boston, Mass.	Jan. 15.
15372	Hands and arms, artificial.	John S. Drake.	Boston, Mass.	July 22.
15831	Legs, artificial.	O. D. Wilcox.	Easton, Pa.	Sept. 30.
14836	Legs, artificial, construction of.	William Selpho.	New York, N. Y.	May 6.
14293	Pessaries, construction of.	F. Roesler.	New York, N. Y.	Feb. 19.
	Phrenology, apparatus for teaching. (See Class XXII.)			
14161	Pill-making machines.	Noah W. Kumlér.	Cincinnati, Ohio.	Jan. 29.
16066	Respirator, medical.	E. M. Murphy.	Lexington, Ill.	Nov. 11.
14853	Splint, surgical.	John Clough and Daniel M. Cummings.	Enfield, N. H.	May 13.
15504	Supporters, invalid.	James T. Alston.	Raleigh, N. C.	Aug. 12.
14524	Syringe-bottles for medicinal agents.	John Stull.	Philadelphia, Pa.	Mar. 25.

15966	Teeth, applying freezing mixtures to the.	Isaac B. Branch.	Galena, Ill.	Oct. 28.
15139	Teeth, artificial, adjustable punches for setting.	Samuel Mallett and Augustus B. Smith.	New Haven, Conn.	June 17.
14924	Teeth, artificial, devices for setting.	Wm. G. Oliver and Thomas Harrison.	Buffalo, N. Y.	May 20.
15965	Tooth extractor.	Hazen J. Batchelder.	West Fairlee, Vt.	Oct. 28.
15706	Tooth-plates by the electrotype process, casting artificial.	John L. Newell.	Binghampton, N. Y.	Sept. 9.
14440	Trusses, hernial.	John Broiles.	Madison, Ala.	Mar. 18.
16292	Truss-pads.	Sylvester I. Sherman.	New York, N. Y.	Dec. 23.
15858	Truss-pads, glass or earthen.	Charles C. Reinhardt.	Baltimore, Md.	Oct. 7.
14993	Uterine supporters.	William Alley.	Columbus, Ga.	June 3.
15897	Uterine supporters.	William Provines.	Columbia, Mo.	Oct. 14.

16

CLASS XXI.—WEARING APPAREL, ARTICLES FOR THE TOILET, &c., including instruments for manufacturing.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
15570	Bonnets and bonnet frames, machines for pressing.	William Osborn.	Louisville, Ky.	Aug. 19, 1856.
15671	Buckle for wearing apparel.	William Slade.	Gum Creek, Ga.	Sept. 2.
15666	Buckle for wearing apparel.	Edward Parker.	Plymouth, Conn.	Sept. 2.
14019	Collars, shirt.	Walter Hunt.	New York, N. Y.	Jan. 1.
14308	Collars, shirt, machinery for making.	Othniel W. Edson.	Troy, N. Y.	Feb. 26.
15634	Comb blanks, machine for sizing.	William Focket and Benj. S. Stedman, assignors to Julius Pratt & Co.	Moriden, Conn.	Aug. 26.
16289	Shirts.	S. H. & J. Strouse.	New York, N. Y.	Dec. 23.
16050	Sleeve-fastener.	John P. Derby.	Cavendish, Vt.	Nov. 11.
14756	Studs for wearing apparel.	Lucius Paige, assignor to himself and Albert L. Lincoln.	Cavendish, Vt.	April 22.
15824	Tailors' measures.	Amos Stocker.	Rome, N. Y.	Sept. 30.
16106	Tailors' pressing machines.	C. W. Williams.	Boston, Mass.	Nov. 18.
14431	Umbrella ribs, manufacturing.	Charles C. Reed, assignor to Charles C. Reed, W. S. Reinert, and J. Schnell.	Philadelphia, Pa.	Mar. 11.
16063	Umbrellas, preparing rattan for.	James W. Martin.	Philadelphia, Pa.	Nov. 11.
14683	Wigs.	Dewitt C. Warner.	Wilkesbarre, Pa.	April 15.
16140	Wristband fastener.	John P. Derby.	Boston, Mass.	Dec. 2.

CLASS XXII—Miscellaneous.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
14719	Annunciators, hotel.....	William H. Hale.....	Worcester, Mass.....	1856. April 22.
16116	Backgammon and checker-boards.....	Edwin O. Goodwin.....	Bristol, Conn.....	Nov. 25.
14900	Bags, travelling, and mail pouches, frames for.	Samuel D. Quimby, assignor to Edward A. Locke.	Winchester, Mass.....	April 2
15042	Barrels, &c, rolling and handling, apparatus for.	Servetus Longley.....	Cincinnati, Ohio.....	June
14964	Billiard cues.....	Conrad Leicht.....	New York, N. Y.....	May 27.
14290	Billiard table cushions.....	Michael Phelan.....	New York, N. Y.....	Feb. 19.
15994	Billiard table cushions.....	William B. Carpenter.....	Brooklyn, N. Y.....	Oct. 28.
15788	Blacking, stove. (See Class IV, letter B.)			
	Bottle castors. (See Class XVII, letter C.)			
	Bottles and other vessels made from plastic substances, tool for forming the grooves around the orifice of.	Amasa Stone.....	Philadelphia, Pa.....	Sept. 23.
15098	Bottles, apparatus for cutting the strings that secure the corks in.	George Blanchard.....	New York, N. Y.....	June 10.
14446	Bottles, corking, machines for.....	H. N. DeGraw.....	Piermont, N. Y.....	18.
14255	Bottles, envelopes for.....	John Seithen.....	Coblentz, Prussia.....	Feb. 12. England Aug. 29, 1854.
15802	Bottles, hermetically sealing, mode of.....	Mills B. Espy.....	Philadelphia, Pa.....	Sept. 30.
15514	Box, fruit.....	J. W. Hayes.....	Newark, N. J.....	Aug. 12.
14783	Box openers.....	Charles P. S. Wardwell.....	Lake Village, N. H.....	April 29.
16017	Burglar's alarm.....	William McLachlan.....	New York, N. Y.....	Nov. 4.
16200	Cigars.....	William Palmer Surgey, assignor to Chas. Henry Stanley.	Hackney, Great Britain.....	Dec. 9. England Sept. 25, 1854.
14763	Cigar, machines.....	William Dawson.....	Huntington, Conn.....	April 29.
14732	Coal breakers.....	Thomas Petherick.....	Pottsville, Pa.....	April 22.
16098	Cork, softening, by steam.....	Bennett Potter, jr.....	Charlestown, Mass.....	Nov. 18.
14527	Creepers to prevent slipping on ice, &c.....	William H. Towers.....	Philadelphia, Pa.....	Mar. 23.
15294	Curry combs.....	A. A. and Andrew Hotchkiss.....	Sharon, Conn.....	July 8.

15440	Detector, pickpocket.....	S. W. Ruggles.....	Fitchburg, Mass.....	July 29.
15869	Fans, automatic, escapement movement for.....	Dow J. Mozart.....	Xenia, Ohio.....	Oct. 14.
16014	Fishing implement.....	Elmore Horton.....	Bristol, Conn.....	Nov. 4.
14587	Fishing lead.....	Wooster Smith.....	South Thomaston, Me.....	April 1.
15466	Fishing rods, reel for.....	John A. Bailey, assignor to John Warren.	Jersey City, N. J.....	Aug. 5.
14706	Fishing tackle.....	Julio T. Buel.....	Whitehall, N. Y.....	April 22.
15279	Fitching horses, clothes-lines, &c, apparatus for.	Edward S. Boynton.....	East Hartford, Conn.....	July 8.
15337	Hogs, slaughtering, apparatus for.....	Thomas J. Godman.....	Madison, Ind.....	July 15.
16312	Horse fastening.....	James Bolton.....	Richmond, Va.....	Dec. 23.
	Horses, harness for shoeing. (See Class XVI, letter H.)			
15483	Ice, breaking, instrument for.....	Isaac H. Giffing.....	New York, N. Y.....	Aug. 5.
16152	Ice saw.....	S. Seaton.....	Richmond, Ind.....	Dec. 2.
15226	Labels, metallic hook for.....	Samuel B. Fay.....	New York, N. Y.....	July 1.
15883	Ladder, fireman's.....	Dominico Giambastiani.....	Washington D. C.....	Oct. 14.
	Lard rendering kettles. (See Class IV, letter L.)			
15941	Mackerel, splitting, machine for.....	Sidney S. Turner, assignor to S. S. Turner and Elmer Townsend.	Lewiston, Me.....	Oct. 21.
15393	Match, friction, machine.....	Calvin D. Smith and Horace Patterson...	Worcester, Mass.....	July 22.
14782	Matches, friction, machine for manufacturing	Alexander Underwood.....	Ilion, N. Y.....	April 29.
15238	Match machine.....	Lawrence Hohns.....	Paterson, N. J.....	July 1.
	Milk, concentration of. (See Class IV, letter M.)			
14635	Mosquito nets, frames for.....	Samuel E. Hartwell.....	New York, N. Y.....	April 15.
14910	Oracular wheel or centre table.....	William O. George.....	Richmond, Va.....	May 20.
16019	Packages, spring frame for.....	Henry B. Osgood.....	Dorchester, Mass.....	Nov. 4.
14685	Phrenology, apparatus for teaching.....	George P. Wilcox and William Butler...	Little Falls, N. Y.....	April 15.
14904	Pill machines.....	Henry E. Chapman.....	Albany, N. Y.....	May 20.
	Shearing sheep. (See Class I.)			
16231	Skate-runners.....	John E. Forbes.....	Hoboken, N. J.....	Dec. 16.
14886	Skates.....	Ferdinand Klein.....	Essex county, N. J.....	April 1.
14624	Slate frame.....	Edwin Young.....	Philadelphia, Pa.....	April 8.
15366	Sleigh bells to straps, mode of attaching.....	Abner G. Bevin.....	Chatham, Mass.....	July 22.
14490	Sugar, loaf, machine for cutting.....	Adolph and Felix Brown.....	New York, N. Y.....	Mar. 25.
14740	Tent, conical.....	Major H. H. Sibley.....	U. S. army.....	April 22.
15278	Trap, fly.....	Joseph Hyter.....	Kent, Ind.....	July 22.
15464	Trap, fly.....	Samuel Arnold.....	Wilson county, Tenn.....	Aug. 5.
15752	Trap, fly.....	S. Arnold.....	Green Hill, Wilson co., Tenn.....	Sept. 23.
15848	Trap, fly.....	George Gilbert.....	Westville, Conn.....	Oct. 7.

Classified List of Patents issued—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.
16217	Trap for catching fish, &c.	Levi Van Hoesen	Westville, Conn.	1856.
14531	Trap, rat, self-setting.	Sammel Beaumont	New York, N. Y.	Dec. 9.
14336	Trap, roach.	John Goodyear, jr., and Thomas I. Berry, assignors to John Goodyear, jr., Thomas I. Berry, and William M. Porter.	Philadelphia, Pa.	Mar. 25.
14612	Whip handles, machine for tapering whale bone for.	L. Hull	Charlestown, Mass.	Feb. 26.
14669	Whip socket	William H. Lyman	Newark, N. J.	April 8.
				April 15.

EXTENSIONS DURING THE YEAR 1856.

Inventions or discoveries.	Patentees.	Residence.	Date of extension.	Date of patent.
Brick press, construction of the.	Alfred Hall.	Perth Amboy, N. J.	1856.	Sept. 3, 1842.
Door locks	John P. Sherwood.	Fort Edward, N. Y.	Sept. 3 Dec. 15	Dec. 17, 1842; re-issued Oct. 7, 1856.
Engines, locomotive steam, manner of constructing, by which they adapt themselves to the curves and undulations of the road.	Matthias W. Baldwin.	Philadelphia, Penn.	Aug. 22	Aug. 25, 1842.
Felting for coats, hats, &c.	Marmaduke Osborne.	New York, N. Y.	May 21	May 28, 1842.
Lamps for essential oils, &c.	Michael B. Dyott.	Philadelphia, Penn.	May 28	May 30, 1842.
Metallic surfaces, particularly saw plates, machinery for grinding and polishing.	Richard M. Hoo.	New York, N. Y.	May 26	May 30, 1842.
Paper, ruling, machines for.	George L. Wright.	West Springfield, Mass.	May 21	May 28, 1842.
Pins, shielded, for securing shawls, diapers, &c., manner of constructing.	Thomas Woodward.	New York, N. Y.	May 7	May 7, 1842.
Presses for pressing hay, cotton, &c., method of constructing.	S. W. Bullock.	New York, N. Y.	Mar. 21	March 23, 1842; re-issued Aug. 14, 1854.

Printing presses.	Jephtha A. Wilkinson.	Fire Place, N. Y.	Sept. 15	Jan. 4, 1853; England, Sept. 23, 1842.
Printing press, power, additional improvements in the.	Isaac Adams.	Boston, Mass.	Aug. 18	March 2, 1836; re-issued June 13, 1848.
Printing press, power, printing machine called the.	Isaac Adams.	Boston, Mass.	Aug. 25	Oct. 4, 1830; extended Sept. 17, 1844.
Pumps and fire engines.	B. T. Rabbit, S. C. Higbee, and P. W. Plantz.	Little Falls, N. Y.	Oct. 7	Oct. 7, 1842.
Reaping machines.	Jonathan Read.	Alton, Ill.	Mar. 10	March 12, 1842.
Screws, wood, machine for cutting the threads of.	Cullen Whipple, assignor to the New England Screw Company, assignors to Cullen Whipple.	Providence, R. I.	Aug. 16	Aug. 18, 1842; re-issued March 5, 1850; re-issue June 13, 1856.
Shoe pegs, machine for cutting.	Stephen K. Baldwin.	Gilford, N. H.	July 8	July 16, 1842.
Spark arrestors.	William C. Grimes.	Philadelphia, Penn.	Jan. 28	Feb. 12, 1842; re-issued Dec. 25, 1855.
Stoves, heating, construction of.	Zeplaniah Bosworth.	Hartmar, Ohio.	Mar. 31	April 6, 1842.
Streets, sweeping and cleaning, machine for.	Joseph Whitworth.	Manchester, England.	July 21	June 1, 1843; England, Aug. 2, 1842.
Threshing and winnowing grain, machines for.	Andrew Ralston.	West Middletown, Penn.	Feb. 18	Feb. 21, 1842; re-issued Feb. 15, 1856.
Vessels, steering apparatus for.	Geo. W. & E. B. Robinson.	Boston, Mass.	Sept. 25	Sept. 30, 1842.
Warps, dressing, manner of constructing brushes for.	Samuel Taylor.	Cambridge, Mass.	May 21	May 28, 1842.
Water-wheels.	L. W. & G. W. Blake.	Pepperell, Mass.	April 21	April 21, 1842.
Window-blind hinges and fastenings.	Reuben Rich.	Salmon River, P. O., N. Y.	July 8	July 8, 1842.
	William Baker.	Utica, N. Y.	Sept. 8	Sept. 17, 1842.

DISCLAIMERS ENTERED DURING THE YEAR 1856.

Inventions or discoveries.	Patentees.	Residence.	Date of disclaimer.	Date of patent.
Lamps.	Michael B. Dyott	Philadelphia, Pa.	1856.	May 30, 1842.
Looms.	John G. Melville and Wm. Grayshaw.	Wetheredville, Md.	May 12 Jan. 21	April 24, 1855.

ADDITIONAL IMPROVEMENTS GRANTED DURING THE YEAR 1856.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Improvements added.
143	Blinds, window, means for holding	Henry A. Frost	Worcester, Mass	Jan. 23, 1856	1856. May 6.
151	Brick machines, rotary	George Crangle	Philadelphia, Pa.	June 3, 1856	Sept. 9.
154	Brick machines, rotary	George Crangle	Philadelphia, Pa.	June 3, 1856	Sept. 9; 2d additional improvement Nov. 25.
133	Candlesticks	Abner Whiteley	Springfield, Ohio	Jan. 10, 1856	Feb. 5.
144	Carriages, coupling for	Abram J. Gibson	Clinton, Mass	Sept. 12, 1854	May 27.
150	Carriage tops, raising and lowering, apparatus for.	Alanson Quigly	Sheldrake, N. Y.	April 22, 1856	Aug. 26.
139	Cars, railroad, ventilating	George F. Foote	Buffalo, N. Y.	July 11, 1854	April 8.
132	Cloth, ornamental felt, manufacture of	O. B. Tomlinson	Athens, Pa.	June 5, 1855	Feb. 5.
134	Daguerreotype cases	John F. Mascher	Philadelphia, Pa.	Mar. 8, 1853	Feb. 19.
136	Excavating machine	J. J. Savage	New York, N. Y.	Jan. 8, 1856	Mar. 11.
142	Faucet	Moses Woodbury	Boston, Mass	Mar. 11, 1856	May 6.
153	Fenders for fire-places	John W. Truslow	Lewisburg, Va.	July 15, 1856	Sept. 30.
152	Fire-arms	Frederick D. Newbury, assignor to Richard Varick DeWitt.	Albany, N. Y.	Aug. 12, 1856	Sept. 16.
145	Fire-arms, breech-loading	Abner N. Newton	Richmond, Ind.	June 27, 1854	June 17.
157	Fire-arms, breech-loading	Dr. Abner N. Newton	Richmond, Ind.	June 27, 1854	Dec. 23.
138	Gas-burner	Charles H. Johnson	Boston, Mass	June 26, 1855	Mar. 18.
149	Gas-ater	William F. Shaw	Boston, Mass	Jan. 23, 1855	July 22.
140	Harvesters, grain, binders for	George W. N. Yost	Pittsburg, Pa.	Jan. 1, 1856	April 8.
141	Harvesters, grass	George Esterly	Heart Prairie, Wis.	June 27, 1854	April 22.
155	Harvesting-machines	George Esterly	Heart Prairie, Wis.	Oct. 22, 1844	Nov. 25.
156	Hubs for carriages	Joseph Smith	Delaware, Ohio	Feb. 19, 1856	Dec. 16.
131	Hydraulic heaters	L. W. Leeds and R. M. Smith.	Philadelphia, Pa.	May 16, 1854	Feb. 5.
147	Looms	James O. Leach	Ballston, N. Y.	Oct. 30, 1855	July 8.
137	Mash-machines	Adolph Hammer	Philadelphia, Pa.	Jan. 9, 1855	Mar. 18.
135	Mills, grinding	Amory Felton	Troy, N. Y.	Jan. 2, 1855, reissue Jan. 29, 1856.	Feb. 26.

148 Pumps, method of regulating by wind-wheels.

Jacob W. Goodwin and Moses C. Hawkins.

Edenborough, Pa

April 8, 1856

July 15.

146 Vessels, war, protecting bulwarks for...

William Ballard

New York, N. Y.

Nov. 1, 1853

July 1.

REISSUES DURING THE YEAR 1856.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of re-issue.
385	Apple parers	Charles P. Carter	Ware, Mass	Oct 16, 1849	1856. Aug. 12.
395	Boats, life, folding	C. Locher	New York, N. Y.	Jan. 2, 1855	Sept. 16.
392	Bomb-lance for killing whales	C. C. Brand	Norwich, Conn	June 22, 1852	Aug. 26.
404	Boring machine	A. Wyckoff and E. R. Morrison, assignors to A. Wyckoff.	Elmira, N. Y.	Sept. 25, 1855	Oct. 14.
399	Buff for polishing spoons and other articles.	Luther Boardman	East Haddam, Conn	Dec. 15, 1843	Oct. 7.
403	Cans, preserve, self-sealing	Robert Arthur	Philadelphia, Pa.	Jan. 2, 1855; reissue June 10, 1856.	Oct. 14.
417	Carpets, manufacturing	John G. McNair	Norwich, Conn	Aug. 7, 1855	Dec. 23.
353	Cars, &c., railroad ticket register for	William Apperly	New York, N. Y.	May 1, 1855	Feb. 19.
360	Cars, railroad	B. J. La Mothe	New York, N. Y.	April 4, 1854	Mar. 18.
367	Cellars, wall and floors of, mode of constructing.	A. R. Moerr	New York, N. Y.	Feb. 26, 1856	April 8.
364	Chain cables, arrangement of means for working and stoppering.	Thomas Brown	London, England	July 25, 1854; England, April 20, 1847.	Mar. 25.
412	Curry-combs	William Beach	Philadelphia, Pa.	Mar. 13, 1849; reissue Feb. 12, 1850.	Dec. 9.
373	Furnace, annealing	J. Joseph Eagleton	New York, N. Y.	May 20, 1856	June 24.
383	Furnaces, bagasse	Samuel H. Gilman	New Orleans, La	Dec. 4, 1855	Aug. 5.
398	Furnaces for burning wet fuel	Moses Thompson	New Orleans, La	April 10, 1855	Oct. 7.
419	Gas-fittings, machine for reaming and tapping.	Henry A. Chapin	Springfield, Mass	July 1, 1856	Dec. 23.
407	Gas, heating by, apparatus for	William F. Shaw	Boston, Mass	Feb. 26, 1856	Oct. 28.
379	Gins, cotton	R. A. L. McCurdy, assignor to David G. Olmstead	Sabine Parish, La	June 26, 1855	July 15.
415	Gun, magazine, repeating and needle	Edward Lindner	New York, N. Y.	June 27, 1854	Dec. 23.

Reissues during the year 1856—Continued.

No.	Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of re-issue.
416	Gun, magazine, repeating and needle (division).	Edward Lindner.	New York, N. Y.	June 27, 1854.	1856. Dec. 23.
358	Harvesters, grain and grass.	Abner Whiteley.	Springfield, Ohio.	Feb. 5, 1856.	Mar. 11.
376	Harvesters, grain and grass.	Eliakim B. Forbush.	Buffalo, N. Y.	July 20, 1852.	July 8.
341	Harvesters, grass, track clearers to	Abner Whiteley.	Springfield, Ohio.	Aug. 22, 1854.	Jan. 8.
348	Harvesting machines.	John Reily.	Heart Prairie, Wis.	Nov. 20, 1855.	Jan. 29.
354	Harvesting machines.	John H. Manny, assignor to P. H. Watson.	Rockford, Ill.	Oct. 17, 1854; antedated June 15, 1854.	Feb. 19.
396	Hat-bodies, making, machinery for.	Henry A. Wells, assignor to Charles St. John, H. A. Burr, A. H. Wright, and James M. Riblet.	New York, N. Y.	April 25, 1846.	Sept. 30.
369	Hat-bodies, planking, machines for.	Phineas Emmons, assignor to Albert Spencer and Alvo E. Laing.	New York, N. Y.	April 19, 1853.	May 27.
400	Hat-bodies, manufacturing.	Henry A. Wells, assignor to Charles St. John, H. A. Burr, A. H. Wright, and James M. Riblet.	New York, N. Y.	April 25, 1846.	Oct. 7.
406	Horse-power, reversible.	P. H. Kells.	Hudson, N. Y.	July 8, 1856.	Oct. 28.
374	Levels, spirit, mounting.	S. I. Sherman.	New York, N. Y.	July 19, 1853.	July 1.
401	Locks, door.	John P. Sherwood, assignor to Calvin Adams, assignor to J. P. Sherwood.	Fort Edward, N. Y.	Dec. 17, 1842; reissue May 13, 1851.	Oct. 7.
413	Marble sawing machines.	L. S. Smith, assignor to B. Howard.	Locust Grove, Ohio.	Sept. 9, 1856.	Dec. 9.
359	Match splints, machinery for splitting.	Amory Folton.	New York, N. Y.	Mar. 28, 1848.	Mar. 11.
347	Mills, grinding.	Jeremiah Carhart.	Troy, N. Y.	Jan. 2, 1855.	Jan. 29.
372	Musical instruments, bellows for.	Robert Griffiths.	New York, N. Y.	Dec. 28, 1846.	June 24.
411	Nut machine.	William Kenyon, assignor to Joseph P. Haigh, Andrew Hartupce, and John Morrow.	Philadelphia, Pa.	Oct. 30, 1855.	Nov. 25.
361	Nuts, washers, &c., machines for making.	Horace W. Peaslee.	Steubenville, Ohio.	Oct. 14, 1851.	Mar. 18.
340	Paper-stock, machines for washing.	Adam W. Rapp.	Pittsburg, Pa.	Jan. 23, 1855; England, Sept. 20, 1854.	Jan. 8.
380	Pens, gold.	Adam W. Rapp.	Malden Ridge, N. Y.	Jan. 6, 1852.	July 22.

368	Photographic impressions, preparation of oil ground to receive.	Joel H. Tatum.	Baltimore, Md.	April 15, 1856.	May 13.
384	Photographic pictures on glass.	James A. Cutting.	Boston, Mass.	July 11, 1854.	Aug. 12.
405	Piano-forte action.	Daniel H. Sharley.	Boston, Mass.	Nov. 28, 1854.	Oct. 21.
418	Plane, moulding, multiform.	Thomas D. Worrall, assignor to M. Paul, assignor to Thomas D. Worrall, alias Thomas Worrall.	Mount Holly, N. J.	Aug. 29, 1854.	Dec. 23.
337	Ploughs.	Samuel Hulbert.	Ogdensburg, N. Y.	Sept. 20, 1853; Canada, Sept. 20, 1852.	Jan. 1.
350	Polishing stone, metals, &c.	Albert Broughton.	Malone, N. Y.	Nov. 7, 1854; antedated Oct. 24, 1854.	Feb. 12.
370	Preserve cans, self-sealing.	Robert Arthur.	Philadelphia, Pa.	Jan. 2, 1855.	June 10.
338	Presses, cotton.	Nathan Chapman.	Mystic River, Conn.	Aug. 8, 1854.	Jan. 8.
366	Printing presses.	George P. Gordon.	New York, N. Y.	Aug. 5, 1851.	April 8.
397	Pumps, rotary.	John Broughton.	Chicago, Ill.	June 10, 1856.	Sept. 30.
386	Railroad chairs, wrought-iron, machine for making.	William Van Anden, assignor to William Bushnell, assignor to the American Railroad Chair Manufacturing Company, assignors to A. Fiar, J. Rowe, and W. Van Anden.	New York, N. Y.	April 30, 1850.	Aug. 19.
381	Raking and loading hay, machine for.	Joseph Smith.	Poughkeepsie, N. Y.	June 3, 1856.	Aug. 19.
367	Reaping machines (Division A).	Jonathan Read.	Condit, Ohio.	Mar. 12, 1842; extended Mar. 12, 1856.	July 22.
388	Reaping machines (Division B).	Jonathan Read.	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
389	Reaping machines (Division C).	Jonathan Read.	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
390	Reaping machines (Division D).	Jonathan Read.	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
391	Reaping machines (Division E).	Jonathan Read.	Alton, Ill.	Mar. 12, 1842; extended Mar. 12, 1856.	Aug. 19.
394	Saddles, harness.	John T. Denniston.	Lyons, N. Y.	Nov. 20, 1846.	Sept. 9.
408	Saddles, harness.	A. H. Gazlay, assignor to O. B. North & Co.	Saratoga Springs, N. Y.	Mar. 14, 1848.	Oct. 28.
365	Sawing machine.	Wm. P. Wood, assignor to W. P. Wood and John S. Gallaher, jr., and John S. Gallaher, jr., assignor to W. P. Wood.	Washington, D. C.	Feb. 26, 1856.	Mar. 25.
393	Saws, reciprocating, method of hanging and straining.	I. N. Forrester.	Centreville, Va.	Oct. 30, 1855.	Sept. 2.
371	Screws, wood, machine for cutting the threads of.	Cullen Whipple.	Providence, R. I.	Aug. 18, 1842; reissue Mar. 5, 1850.	June 13.

ANNUAL REPORT OF THE

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Date of re-issue.
378 Seine-needles, machinery for filling.....	H. M. Glines, assignor to John M. Stanton and Simon F. Stanton, assignors to P. Bennett, J. Kendrick, and L. A. Cook. Thomas J. W. Robertson, assignor to self and A. E. Beach.	Providence, R. I.....	Oct. 2, 1855.....	1856. July 15.
343 Sewing machines.....	Allen B. Wilson.....	New York, N. Y.....	Mar. 20, 1855.....	Jan. 15.
345 Sewing machines.....	Allen B. Wilson.....	Waterbury, Conn.....	Nov. 12, 1850.....	Jan. 15.
346 Sewing machines, (division).....	Allen B. Wilson.....	Waterbury, Conn.....	Nov. 12, 1850.....	Jan. 15.
355 Sewing machines.....	William H. Johnson.....	Granville, Mass.....	Mar. 7, 1854.....	Feb. 26.
363 Sewing machines.....	Sidney S. Turner, assignor to.....	Roston, Mass.....	Aug. 22, 1854.....	Mar. 25.
410 Sewing machines.....	Elmer Townsend.....	Westborough, Mass.....	July 23, 1856.....	Nov. 4.
414 Sewing machines.....	A. Swingle, assignor to E. Townsend.....	Roston, Mass.....	Nov. 12, 1850; reissue	Dec. 9.
352 Sewing or stitching straight seams, machines for.....	A. B. Wilson.....	Pittsfield, Mass.....	Jan. 22, 1856.	Feb. 12.
409 Shoe-pegs, machine for cutting.....	J. J. Greenough, assignor to J. M. Singer and Edward Clark.	New York, N. Y.....	Feb. 21, 1842.....	Nov. 4.
344 Silica, apparatus for dissolving.....	Stephen K. Baldwin.....	Gilford, N. H.....	July 16, 1842; extended	Nov. 4.
377 Sowing machine.....	Benjamin Hardinge.....	New York, N. Y.....	July 8, 1856.	Jan. 22.
351 Spike machine.....	P. Seymour.....	East Bloomfield, N. Y.....	May 8, 1855.....	July 15.
356 Spark and gas consumers.....	A. M. George.....	Nashua, N. H.....	May 7, 1815.....	Feb. 12.
357 Spark arresters.....	David Matthew.....	Philadelphia, Penn.....	Dec. 18, 1855.....	Feb. 26.
402 Stone, artificial.....	David Matthew.....	Philadelphia, Penn.....	Feb. 20, 1849; reissue,	Mar. 4.
342 Threshing and winnowing grain, machines for.....	David Matthew.....	Philadelphia, Penn.....	Oct. 4, 1843.	Mar. 4.
349 Tonguing and grooving machines.....	St. Julien Ravenal.....	Philadelphia, Penn.....	Dec. 31, 1840; extended,	Mar. 4.
339 Types, composing and setting, machine for.....	Andrew Ralston.....	Charleston, S. C.....	Dec. 27, 1854.	Oct. 14.
382 Valves, operating, in direct acting steam-engines.....	Charles W. Brown.....	Middletown, Penn.....	Aug. 12, 1856.....	Jan. 15.
	W. S. Loughborough.....	Boston, Mass.....	Feb. 21, 1842.....	Feb. 5.
	Wm. H. Guild and Wm. F. Garrison.....	Rochester, N. Y.....	Aug. 14, 1844.....	Jan. 8.
		Brooklyn, N. Y.....	Oct. 23, 1855.....	Jan. 8.
			Mar. 27, 1855.....	July 29.

375 Watches, securing pinions, &c., of, in lathes.....	James M. Bottum.....	New York, N. Y.....	July 15, 1851.....	July 8.
362 Web for cloth of wool, hair or other suitable substance, machine for forming the, without spinning or weaving.....	John Arnold, deceased, legal representatives of, assignors to Union Manufacturing Company..	Norwalk, Conn.....	July 15, 1829; extended by Congress 14 years from Mar. 28, 1854.	Mar. 18.

PATENTS FOR DESIGNS GRANTED DURING THE YEAR 1856.

No.	Designs.	Patentees.	Residence.	Date of patent.
858	Bedsteads, metallic.....	John B. Wickersham.....	New York, N. Y.....	1856.
763	Bottle casters and egg-cup stands.....	R. Gleason, jr., assignor to R. Gleason & Sons.	Dorchester, Mass.....	Dec. 23.
755	Bottles, perfumery.....	Augustus E. Wetherill.....	Cincinnati, Ohio.....	Feb. 12.
761	Bricks, moulded.....	James M. Thompson.....	Philadelphia, Penn.....	Jan. 8.
838	Bust of J. C. Fremont.....	John Gott.....	Albany, N. Y.....	Feb. 12.
784	Castors.....	William H. Green.....	Meriden, Conn.....	Oct. 7.
777	Chandeliers.....	Samuel B. H. Vance, assignor to Mitchell, Bailey, & Co.	New York, N. Y.....	April 22.
778	Chandeliers.....	Samuel B. H. Vance, assignor to Mitchell, Bailey, & Co.	New York, N. Y.....	April 8.
771	Clock-case fronts.....	Nicholas Muller.....	New York, N. Y.....	April 8.
787	Clock-case fronts, A.....	Nicholas Muller.....	New York, N. Y.....	April 1.
787	Clock-case fronts, B.....	Nicholas Muller.....	New York, N. Y.....	April 29.
813	Clock-case fronts, No. 2.....	Nicholas Muller.....	New York, N. Y.....	April 29.
812	Clock-case fronts, base of, No. 1.....	Nicholas Muller.....	New York, N. Y.....	July 1.
818	Clock fronts.....	J. and R. Shepherd.....	New York, N. Y.....	July 1.
820	Drawer-pulls.....	P. and E. W. and J. A. Blake.....	New Haven, Conn.....	July 29.
831	Floor cloths (No. 1).....	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Aug. 5.
832	Floor cloths (No. 2).....	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Sept. 16.
859	Floor cloths.....	A. Glominski, assignor to D., A. E., and N. B. Powers.	Lansingburg, N. Y.....	Sept. 16.
769	Forks and spoons, handles of.....	Theodore Evans.....	New York, N. Y.....	Dec. 23.
757	Furnaces, portable.....	G. Smith, H. Brown, and J. A. Road, assignors to A. E. Warfield.	Philadelphia, Pa.....	Mar. 4.
				Jan. 15; antedated Dec. 31, 1855.

Designs for 1856—Continued.

No.	Designs.	Patentees.	Residence.	Date of patent.
753	Furnace, summer.....	Jacob Besley, assignor to Cresson, Stuart & Peterson.	Philadelphia, Pa.....	1856. April 15.
759	Gates.....	Herman E. Wesche, assignor to Robert Wood.	Philadelphia, Pa.....	Feb. 5.
762	Gates.....	Herman E. Wesche, assignor to Robert Wood.	Philadelphia, Pa.....	Feb. 12.
814	Grate, ornamental, for fire-places.....	John C. Macy.....	Cincinnati, Ohio.....	July 8.
855	Grates, parlor.....	John T. Davy.....	Troy, N. Y.....	Dec. 23.
796	Match safes, paper weights and pincushions combined.....	Michael B. Dyott.....	Philadelphia, Pa.....	May 27.
792	Oven and stove doors.....	Joseph A. Read, assignor to John H. Cahill.	Philadelphia, Pa.....	May 13.
782	Oven, gas.....	Edward J. Delaney, assignor to Cresson, Stuart & Peterson.	Philadelphia, Pa.....	April 15.
815	Ovens, parlor.....	Russell Wheeler and Stephen A. Bailey..	Utica, N. Y.....	July 8.
753	Pendants, hall.....	S. B. H. Vance, assignor to.....	New York, N. Y.....	Jan. 1.
754	Pendants or chandeliers, hall.....	Mitchell, Bailey & Co.....	Connecticut.....	Jan. 1.
780	Pen, steel.....	Samuel B. H. Vance, assignor to.....	New York, N. Y.....	April 15.
788	Piano forte legs.....	Mitchell, Bailey & Co.....	Connecticut.....	May 13.
798	Piano forte legs.....	Albert Granger.....	Boston, Mass.....	May 27.
760	Printing type.....	Albert Bosworth, assignor to Albert Bosworth and Timothy H. Loomis.	Philadelphia, Pa.....	Feb. 12.
851	Printing types.....	L. Johnson.....	Philadelphia, Pa.....	Feb. 2.
758	Ranges, portable.....	George Bruce.....	New York, N. Y.....	Jan. 15; antedated Dec. 31, 1855.
797	Ranges, portable.....	G. Smith, H. Brown, and J. A. Read, assignors to A. E. Warfield.	Philadelphia, Pa.....	May 27.
847	Statuettes of Burton as Captain Cuttle.....	James Horton and John Carrie, assignors to Cox, Hagar & Cox.	Philadelphia, Pa.....	Oct. 21.
816	Stove, box, plate.....	Charles Müller.....	New York, N. Y.....	Oct. 21.
765	Stove plates.....	Windlew Ames.....	Nashua, N. H.....	July 15.
		Sanford Burnam, assignor to Cox, Warren, Morrison, & Co.	Troy, N. Y.....	Feb. 12.

774	Stove plates.....	Samuel H. Ransom.....	Albany, N. Y.....	April 1.
785	Stove plates.....	Harvey Smith and Frederick A. Sheldon..	Troy, N. Y.....	April 22.
821	Stove plates.....	N. S. Vedder, assignor to G. F. Filley.....	Troy, N. Y.....	Aug. 5.
842	Stove plates, cooking.....	N. S. Vedder, assignor to Mann, Torrance, & Co.	Troy, N. Y.....	Oct. 7.
793	Stoves.....	Samuel W. Gibbs, assignor to W. & J. Treadwell and Perry & Norton.	Albany, N. Y.....	May 20.
805	Stoves.....	G. Smith, H. Brown, and Joseph A. Read, assignors to A. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	June 17.
806	Stoves.....	Samuel W. Gibbs, assignor to Treadwell, Perry & Norton.	Albany, N. Y.....	June 17.
801	Stoves.....	Isaac Diller.....	Lancaster, Pa.....	June 17.
809	Stoves.....	Samuel F. Pratt, assignor to W. & J. Treadwell, Perry & Norton.	Boston, Mass.....	June 24.
810	Stoves.....	N. S. Vedder and William L. Sanderson, assignors to North, Chase & North.	Troy, N. Y.....	June 24.
808	Stoves.....	S. W. Gibbs, assignor to.....	Albany, N. Y.....	June 24.
830	Stoves.....	North, Chase & North.....	Philadelphia, Pa.....	June 24.
840	Stoves.....	G. Smith, H. Brown, and J. A. Read, assignors to Cox, Hagar & Cox.	Philadelphia, Pa.....	Sept. 16.
839	Stoves.....	S. W. Gibbs, assignor to North, Chase & North.	New York, N. Y.....	Oct. 7.
844	Stoves.....	N. S. Vedder and William L. Sanderson, assignors to North, Chase & North.	Troy, N. Y.....	Oct. 7.
845	Stoves.....	G. Smith, H. Brown, and J. A. Read, assignors to Hayward, Bartlett & Co.	Philadelphia, Pa.....	Oct. 7.
848	Stoves.....	Hudson E. Bridge.....	St. Louis, Mo.....	Oct. 14.
803	Stoves, airtight.....	James J. Dulle, assignor to Fuller, Warren & Morrison.	Troy, N. Y.....	Nov. 4.
836	Stoves, coal, cylindrical.....	Garretson Smith and Henry Brown, assignors to A. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	June 17.
756	Stoves, cooking.....	Russell Wheeler and Stephen A. Bailey..	Utica, N. Y.....	Oct. 7.
764	Stoves, cooking.....	G. Smith, H. Brown, and J. A. Read, assignors to J. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	Jan. 15.
766	Stoves, cooking.....	Saml. Pierce and J. J. Dulle, assignors to Cox, Morrison, Warren & Co.	Troy, N. Y.....	Dec. 31, 1855.
775	Stoves, cooking.....	Saml. Pierce and Sanford Burnam, assignors to Cox, Warren, Morrison & Co.	Troy, N. Y.....	Feb. 12.
781	Stoves, cooking.....	Samuel H. Ransom.....	Troy, N. Y.....	Feb. 12.
		Samuel H. Ransom.....	Albany, N. Y.....	April 1.
		Samuel H. Ransom.....	Albany, N. Y.....	April 15.

Designs for 1856—Continued.

No.	Designs.	Patentees.	Residence.	Date of patent.
789	Stoves, cooking.....	Anthony J. Gallagher.....	Philadelphia, Pa.....	1856. May 13.
790	Stoves, cooking.....	Thomas A. Herrick, assignor to Lemuel M. Leonard.....	East Bridgewater, Mass.....	May 20.
791	Stoves, cooking (A).....	William Resor.....	Cincinnati, Ohio.....	June 3.
800	Stoves, cooking (B).....	John F. Allen, assignor to Stratton and Massey.....	Cincinnati, Ohio.....	June 3.
807	Stoves, cooking.....	G. Smith, H. Brown, and Jos. A. Read, assignors to A. G. Abbott and A. Lawrence.....	Philadelphia, Pa.....	June 17.
802	Stoves, cooking.....	Garretson Smith, Henry Brown, and Jos. A. Read, assignors to Leibrant, McDowell, & Co.....	Philadelphia, Pa.....	June 24.
811	Stoves, cooking.....	Joseph Hackett.....	Philadelphia, Pa.....	June 24.
817	Stoves, cooking.....	Benj. Wardwell and Ephraim R. Barstow.....	Louisville, Ky.....	July 29.
819	Stoves, cooking.....	Saml. Pierce and J. J. Dullev, assignors to Fuller, Warren, and Morrison.....	Fall River, Mass.....	July 29.
823	Stoves, cooking.....	N. S. Vedder and Ezra Ripley, assignors to Cox, Richardson, and Boynton.....	Troy, N. Y.....	Aug. 5.
825	Stoves, cooking.....	N. S. Vedder, assignor to Cox, Richardson, and Boynton.....	Troy, N. Y.....	Aug. 19.
824	Stoves, cooking.....	N. S. Vedder and W. L. Sanderson, assignors to Sweetland and Little.....	Troy, N. Y.....	Aug. 19.
828	Stoves, cooking.....	N. S. Vedder and W. L. Sanderson, assignors to Sweetland and Little.....	Troy, N. Y.....	Aug. 26.
829	Stoves, cooking.....	Daniel Wilson.....	Troy, N. Y.....	Aug. 26.
835	Stoves, cooking.....	N. S. Vedder, assignor to Graff, Reininger & Graff.....	Nashua, N. H.....	Oct. 7.
843	Stoves, cooking.....	Hudson F. Bridge.....	Troy, N. Y.....	Oct. 7.
837	Stoves, cooking.....	Samuel W. Gibbs, assignor to A. H. McArthur & Co.....	St. Louis, Mo.....	Oct. 9.
852	Stoves, cooking.....	S. W. Gibbs, assignor to G. W. Ball & Co.....	Albany, N. Y.....	Dec. 23.
853	Stoves, cooking.....	Garretson Smith and H. Brown.....	Philadelphia, Pa.....	Dec. 23.
854	Stoves, cooking.....	John T. Davy.....	Troy, N. Y.....	Dec. 23.
856	Stoves, cooking.....			

776	Stoves, cooking, elevated oven.....	Samuel H. Ransom.....	Albany, N. Y.....	April 1.
791	Stoves, cooking, for the plates of.....	W. L. Sanderson and N. S. Vedder, assignors to Sanders, Wolfe, & Warren.....	Troy, N. Y.....	May 13.
857	Stoves, cooking, parlor.....	John T. Davy.....	Troy, N. Y.....	Dec. 23.
846	Stoves, cooking, parlor.....	N. S. Vedder and W. L. Sanderson, assignors to G. W. Eddy.....	Troy, N. Y.....	Oct. 21.
770	Stoves, elevated oven.....	Samuel W. Gibbs, assignor to W. & J. Treadwell, Perry & Norton.....	Albany, N. Y.....	Mar. 18.
850	Stoves, kitchen.....	S. W. Gibbs, assignor to Wood, Roberts & Co.....	Albany, N. Y.....	Nov. 25.
804	Stoves, nine-plate.....	G. Smith, H. Brown, and J. A. Read, assignors to A. G. Abbott and A. Lawrence.....	Philadelphia, Pa.....	June 17.
834	Stoves, oven.....	Samuel F. Pratt, assignor to Treadwell, Perry & Norton.....	Boston, Mass.....	Sept. 23.
767	Stoves, parlor.....	William T. Coggeshall.....	Fall River, Mass.....	Feb. 19.
768	Stoves, parlor.....	Samuel D. Vose.....	Albany, N. Y.....	Mar. 4.
772	Stoves, parlor.....	Samuel H. Ransom.....	Albany, N. Y.....	April 1.
779	Stoves, parlor.....	N. S. Vedder and William L. Sanderson, assignors to Sanders, Wolfe, & Warren.....	Troy, N. Y.....	April 8.
790	Stoves, parlor.....	N. S. Vedder and William L. Sanderson, assignors to N. S. Vedder.....	Troy, N. Y.....	May 13.
794	Stoves, parlor.....	David Hathaway, assignor to Cox, Richardson, & Boynton.....	New York, N. Y.....	May 2.
822	Stoves, parlor.....	Samuel Pierce and J. J. Dulley, assignors to Fuller, Warren & Morrison.....	Troy, N. Y.....	Aug. 5.
826	Stoves, parlor.....	David Hathaway, assignor to Cox, Richardson, and Boynton.....	Troy, N. Y.....	Aug. 19.
833	Stoves, parlor.....	Samuel F. Pratt, assignor to Treadwell, Perry, & Norton.....	Boston, Mass.....	Sept. 23.
841	Stoves, parlor.....	J. Beesley and E. J. Delaney, assignors to Cresson, Stuart, and Petersen.....	Philadelphia, Pa.....	Oct. 7.
849	Stoves, parlor.....	Elihu Smith.....	Albany, N. Y.....	Nov. 11.
773	Stoves, six-plate.....	Samuel H. Ransom.....	Albany, N. Y.....	April 1.
827	Stoves, six-plate.....	N. S. Vedder and E. Ripley, assignors to Sweetland & Little.....	Troy, N. Y.....	Aug. 26.

DESCRIPTIONS AND CLAIMS OF PATENTS,
ISSUED IN THE YEAR 1856.

ILLUSTRATED BY ENGRAVINGS.

[To find the Plates, see Index at the end of Vol. II.]

I.—AGRICULTURE.

No. 14,051.—GEORGE H. CLARKE.—*Improvement in Bee-Hives*.—Patented January 8, 1856.

The nature of this invention consists in the application of three or more open-sided hollow bars or tubes D, inserted in the bee-hive for the purpose of affording, at all times, a safe and easy mode of inter-communication between all the combs in the hive, and also for better supporting the combs.

The inventor says: Disclaiming the other devices, described individually or combined, what I *claim* is, the construction and arrangement of the hollow bars D, in the manner and for the purposes set forth.

No. 14,168.—H. G. ROBERTSON.—*Improvement in Bee-Hives*.—Patented January 29, 1856.

All the joints of this bee-hive have grooves Z formed in them to receive caustic lime, which is tightly packed therein. The object of this lime is to destroy the larvæ hatched from eggs laid in the joints, or which seek to enter the hive thereat.

The inventor says: I do not claim lime as a material for packing the joints of my hive, but merely indicate it as the most suitable for that purpose, among several materials offensive to insects which I know of that could be used with more or less advantage. I *claim* making the joints hollow, and stuffing them with caustic lime or other matter offensive to insects, in the manner and for the purpose specified.

No. 15,457.—J. S. BROWN, assignor to JOSEPH KENT.—*Improvement in Bee-Hives*.—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The peculiar construction of the drawer E, and its arrangement in combination with the basement D and the bottom M of the

hive, substantially as herein set forth, so as to be reversible in position, and to serve the several purposes of controllable ventilator, filth receptacle, with moth-trap and feeding chamber, in the manner specified.

No. 15,894.—CHARLES PAWLING.—*Improvement in Bee-Hives*.—Patented October 14, 1856.

The nature of this invention consists in providing the front part of the bee-palace with three boxes E F G placed in the front part of the palace, without having any connexion with the interior, for the reception of moths, the bees entering the palace through the openings H, and the moths through the openings F.

Claim—The arrangement of the bee entrances H H, with the moth entrances *fff*, and moth receptacles E F G P, when located as set forth and described, and for the purpose stated.

No. 15,436.—WASHINGTON F. PAGETT.—*Improvement in Machines for Binding Grain &c.*—Patented July 29, 1856.

In using this apparatus, the outer hook *b*, of band G, is attached to the forward end of the conductor D, which is driven forward by a pinion meshing in the racks B; the other end of the band G is hooked on to the way A, in front of the slide J, which is now withdrawn. The conductor D is now run under the sheaf and the hook removed from it, and attached to the end of the way A, as represented in dotted lines. The motion of the apparatus is now reversed, and the rack B slides the ring *a* off the end of the way A, when it grapples the other hook; the sheaf is thus compressed and securely bound, and the band disengaged from the machine.

Claim.—The way A, in combination with the slide J, or its equivalent, when operating in the manner and for the purposes described.

2d. I claim the band G, in combination with the way A and slide J, for the purposes described.

No. 14,530.—JAMES H. BENNETT.—*Improved Butter-Worker*.—Patented March 25, 1856.

The bowl B is rotated, and the spatula I is placed against the bar H, which latter is fitted to the frame A, directly over the centre of the bowl. The butter will thus be spread out in a thin sheet around the sides of the bowl.

Claim.—The rotating bowl B, in combination with the horizontal bar H and spatula J, when arranged and operated for the purpose herein specified.

No. 15,350.—HIRAM TARBOX, 2d.—*Improved Cattle Stall*.—Patented July 15, 1856.

The nature of this invention consists in having an excrement apron B, attached and supported by means of cords *b* and *d* behind the animal, said cords running over friction rollers. When it is desired to remove the excrements, the cord *d* is raised, and thus the apron C is caused to assume a vertical position.

Claim.—Having attached or supported an apron or its equivalent, whereby the excrement is prevented from dirtying the animal, and also protecting litter or bed.

No. 14,309.—JOHN U. FIESTER.—*Improvement in Churns*.—Patented February 26, 1856.

The agitator J is composed of three pieces, two of which are hung on a pin to the center-piece. As the agitator revolves, the cams *b*, acted upon by the eccentric circular recess *c*, cause the two pieces of the agitator to swing laterally, so as to alternately check and allow the flow of the current of the cream through holes *a*, in each of the three pieces of the agitator, which holes are in one line (so as to allow the cream to flow through) only in one position of the pieces during each of the lateral vibrations.

Claim.—The cams *b* and eccentric circle *c*, in combination with the agitator J, for the purpose of breaking or cutting the current of cream in its passage through them, and for producing friction by the lateral motion of the two sides of the agitator, as herein described, and for the purposes set forth.

No. 14,458.—LUCIUS LEAVENWORTH.—*Improvement in Churns*.—Patented March 18, 1856.

By moving the lever G with a reciprocating motion, the cords attached to the arc of the lever will alternately wind and unwind on the pulley F, causing it to revolve in the direction of the lever, thus causing the cords E E to move the staff B with a reciprocating motion, and, by having cords wound on the staff, imparting to it, as they alternately wind and unwind, a rotary motion.

Claim.—The arrangement of the cords or bands attached to the pulley, and also to the staff, being wound on the staff to give a required rotary motion, as described in the specification.

No. 14,677.—WILLIAM NEWBROUGH.—*Improvement in Churns*.—Patented April 15, 1856.

The diagonal separator B is formed with openings *a*, and rests on the bearings *c'*; obliquely under the box A, are secured the rockers *d*. The churn is rocked by means of shaft *f* and the elastic handle H,

whereby a violent agitation of the cream through the separator is produced.

Claim.—The combination of the oblique-bulged rockers with the diagonal separator, for producing a violent agitation of the cream.

No. 15,412.—WILLIAM H. BURNHAM and B. HIBBARD.—*Improvement in Churns.*—Patented July 29, 1856.

The nature of this improvement consists in the peculiar construction of the churn-dasher, which is composed of two independent frames: one consisting of the slats *d* and connecting side slats *c*; the other of the slats *e* and *f*; all attached to the shaft *b*, and arranged as represented in the engraving.

Claim.—The improved churn-dasher, composed of two independent frames, combined with each other and with the operating lever, substantially in the manner set forth.

No. 15,661.—LOOMIS LAMB.—*Improvement in Churns.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim employing in a tub two concentric shafts separately, provided with one or more dashers to revolve with them. But I *claim* applying the auxiliary dasher *E* to the shaft of the rotary dasher *D*, without any other shaft, so that the shaft of the rotary dasher may revolve on the hub of the auxiliary dasher, in combination with applying to the inside surface of the tub a stop or projection *G*, or equivalent means, arranged as described, and by which the auxiliary dasher may be stopped from revolving with the other dasher, when both are placed in the cistern, and the churn is in operation, as described.

No. 15,741.—ALBERT PEASE.—*Improvement in Churns.*—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of the two fixed boards *c* and *b* on the dasher handle, and a sliding board *d*, or its equivalent, moving between them, substantially as described; disclaiming the use of two fixed boards, except in the combination herein specified.

No. 15,787.—FRANKLIN THORPE.—*Improvement in Churns.*—Patented September 23, 1856.

When it is desired to churn, the crank *g* being turned to the right, the action of the scolloped buckets *K* squirts or projects the milk

forcibly against the head of the tub in the direction of the arrow. This action constantly breaks the vertical motion, and produces a series of rapid concussions of the liquid against the ends of the tub, which result in a speedy formation of butter. This being accomplished, a backward rotation instantly brings the loose bucket in line with the other, as represented in fig. 3, so as to present two rounded edges adapted for gathering the butter by rolling it against the sides, bottom, and top of the tub.

Claim.—The described arrangement and combination of the fast and loose buckets—the latter being slackened from the former in the act of opening, and tightening to it in the act of closing, by the screw upon the spindle, or equivalent devices, for the purposes explained.

No. 16,203.—WILLIAM A. VERTREES.—*Improvement in Churns.*—Patented December 9, 1856.

The air tube *T* extends from near the top of churn *A* nearly to the bottom, where it is bent into a horizontal position. The lower end of the tube is provided with a double-acting valve *V*; the outward wing of which presses against the fluid, while the other end extends inward and closes one side of the tube to prevent the cream from entering the tube, while the valve is open to let the air pass behind the valve, as the shaft *S* is revolved back and forward.

Claim.—The air tube with its double-acting valve, arranged in the manner and for the purposes set forth.

No. 16,193.—CHARLES A. SHAW.—*Improvement in Churns.*—Patented December 9, 1856.

As the swinging frame *D*, to which the churn *A* is attached, is caused to vibrate on its fulcrum *a* by applying power to the handle *L*, the toothed sector *K* causes to oscillate pinion *I* and shaft *H*. By this arrangement, a rising and descending motion is imparted to pitman *F*, gate *D*, and dasher *E*; during which motion the dasher *E* is oscillated as the screw-thread *f* on its periphery *I* plays in the corresponding screw nut *h*.

The inventor says: I do not claim combining with the dasher and pendulous frame a mechanism by which and the pendulous frame, the dasher will have a rotary motion on its axis when the pendulous frame is put in motion.

Nor do I claim, separate from the same, combining with the dasher and the pendulous frame a mechanism by which and the pendulous frame such dasher will have imparted to it upward and downward motions when the pendulous frame is set in motion.

I *claim* combining with the pendulous frame, and the mechanism connected therewith, for imparting to the dasher up and down motions, a mechanism which, at the same time, will rotate the dasher on its axis—the dasher thus having at one and the same time a compound

movement, consisting of one in line of its axis, and one of rotation on its axis, whereby the operation of churning is greatly improved and facilitated.

No. 16,210.—GOODRICH LIGHTFOOT.—*Improvement in Churns*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The adjustable floats or buckets *b c*, attached to the annular plate *H*, which is secured to the shaft *B*; the above parts being arranged, as shown, for the purpose specified.

No. 15,743.—EDWIN A. PALMER.—*Improved Clevis*.—Patented September 16, 1856.

By putting the pin *B*, with the arms *E*, down through the openings *F* in the projection *L*, and turning it one-fourth round, the spring *A* will press the pin and arms back into the recesses *I*; the spring will keep the arms in these places and prevent the pin from turning, and thus obviate the friction. This arrangement avoids the use of a screw on the pin, or a key to keep the pin in its place.

The inventor says: I do not claim any part of the common clevis; but I *claim* the pin provided with a spring, and arms *E E*, in combination with the projection in the head, and openings through which the arms may pass, and the recesses *I I*, arranged substantially as and for the purposes set forth.

No. 14,816.—MATHEW S. KAHLE.—*Improvement in Machines for Saving Clover Seed*.—Patented May 6, 1856.

The rake *D* catches the heads of clover as the machine moves forward, and the revolving blades *C C C C* cut them off. The cloth *E E* carries the clover heads up, and empties them between the rubber *H* and the sieve *I I*, where they are broken by the projecting spikes on rubber *H*.

The seed and light pod are prevented from falling between the rubber *M* and fans *S* by the shelving board *U*, and pass down between the rubber *M* and the concave board *V V*. Here they are again rubbed, and pass out at *W*, where the wind of the fan-wheel blows away the chaff, and the seed falls through the sieve *x x* into the drawer *y y*.

Claim.—In combination with a gathering and conveying apparatus, such as described, the rubber and meshed wire concave *I I*, for separating and throwing out the grass, leaves, weeds, and other impurities, from the heads, pods, &c., and passing the latter to the threshing cylinder, and concave, and blast, and screen underneath them.

No. 14,596.—GEORGE E. BURT.—*Improved Machine for Combing Seed off Broom-Corn*.—Patented April 8, 1856.

Having laid the substance to be combed upon the belts *E E E E*, motion is communicated to them by the pulley *S*. The pinion *M*, on crank-shaft *R*, gives motion to the wheel *B*, which imparts motion to the cylinder *C* by means of gear *N*, shaft *O*, pulley *P*, and belt *e e*. The broom-corn, being forced upon the teeth of the wheel by the rolls *G G*, is brought under the bar *D*, which beats it down parallel with the plane of the wheel, and brings it in contact with the comb cylinder *C C*; thus stripping the seed entirely off without injury to the fibre, and delivering it by the fingers *J J* and spur roll *K* in an even and regular manner. The plate *L* serves to clear the corn from the roll by means of its projections, which enter the grooves *c c c c* in the roll.

The inventor says: I do not claim setting teeth spirally on cylinders; neither do I claim an endless bearded belt constructed of any proper material, having lugs or spikes, in combination with comb rollers, set diagonally upon a frame, as employed by Lorenzo D. Grosvenor, patented September 23, 1851 but I *claim* the combination of the wheel *B*, or its equivalent, (such as a rim or circle,) having one or more rows of teeth in its periphery, with one or more cylinders *C* placed parallel, or nearly so, with the plane of the wheel *B*. I also *claim* the bar *D*, arranged in the manner and for the purposes set forth. I also *claim* the spur roller *R*, in combination with the plate *L*, substantially as described.

No. 14,374.—JEREMIAH P. SMITH.—*Improvement in Corn-Shellers*.—Patented March 4, 1856.

The teeth *b b* of the breast-beam *D* project into the grooves *c c c* of the cylinder *A*, so that the cobs may not get around the ends of said teeth, and thereby be broken. The corn is thrown into the hopper *B*, and an elastic bar *C* is employed to keep the ears close to the shelling cylinder.

Claim.—Grooving the shelling cylinder around its periphery, and extending the teeth of the breast-beam therein, in combination with the arrangement for adjusting said breast-beam to different degrees of inclination to suit the different condition of corn to be shelled, substantially in the manner and for the purposes herein set forth.

No. 14,745.—A. H. STEVENS.—*Improvement in Corn-Shellers*.—Patented April 22, 1856.

The disk *B*, when in operation, rotates in the direction of the arrow, and the fans *d* create a blast which, by the peculiar shape of said fans, is crowded into the corners *r*, and escapes through the air passages *y*. This current is caught immediately by another system of fans *Z*, which give it a tangential direction to the circumference of the disk, forcing it upwards against the cap *L*, and downwards through the open space *k* and the apertures *g*, (in *K*), which are sufficiently narrow not to

permit any grains to pass through them. The heavier corn, being detached from the cobs by means of the teeth *a* on the shelling surfaces B and C, falls through the aperture N in the bottom O of the box A, while the chaff and dust are driven out through the passage M.

Claim.—In combination with the shelling surfaces, the wings Z, openings *y*, and spiral flanges or ribs *d*, for the purpose of creating and driving through the machine a blast or current of air for separating the grain from the other impurities.

No. 14,771.—EBENEZER MATHERS.—*Improvement in Corn-Shellers.*—Patented April 29, 1856.

The object of the tongues D D is to keep the ears of corn pressed out against the teeth C of the cylinder A, as they descend in the channels *k k*, but yielding sufficiently to allow the passage of the cob after the corn is shelled off.

Claim.—The construction of the shaft B, with the channels *k k*, said channels being furnished with elastic tongues D D, for the purpose above specified.

No. 14,990.—CHARLES S. C. CRANE, assignor to SAMUEL M. TINKMAN.—*Improvement in Corn-Shellers.*—Patented May 27, 1856.

The ears of corn pass from the vibrating board Q down the chute O, between bars R R and shelling-wheel C, the springs *d d* pressing the ears against the teeth *a* of the wheel, thereby shelling the corn from the cobs. The plates *e e* prevent more than one ear from being shelled at once at each side of the wheel.

Claim.—The shelling-wheel C, toothed or corrugated on both sides, the pressure bars R R provided with plates *e* on their upper ends, and the feeding device, composed of the uprights *b b* and board Q. The above parts being arranged and operating conjointly, as shown, for the purpose specified.

No. 15,105.—EBENEZER MORRISON.—*Improvement in Corn-Shellers.*—Patented June 10, 1856.

The ears of corn Z are fed into the machine through tube E. As it strikes the feed cones R R, a rotary motion is imparted to the ear of corn by the revolving of the feed-cones and rows of teeth thereon; the angle of the ear being such as to cause the ears of corn to be fed downward just fast enough to allow the shelling-wheel Y to remove all the corn from the cob, and then allow the cob to pass out of the machine at the outlet E².

Claim.—The arrangement of the two-toothed truncated feed-cones R R for both revolving and feeding down the ears of corn in such manner that the toothed shelling-wheel Y will remove all the corn from the cob during such revolving.

No. 15,502.—CALVIN ADAMS.—*Corn-Sheller.*—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—Alternating the annular rows of rotating teeth *b* of the shelling cylinder with stationary toothed rings *e*, when the said shelling cylinder is combined with a rack composed of a series of self-adjusting toothed segments *h*, substantially in the manner herein set forth.

No. 15,765.—JAMES JONES JOHNSTON.—*Improvement in Corn-Shellers.*—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—I claim the drum D, with the two sets of teeth, arranged as described, and its combination with the vertical guide-boards E F and spring-plates G H, substantially as set forth, and for the purpose described.

No. 15,920.—WILLIAM BLACK.—*Improvement in Corn-Shellers.*—Patented October 21, 1856.

In shelling corn with this apparatus, the operator pushes the ears by hand into the holes *g* in such a manner that the teeth A will enter between the rows of the corn-cob, and by turning the ears, the corn is separated from the cob.

Claim.—Two or more holes *g*, of different sizes, with teeth A, converging in the manner shown, or any equivalent manner, for the purpose set forth.

No. 16,191.—HAMILTON E. SMITH.—*Improvement in Corn-Shellers.*—Patented December 9, 1856.

The corn is fed from the hopper J, in between the shelling cylinder D and the concave G, and as the cylinder is rotated the corn is shelled by the action of said cylinder on the concave. The concave G rests by means of the four pins *g* on the springs I, which can be adjusted by the set-screws F, and thus the concave is permitted to yield during the operation of the machine.

Claim.—The combination of the cylinder D and concave G, when made and operating together, substantially in the manner described.

No. 16,291, EDGAR M. STEVENS.—*Improvement in Corn-Shellers.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The self-adjusting cylinder *f*, in combination with the presser-bar *i* and bed *k*, when all are arranged as set forth, and for the purpose specified.

No. 16,127.—JEREMIAH P. SMITH.—*Improved Disk for Shelling Corn.*—Patented November 25, 1856.

The corn-cobs pass from the hopper *E* into the space between the plates *H* and the vertical shelling-disk *B*, and are shelled by the rotation of said disk on its shaft *D*. The plates *H* are attached to a rod *I*, which is pivoted loosely at *L*, and pressed towards the disk by means of spring *g*. The plates *H* can be further adjusted by means of bolt *F*, which passes through slot *d*, and is connected with the supporting arm *M*.

Claim.—The annular concave shelling surface *N*, on the face of the shelling disk, when employed in combination with the other parts of the machine, substantially in the manner and for the purpose described.

No. 16,177.—WILLIAM B. COATES.—*Improvement in Machines for Cutting the Stalks of Standing Corn.*—Patented December 9, 1856.

As the machine is drawn over the ground, the stalks of one row of corn are caused to pass into the opening between the projections *S* and *T*, and a rapid reciprocating motion will be imparted to the knife *L*, by means of the cog-wheel *G* on the driving shaft, pinion *H*, wheel *I*, pinion *J*, crank *k*, and connecting rod *h*; and as the knife is hung to an oblique pin, its movement must have a corresponding obliquity. By means of the adjustable connecting rod *h*, the motion of the knife *L* is so regulated that its cutting-edge may, when at the lowest point of its movement, be in very close contact with the inner edge of the projection *S*, so as readily to divide the stalks by an oblique cut.

Claim.—The oblique knife *L*, in combination with the connecting rod *h*, universal joint *g*, and crank *k*, said rod being made adjustable, for the purpose specified and in the manner set forth, or any equivalent to the same.

No. 15,746.—BENJAMIN G. SHIELDS.—*Improvement in Cotton-Pickers.*—Patented September 16, 1856.

The cotton is gathered by the teeth of the chain *C* running over two pulleys *a* and *b*, through two separate tubes *A*, as the crank *E* is rotated; and as the locks of cotton approach on the chain, the arms of the blower *G* knock it off by a blow from behind, and the blast facilitates and completes the delivery.

Claim.—As an improvement on the patent of George A. Howe, of the 4th December, 1855, the application of a fan or fans to the gathering chain, as a means of removing the gathered cotton from said chain; and this I claim whether said fans be used as set forth, or in any other way substantially the same.

No. 15,606.—HERVY D. GANSE.—*Improved Cultivator.*—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—So constructing and arranging my cultivator, by means of the clevis *x*, the beams *M*, and brace *n*, substantially as described, that, in combination with the seat *W*, the plows may be guided by the feet of the driver, in the manner set forth.

No. 14,715.—GEORGE ESTERLY.—*Improvement in Cultivators.*—Patented April 22, 1856.

The object of this invention is to provide a machine capable of cultivating corn, cotton, and other row-planted crops, through all their stages, from the time they spring through the soil and are thinned till they have obtained such growth as to do without further assistance.

Claim.—The hanging of two or more ploughs to a supporting beam or axle *H*, by swivelling joints at each of the ends of their drag bars *G G*, so that said ploughs may be moved either way laterally, without affecting the axle, and still maintain their parallelism; and this I claim whether the stock to which the ploughs are connected be adjustable in the drag-bars, or the ploughs be adjustable in the stock, or otherwise.

No. 15,453.—JACOB ZIMMERMAN.—*Improvement in Cultivators.*—Patented July 29, 1856.

The cutters *c* cut up the weeds and stalks as they are severed by the cutters *C*, and also serve to loosen the ground between the rows. The rake *R* collects the rubbish; and when a sufficient quantity has accumulated, support *s* is drawn up, and the shaft *S* allowed to revolve; as the arms *a* pass through the comb *D*, all adhering rubbish is removed thereby.

Claim.—The revolving rake and cleaner, in combination with the series of elastic cutters *c* and flat cutters *C*, as set forth.

No. 14,254.—CHARLES H. SAYRE and GEORGE KLINCK.—*Improvement in Cultivator Teeth.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—So constructing a cultivator tooth that, when made of thin or sheet metal, a part thereof shall form a tubular, shank *B*, whereby said tooth may be drawn up and securely attached to the frame, substantially as described.

No. 15,210.—ABRAHAM FRAVEL, assignor to Himself and THOMAS D. LEMON.—*Improvement in Grain Drills.*—Patented June 24, 1856.

The grain passes from hopper *A* to the shoes *C*, which latter receive a perpendicular motion by means of the tumblers *M*. The grain passes

then from shoes C, through guards D and spouts E, into the teeth F, with cutters F¹. The teeth F are attached to lever G, which latter extends back to form box H for the reception of weights, to give the tooth the necessary depth in sod or hard ground.

Claim.—The combination of tooth F, cutter F¹, and lever G, with shoe C, guard D, and tumbler M.

No. 14,708.—WARREN S. BARTLE.—*Improved Machine for Sowing Fertilizers.*—Patented April 22, 1856.

The fender *u* is let down, as seen in fig. 1, for the purpose of preventing the too rapid flow of the finely pulverized fertilizers. The operation will be understood from the engravings.

Claim.—The distributors composed of the radials *r r r*, in combination with the shaft *k k¹ k¹* and fender *u*, constructed and arranged substantially as described.

No. 15,976.—REUBEN M. HINE.—*Improvement in the Handles of Agricultural Forks, Shovels, and Hoes.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says:

I do not claim any mode of fastening the handle to the piercing or cutting part of a fork, shovel, or hoe.

Neither do I claim any mode of constructing the head-piece, or of attaching it to the handle; and I disclaim making the handle of any implement whatever of metal, or of an unfilled metallic tube.

But I *claim* making the handle of an agricultural fork, shovel, hoe, or equivalent implement, of a metallic tube filled with wood, as described, whereby the advantage specified is secured.

No. 15,151.—GARRETT J. OLENDORF.—*Improvement in Revolving Harrows.*—Patented June 17, 1856.

The nature of this invention consists of a cylinder C, secured on a shaft which is connected to the driving wheels by gearing, the ratchet wheels E being secured on the cylinder shaft at each end, and serving to prevent the cylinder C from binding, and also to make either of the driving wheels A act independently. The cylinder revolves several times faster than its natural speed would be rolling over the ground, and thereby harrowing the land well.

The inventor says: I do not claim to be the inventor of inverted gear, pinions, ratchet-wheels, or a cylinder constructed with a series of spikes on its surface; for I am aware these have long been in common use. But I *claim* the construction and combination of the several parts of my revolving harrow, the whole being arranged as described and set forth for the purpose specified.

No. 14,149.—JOHN H. MANNY.—*Improvement in Harvester Cutter-Bars.*—Patented January 22, 1856.

This improvement consists in making finger-bars of steel which possesses such strength that a finger-bar sufficiently strong to resist all tendency towards bending or twisting it would yet not be so high or so wide as to obstruct the delivery of the cut grass or grain on the stubble behind the bar; whereas these disadvantages would result from the necessary increase in height and width if the bar were made of iron instead of steel.

Claim.—The tempered steel finger-bar A, by which the delivery of the cut grain or grass upon the stubble is facilitated, and other advantages attained, as herein described.

No. 14,768.—WILLIAM H. HOVEY.—*Improvement in Attaching Harvester Cutter-Blades to the Sickle-Bar.*—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the teeth B to the sickle-bar A, by means of the grooved pins *a*, and bar C attached to the bar A, and the plate D having holes *d* and slots *e* made through it.

No. 14,402.—ISRAEL S. LOVE.—*Improvement in Cutters for Harvesters.*—Patented March 11, 1856.

This invention consists in making a double set of teeth X and Y, to be attached to the sickle-bar, whereby the close proximity of the bar and consequent pressure on all the guard-fingers J J is avoided, having always a space between them and the under side of the cutter-bar, which otherwise will often clog up.

The inventor says: I do not claim the cutting-blades in their usual form, nor do I claim the other parts as they have hitherto been used; neither do I claim the tooth X (which may be made either in one piece or more) when used without the tooth Y; but I *claim* the use of the clearing tooth Y, in connexion with the cutting-tooth X, in the manner and for the purpose as set forth, provided the cutters be distinct and the spaces between them continue back to the rear of the cutter-bar.

No. 14,422.—PLINY THAYER.—*Improvement in Harvester-Cutters.*—Patented March 11, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—In combination with the plates *e*, being loosely on the fingers or guards, but kept from moving by the projections *f f* on the plates, and the open countersinks on the guards, the cutters *d*, which are vibrated past those *e*, and held to them by the guides and springs L, M, substantially as described.

No. 14,453.—HORACE L. HERVEY.—*Improvement in Harvester-Cutters.*—Patented March 18, 1856.

The nature of this invention will be understood from the engravings and the claim.

Claim.—Furnishing the cutter-bar C with a series of inclined blades or knives A, in combination with the inclined blocks E and rollers d, or their equivalents, for giving to said cutters or cutter-bar an oblique cut.

No. 14,544.—JOHN H. MANNY, assignor to PETER H. WATSON.—*Improvement in Harvester-Cutters.*—Patented March 25, 1856.

The nature of this invention consists in constructing a sickle with two edges *b b* in such a manner that either of them may be used. C are cleaning hooks secured to the stock *a*; *d d* are holes to connect with the connecting rod by which the sickle is vibrated.

Claim.—The reversible duplex sickle, substantially as herein described.

No. 14,777.—BENJAMIN T. RONEY.—*Improvement in Harvester-Cutters.*—Patented April 29, 1856.

A reciprocating motion is imparted to the bars C and D by connecting a rod actuated by a crank on any moving part of the machine to the projection *f*; this reciprocating motion of the connected bars imparts to the cutter-levers E a vibrating motion, so that the knives *h h* and projecting cutters *d d* move across each other in contrary directions.

The inventor says: I am aware that vibrating knives or cutters for harvesters are well known and in common use, and that such cutters have been arranged so as to produce what is known as the shear cut. I therefore do not claim the use of vibrating cutters exclusively, but as an improvement upon the ordinary manner of arranging the same. But I *claim* the slotted bar C and cutter bar D, as connected together by the cross pieces *e e*, in combination with the cutter-levers E, their knives *h*, and projecting pins *i*; the whole being arranged in conjunction with the fulcrum-bar A, substantially in the manner as shown.

No. 14,790.—JOHN REILY.—*Improvement in Harvester-Fingers.*—Patented April 29, 1856.

The inventor says: I am aware that steel plates have heretofore been inserted into the upper side of the fingers, to act as stationary cutters, but to those I lay no claim, as they are at once costly and liable to get out of order; but I *claim* hardening that part of the tooth on which the knife works.

No. 15,013.—HENRY F. MANN.—*Improvement in Harvester Frames.*—Patented June 3, 1856.

The inventor says: I am aware that harvester frames have been inclined downward in front of the supporting and driving wheel, and where the cutter-bar was also in front of the said wheel. This not only makes the tongue connexion awkward, but, the whole weight being forward of the wheel, throws the machine out of proper balance. But in the machine above referred to, there is no inclination of the pinion shaft, which I deem a material point in the construction of the frame. Such form of frame I lay no claim to; but I *claim* inclining the rear portions of the side-pieces B C so that the shaft *b* may lie upon and have the same dip with the one C on which it is supported, for the double purpose of giving said shaft a firm support, and to bring its drive-wheel J close down to the pinion on the crank-shaft.

No. 15,701.—WILLIAM P. MAXSON.—*Improved Grain and Grass Harvester.*—Patented September 9, 1856.

In this apparatus the sickle E can be raised and lowered by operating the lever G; and the wheel H can be thrown in and out of gear with pinion *c* by operating the lever U, the wheel H being attached to driving wheel F.

Claim.—The wheel H, attached to the driving wheel F, in combination with the curved sliding lever G (on which the driving wheel is hung) and straight lever U, when arranged to operate in the manner and for the purposes set forth.

No. 14,350.—OWEN DORSEY.—*Improvement in Harvester-Rakes.*—Patented March 4, 1856.

As the rake-head passes over the platform A, its movement is horizontal, the arm C passing over the rail from *m* to *h* (fig. 1); but on reaching the edge of the platform the rake-head is suddenly raised by the arm passing up the incline *m* (fig. 3) of the guide rail, while the rake and opposite end of the arm drops at a corresponding incline; and by continuing its movement the rake reaches over the heads of the grain, and, gradually descending by the guide rail, draws the wheat towards the cutters.

Claim.—The combination with the rake-arms *c c*, to which the rakes are firmly attached, of the vertical revolving shaft *i* and cam-way or guide *f f*, *m m*, from which the rake-arms receive an undulating motion in a vertical plane revolving about said shaft *i*, substantially in the manner and for the purposes set forth.

No. 14,043.—GEORGE A. CLARKE, assignor to WILLIAM CLARKE.—*Improvement in Harvester Raking Apparatus.*—Patented January 1, 1856.

As the grain is cut by the sickle it falls over on the platform X, and the rake M is moved back and forth by the endless belt Q, which is

operated by the belt a^1 . When the rake M reaches the end of its backward stroke, the teeth are elevated in consequence of the pin o striking against the projection p , and the rake, in moving towards the driving end of the sickle, carries the grain off the platform. Just before the rake M reaches the end of the platform, the rod j^1 catches against the end of the arm T and moves it outward, and consequently throws the rod y backward so that the grain will fall upon the ground; and as the rake returns, the rod j^1 will draw upon the catch U, and force outward the rods y to their original position, so that the rods will catch the grain that is cut opposite to them, and retain it till the rake again arrives at the end of the platform X.

Claim.—Operating the rake M by means of the endless belt Q, in combination with the levers R W connected with the rods y , as shown, for the purpose of raking the cut grain from the platform X.

No. 14,693.—WILLIAM H. HOVEY.—*Improvement in Harvester Raking Attachments.*—Patented April 15, 1856.

As the machine is drawn along, the rake D^1 is moved back to the outer end of the platform C, in consequence of the teeth w gearing into the pinion on the pulley O, the teeth of the rake D^1 being kept in a horizontal position by means of the weighted arm G. When the rake D^1 reaches the outer end of the platform, the teeth are elevated above the slats d by an incline z , and kept in an elevated position by the catch-bar H, which fits over a projection on the end of the head E^1 . The teeth w , on the wheel P, leave the lower pinion v at this point, while the teeth y , of the inner periphery of wheel P, gear into the pinion r , and the rake D^1 is moved from the outer to the inner end of the platform C^1 , whereby the cut grain is raked up against the teeth k and underneath the teeth j of the rake I. At this position of the rake D^1 the catch i acts upon the catch M, throwing it free from the lower end of the lever L; and as the rake returns, the catch i will draw back the lower end of lever L, by means of pin r , and the rake I will be turned, the teeth j throwing the cut grain from the platform; the rake returning to its original position as soon as the pin r is freed from the catch i by means of the weight O.

The inventor says: I am aware that a reciprocating rake D^1 , working through a slotted platform, has been previously used, and I therefore do not claim said rake separately.

But I *claim* the swinging rake I, in combination with the reciprocating rake D^1 , when said rakes are used in combination with the device for operating the rake I, formed as shown, viz: of the catch M, lever L, with pin p , attached to arms k o , and the catch-bar H attached to the rake D^1 , whereby the proper movements are given at the desired time to the rake I.

2d. I *claim* operating the reciprocating rake D^1 by means of the chains M N attached to said rake, as shown, and passing around pulleys t u u , and attached to the pulleys o o , which pulleys are turned or operated alternately by the wheel P, having teeth w y upon its outer and inner peripheries.

No. 14,026.—JOHN H. MANNY.—*Improvement in Harvesters.*—Patented January 1, 1856.

The front end of the rear section (A) of the tongue projects across the hinge C over the rear end of the front section B, and the projecting end of the rear section is fitted with an adjusting screw a , which passes through it and extends toward a plate, b , on the rear end of the front section. By turning, to make its point project more or less, the front section of the tongue will be allowed to rise a less or greater distance from the ground without lifting the forward end of the rear section, as the joint C can only be turned downward until the lower end of the adjusting screw a comes in contact with the plate b .

Claim.—The tongue with an adjustable joint, constructed and operating substantially in the manner herein set forth

No. 14,046.—LEBBEUS BARNES.—*Improvement in Harvesters.*—Patented January 8, 1856.

A spring f is attached direct to the cutter-bar by means of a rod e , for the purpose of neutralizing the deadness of action accompanying the reciprocating motion of the cutter-bar, and also for weakening the jerk of said motion. The spring f is attached to the frame at the point g , and is shown in its two extreme positions drawn in full and in dotted lines.

Claim.—The application to the reciprocating cutter-bar of a mowing machine or reaper of a spring or springs driven by or operating in connexion with the cutter, essentially as specified.

No. 14,079.—JOHN REILY, assignor to Himself, TALBOT C. DOUSMAN and JOHN HEATH.—*Improvement in Harvesters.*—Patented January 8, 1856.

When the driver desires to raise the front of the machine he presses his foot upon the spring d , which detaches the pin c from ratchet wheel D on shaft o ; this leaves the lever wheel D free to be rotated by his hand. Wheel D is mounted on the same shaft o , and also a small pinion, which latter (being rotated together with D and gearing into the rack F) will raise the rack F on the end of lever E; as this lever is raised it carries up with it the rod f attached to the cutter-bar B, in this way raising the front and depressing the rear of the machine.

To the inside of the cutter-bar is hinged the front end of the platform G, the rear end being supported by standard G^1 . This standard plays up and down through a mortise in crossbeam A^3 , as the platform rises and falls by the inequalities of the ground.

The grain guard I is provided with two arms i , so as to project it towards the platform G, in a line parallel with the frame in the same manner as a parallel ruler. This grain guard is projected more or less towards the platform by means of a proper hand lever, for the purpose of enabling the raker to straighten the grain with facility as it is brought

in contact with it in depositing it upon the ground, whether the grain be long or short.

Claim.—1st. The method of raising and lowering the cutter-bar, substantially as described.

2d. The arrangement and combination of a raker's seat with a swinging platform, as described; and,

3d. The adjustable grain-guard or straightening-board I, for the purposes described.

No. 14,205.—B. F. RAY.—*Improvement in Harvesters.*—Patented February 5, 1856.

The guard plate serves to exclude all matter which would tend to obstruct the mechanism enclosed in the wheel. In order that the machine may be conveyed to different points without giving motion to the cutting apparatus, and to prevent the bell crank from becoming bent for want of proper support, the sliding bar M is slotted, which permits the bell crank to remain stationary until secured by pin *t*.

Claim.—1st. Providing the main or driving wheel of reaping and mowing machines with a stationary guard plate R, in the manner and for the purpose herein described.

2d. The sliding bar M arranged in the same horizontal plane with and perpendicular to the axle of the driving wheel of reaping and mowing machines, in combination with the bell crank F, for the purpose of giving direct and positive motion to the cutting apparatus when arranged obliquely to the line of draught, substantially as described.

3d. Forming in the sliding bar a slot for the reception and operation of the bell crank as herein set forth.

No. 15,146.—J. C. PLUCHE and L. C. PLUCHE.—*Improvement in Harvesters.*—Patented June 17, 1856.

With this improvement either end of the sickle may be raised or lowered: for instance, if the outer end is raised, the sickle and finger bar will cause the shaft *k* to turn between the two strips *b b*; and if the inner end is raised, the strips *b b* will raise the plates *f f* and frame C, the upper ends of the plates *f* being properly guided in consequence of the roller *g* working in the guide F. The sickle may be raised by the driver at any time, in order that it may pass over obstructions, by depressing lever M. The weighted lever I causes the sickle to descend and keeps it at the surface of the ground.

Claim.—The frame C, when arranged in respect to the driving shaft D, and having the bar E attached to its lower end, and the strips *f* attached to the bar E; the upper ends of the strips *f* having a roller, *g*, attached to them, which roller is fitted and works in a guide F, the finger bar G being connected to a shaft *k* fitted within the bar E, when the whole is constructed and arranged substantially as shown for the purpose specified.

No. 15,204.—CYRIL B. WAGNER.—*Improvement in Harvesters.*—Patented June 24, 1856.

This harvester is so constructed that should the main wheel D drop into a hole, the rear wheel Q will still keep up the rear of the machine, whilst the frame A will merely oscillate on its bearings C, rolling the pinion F upon the gears *b*; and the tongue E not being influenced by the dropping of the front of the frame, no effect is produced upon the horses.

Claim.—In combination with the main supporting and driving wheel D, and the main frame A, and its supporting wheel Q, the tongue frame B, so united that the motion of one shall not injuriously affect the action of others.

No. 15,236.—JOHN C. HEUERMANN.—*Improvement in Harvesters.*—Patented July 1, 1856.

The machine being drawn along, the angular projections *a* acting on the rollers *m* will, on account of the position of the two sets of projections *a a'* to each other, cause the opposite levers H and H' to vibrate in contrary directions, imparting through the rods I and I' a vibratory motion to the levers J and its arms K K', and a corresponding reciprocating motion to the bar E with its cutters *f*.

The inventors say: We wish it to be understood that we do not claim exclusively the employment of cams or projections on the driving wheel in combination with levers for agitating the cutters of harvesters; but we *claim* the wheel C, with its projection in combination with the levers H and H', and their scrapers *j'*, the rods I and I', lever J and arms K, the whole being arranged and constructed substantially in the manner herein set forth for the double purpose of clearing the projections from dirt and agitating the cutters.

No. 15,377.—STEPHEN R. HUNTER.—*Improvement in Harvesters.*—Patented July 22, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

The inventor says: I do not claim the rotary cutters working within or through the slotted fingers *c*, separately or in themselves considered, for they have been previously used; but I *claim* the employment or use of the rotating cutters formed of circular plates L, with teeth *e'*, at their peripheries; said teeth working through or between slotted fingers *c*, on the plates J, J, when said plates are connected by a hinge or joint *b*, and attached to the frame A, as shown and described for the purpose set forth.

No. 15,582.—WILLIAM TINKER.—*Improvement in Harvesters.*—Patented August 19, 1856.

As the machine is drawn along, the shaft C and wiper wheel F are rotated by the gearing D E, and the wiper wheel, as it rotates, gives a

reciprocating motion to the frame G, rod H, and sickle bar I. The sickle bar has cutters *d* attached to it. The front part of the cutters are of the usual saw-tooth form, the back end of the cutters extend back of the cutter bar, and are merely short projections *e*, with parallel cutting edges which prevent the sickle from being choked by grain or grass collecting between the sickle and finger bar, as the projections *e* cut it immediately and keep the sickle free at all times.

The inventor says: I do not claim, irrespective of the relative arrangement of their cutting edges to the finger bar, and their action, as specified, the reciprocating back cutting projections over or through the fingers between the finger bar and sickle. And I am also aware that a sickle has been provided with back scraping projections, presenting parallel sides or edges, and moving crosswise to the traverse of the machine on or over the plain surface of the sickle bar. Such, therefore, I do not claim. But I *claim* forming the cutting teeth *d*, with narrow back projections *e*, having cutting edges parallel to each other along the sides of each projection, so as to cut at right angles to the face of the finger bar, when said projections are arranged for operation over the fingers between the finger bar and sickle, as specified, in combination with the wiper wheel driving appliance for giving an abrupt action to said cutters for the better clearance from grain or grass of the space which separates the finger bar and sickle, as set forth.

No. 15,638.—HOMER ADKINS.—*Improvement in Harvesters*.—Patented September 2, 1856.

This invention relates to the attachment of a rake to a harvester. The harvester itself may be of any of the well known constructions; Motion being imparted to the pulley M from the driving shaft, the crank N on the shaft of said pulley is rotated, and a reciprocating motion is imparted to the bar O, and the rake P is drawn over the platform B, and rakes the cut grain off. The guide blocks Q and S assist in giving the proper movement to the bar O.

Claim.—The rake operated by means of the crank N, and guide blocks Q S, substantially as described for the purpose specified.

No. 15,721.—WILLIAM H. SEYMOUR and HENRY PEASE, assignors to WILLIAM H. SEYMOUR and DAYTON S. MORGAN.—*Improvement in Harvesters*.—Patented September 9, 1856.

This invention relates to the peculiar construction of harvester frames, by which said harvester can readily be converted from a mowing to a reaping machine, and *vice versa*. Figure 1 represents the arrangement when the machine is used as a reaper. The driving wheel G is to be placed upon shaft G, when the cogged wheel H will come into gear with pinion I and drive the raking and cutting apparatus. The tongue L is held rigid by the insertion of pin *c* into a hole in the standards *b*. In converting said machine into a mower, the block F¹ is removed into the position marked by letter E, the bolts of said block passing through

the holes *f*, and when the driving-wheel is set on its shaft, the arrangement will assume the position represented in fig. 2; the front part of the mower is then supported by means of the wheel M, attached to a frame by a bolt *h* passing through hole *g*, and the tongue L is permitted to play by the withdrawal of the bolt *c*.

Claim.—In combination with the main wheel H, and removable wheel M, a frame capable of allowing the shifting of the former, and the removing or replacing of the latter, when the machine is to be converted from a reaper to a mower, or *vice versa*, substantially as set forth.

No. 15,722.—WILLIAM H. SEYMOUR and HENRY PEASE, assignors to WILLIAM H. SEYMOUR and DAYTON S. MORGAN.—*Improvement in Harvesters*.—Patented September 9, 1856.

Motion being imparted to the machine by the driving wheel F, upon shaft E, the cogged wheel I causes to revolve the pinion H, and the latter transferring motion to pinion *c* rotates shaft *d*, and operates the cutting apparatus by means of crank *e* and pitman K. The pinion J imparts revolving motion to shaft *b* K *l*, and to pinion *g*; and as the latter revolves, it meshes into the teeth of the circular rack N, and runs through the entire length of said rack carrying along the platform Q, which swings on the pin *t*, together with the bearing *w* of the rake *z* and rack *p* and pinion *y*. In the position as represented in fig. 2 of the illustration, the rake and platform Q are progressing towards the front edge of the platform of the harvester. When the pinion *g* has arrived at the front end of the rack N, it is caused to descend to the lower side of said rack, and by thus descending the rack *p* operates the pinion *y*, and turns the rake shaft *x* and rake *z* from a horizontal into a vertical position, the rake commencing its rearward motion and raking the grain off the platform. The driver sitting on the seat M, fig. 1, can, by the pressure of the foot upon the lever *g*, operate the clutch-arms *g* in such a manner as to connect or disengage the shaft *b* from the shaft K, and can thus either stop the motion of the rake altogether, or regulate its motion so that the gavels on the platform can all be formed of the same size.

Claim.—The particular arrangement of the clutch and clutch lever, with regard to the conductor's seat and platform, and the shaft *b*, from which motion is communicated to both the rake and sickle, as that the operator from his seat, having a distinct view of the platform, can engage or disengage said rake with his foot, whilst the sickle continues to run, substantially as set forth.

Also, the combination of the universal joint *i*, for connecting the shafts *b* *k*, the sleeve *l*, and plate Q with its guide *m* *m*, and gimbal joint *o*, for giving the rake its transverse movement, as described.

Also, the bow and rake head, so formed as to incline towards their outer ends, and so acting as to cause the bent or entangled straws to slide off on to the platform, substantially as described.

No. 15,735.—WILLIAM GAGE.—*Improvement in Harvesters*.—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I *claim* raising and lowering the finger-bar and cutters by means of swinging the outside frame, to which the finger-bar is attached, upon two pivots upon the inside frame, and holding the same where placed by means of the serrated plates E E and tightening rod *d d*, when said frames are constructed and arranged to operate in relation to each other, and the driving wheel, finger-bar, and cutters, in the manner and for the purposes set forth.

I do not claim a board set edgewise and upon an angle inward, when the same is not combined with the wheel W, and used for mowing, whether fixed immovably to finger-bar or hung upon a hinge.

Neither do I claim a mould board or a dividing board, when combined with, and fixed on, a platform and used for reaping.

But I *claim* the peculiarly adjustable mould board *z y*, in combination with the wheel W, and its supporting arm, *x y*, when used in mowing, for the purpose of protecting the wheel and arm from loose grass, and prevent its lodgment thereon, when the above parts are constructed and arranged in the manner described.

No. 15,855.—ISRAEL S. LOVE.—*Improvement in Harvesters*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The use of the movable rolling guides E, placed between the cutting blades D and the sill A of the harvester, whether they be used with a sill made entirely of metal, or partly of wood, with more or less metal attached to the same.

No. 15,843.—WILLIAM DRIPPS.—*Improvement in Harvesters*.—Patented October 7, 1856.

The cutters *b* are set into the links E of an endless chain in such a manner that they can play freely in their bearings; as the wheels D are rotated they impart motion to the chain and to cutters *b*, and when the cutters arrive to the front side of the machine they are caused to revolve as the pinions *c* come in contact with the rack G, thus assuming a travelling and revolving motion while they operate upon the fingers C.

Claim.—Giving to the cutters of a harvesting machine a travelling and a rotating motion, at the same time and by means substantially such as described.

No. 15,882.—CARLOS W. GLOVER.—*Improvement in Harvesters*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Attaching the finger bar E to the guide box B, which is fitted over the flanch *b¹* of the driving wheel A, as shown; the guide box having the two shafts C D attached to it, by which motion is communicated to the sickle from the driving wheel, and the bar F, attached to the finger bar by hinges or joints *k*, and the guide box B, to the rod H; the whole being arranged, as shown, for the purpose set forth.

No. 15,927.—PELLS MANNY.—*Improvement in Harvesters*.—Patented October 21, 1856.

A straining bar E is attached underneath the frame A. The screw *e* passes through the centre of the axle D, so as to bear upon the bar E, in such a manner that, upon suitably adjusting the screw *e*, the bar E is depressed at its centre, by which means the finger bar *a* may be kept perfectly horizontal.

Claim.—The straining stirrup or brace bar E, arranged diagonally beneath the frame, and fitted so as to secure the ready and effectual adjustment of the frame or finger-bar portion thereof, as described.

No. 16,079.—ALVIN BULLOCK.—*Improvement in Harvesters*.—Patented November 11, 1856.

As the machine is drawn along, the zig-zag flanch D will operate the lever J, giving it a vertical vibratory motion, and the bent lever G will also be vibrated, imparting a reciprocating motion to the cutter bar H.

Claim.—Operating the sickle bar H by means of the right angle lever G on the shaft E in combination with the lever T, bar *c*, and flanch D, when the same are constructed and arranged to operate in relation to the main frame A, drive wheel B, and adjustable finger-bar 1, in the manner and for the purpose set forth.

No. 16,194.—WILLIAM TINKER.—*Improvement in Harvesters*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim driving or operating the sickle F by means of the bent lever D and the scalloped rim *a* and ring *b* on the driving wheel; for this or equivalent devices have been previously used.

But I *claim* the employment of the freely turning support *d*, arranged and operating substantially as described, in combination with the bent lever D and scalloped driving wheel C, for the purpose of securing said lever from strain, and at the same time of retaining the utmost facility and freedom of motion thereof in the manner specified.

No. 14,553.—SAMUEL COMFORT, jr.—*Improved Apparatus for Removing Grain from Harvesters*.—Patented April 1, 1856.

The radial grating is formed of the rods *e e e e*, which are secured to the curved bar *E*. The bar *S*, with its projecting rods *v v v v*, constitutes the grated platform.

To the bar *S* is secured the guide *T*, the lower legs of which slide in a bracket *U*, the upper leg being guided in a sleeve *W*.

Claim.—1st. The employment in harvesters of the grated platform and radial grating, the same being constructed and operating in conjunction with each other as described.

2d. The radial grating with its two rollers *a* and *a'*, shaft *F*, and arm *G*, as connected to the shaft *H* in combination with the curved plate *D* and its curved recess *d*, (the said shaft *H* being acutated in the manner set forth or any equivalent to the same,) for the purpose of turning over the said radial grating and clearing it of the grain or grass.

3d. The arm *G*, with its projection *R*, recess *r*, and jointed inclined plane *Q* in combination with the shaft *P*, its cranked portions *t* and *p*, and roller *h*, for the purpose of giving the grated platform the desired vertical movement.

No. 14,769.—SALEM T. LAMB.—*Improvement in Automatic Rake for Harvesters*.—Patented April 29, 1856.

The rake moves along the platform longitudinally, carrying the grain ahead of it, and, when the rake reaches the point *o*, a projection *n* on the rake strikes against a friction roll *O* and holds the rear of the rake, while the front part of the rake turns upon its pivot *i* and coils up the spring *J*. Just as the hook *l* runs out from under the ledge *N* at *m*, *j* strikes against a roll *p* and causes said cam to turn on the shaft *K* and raise up the rake vertically; the spring *J* uncoils and returns the rake to the original position with regard to the arm *L*. As the cam *J* rolls on the shaft by striking against *p*, a pin *g* thereon passes under the ledge behind *C* and holds the cam, rake and all, in the raised up position, until the cam traverses back and meets a stop roll *P*, which turns it back around the shaft *K*, whereby the pin *g* is drawn out from under the ledge *N*, and the rake is let down gently by the intervention of the cam ledge *Q*, which receives the pin *g*.

The cam *J* receives its motion by means of the pitman *I*, the arm *H* attached to the turning stud *F*, and the short arm *g*, which has a friction roll *h* on its end—said roll passing between the cam rings *E*, whereby a variable turning motion of the stud *F* is caused.

Claim.—Giving the rake *M* its circular motion by means of the traversing and rocking cam *J*, in connexion with the revolving cam *E*, which gives the longitudinal motion, through the intervention of the devices substantially such as described.

No. 16,307.—SAMUEL COMFORT, jr., assignor to EDWARD S. RENWICK.—*Improvement in Automatic Rakes for Harvesters*.—Patented December 23, 1856.

As the machine is drawn along, the pinion *N* is rotated; this pinion is attached to shaft *M*, which turns in the stationary bearings *m*. The pinion *N*, in position, as represented in figure 3, in revolving, causes the endless rack *I* to move in the direction of the arrow, and at the same time the entire raker frame, composed of parts *L*, *P*, *T*, *S*, *R*, moves in the same direction, towards the rear end of the harvester platform, the rake *U V* being in the position as shown in figure 2. When the pinion *N* comes in contact with the end *i'* of the rack *I* the latter is raised, together with frame *L* and rod *P*, and rake *U V* is thrown in the position of figure 1 by the action of rod *P* upon link *q* and lever *R*; as the pinion *N* revolves further, the rack *I* and extended rake move towards the front end of the platform. As soon as the pinion begins to act upon the teeth *i* of the rack, the rake *U V* returns to position figure 2, sweeping off the grain and compressing it against plate *H*, and the gavel thus formed is carried to the rear of the machine by the backward movement of rack *I*, and dropped as soon as the rake returns to position figure 1.

Claim.—1st. The combination of the rake handle, the guide which its upper end traverses, and the lever to vibrate the rake in and out, when arranged for joint operation, substantially as set forth.

2d. The counter loading of the rake for the purpose of rendering the draft of the machine more equable, substantially as set forth.

3d. The combination of the rake with the mechanism for moving the same to and fro over the platform with a traversing carriage, substantially as set forth.

4th. The method of discharging the gavel before being bound by dropping it from between the rake teeth *V* and the plate *H*, while the machine is in motion, as if it were standing still, by neutralizing the forward motion derived by the gavel from the machine by its backward motion derived from the rake, substantially as set forth.

5th. The combination of the rack and pinion, or the equivalent thereof, with the rake, substantially as set forth, whereby the motions are generated for traversing the rake, first along the platform to gather the grain into a gavel, and then across the platform, to discharge the gavel.

No. 15,449.—C. B. WHEELER and AUSTIN BASCOM.—*Improvement in Clover-seed Harvesters*.—Patented July 29, 1856.

When this apparatus is drawn along, the clover heads pass between the stationary teeth *b* and the reel *F*, which is hung in an adjustable frame *E*, strikes against the clover heads, which are cut off, and are thrown within the body *A*, an endless apron *H*, conveying them to the rear part of the body.

Claim.—The reel *F* and cutters or teeth *b*, placed within the sliding or adjustable frame *E*, in combination with the endless apron *H*, the parts being arranged as shown, for the purpose set forth.

No. 14,076.—GEORGE W. N. YOST.—*Improvement in Corn Harvesters*—Patented January 8, 1856.

As the machine is moved forward, the driving wheel communicates revolving motion to the knife B, and by means of the rods G, which are allowed to run on or near the ground, and may be adjusted by cords *a*, all stalks of corn which lie across the track are gathered between the said rods and caused to come in contact with the knife inside of finger board *d*. As the corn is cut off it is taken by the man standing on platform E and set back against the frame F; and when sufficient is set up to form a shock, the tops are bound and the frame opened at *h*, and the lever *c* is moved, which allows the platform to fall and the shock is left standing already secured.

Claim.—The combination of the adjustable lifters G G, finger board *d*, revolving sickle-shaped knives B, vertical adjustable frame F, and the adjustable platform D, for the purpose of harvesting corn, when all are operated and operating as described and herein set forth.

No. 14,34.—WILLIAM M. BONWILL.—*Improvement in Corn Harvesters*. 4 Patented March 4, 1856.

As the machine is drawn along, the saws J J are rotated by means of the gearing as shown, and the saws cut the stalks, each saw being in line with a row. The cut stalks fall upon the plates K K, and when a sufficient quantity is upon the beds, the rods *b b* are depressed by the driver, and the lower ends of the rods *c c* are thrown outwards thereby, and the stalks are thrown upon the ground.

The inventor says: I do not claim the circular saws for cutting the stalks, for they have been previously used; but I *claim* the two saws J J placed at the front part and at each side of the platform A, in combination with the horizontal plates or beds K K, and discharging rods *c c*, arranged substantially as herein shown and described for the purpose specified.

No. 14,730.—R. C. MAUCK and W. T. MCGAHEY.—*Improvement in Corn Harvesters*.—Patented April 22, 1856.

Figure 1 represents one half of the plan view of the machine, and figure 2 a section of the same. The harvester is driven forward so that one of the stalk receivers *f* will embrace each stalk of a row as it comes in contact with the said stalks. As the stalk is cut by the cutter *a*, the vibrating frame *k* throws it upon the inclined guide *n*, across the machine, whence it falls within the action of the arms *p*, which convey it under the packing guides *q*; as these guides pass close to the bottom of the body, the stalks accumulate under them and cause the rear stalks to be forced backward until the body is filled. Simultaneously with the cutting of the stalks by the cutter *a*, the cutters *b* sever the stumps from the ground and permit the passage of the machine.

Claim.—1st. The rotary arms *p*, in combination with the packing guides *q*, for affecting the filling of the body.

2d. The employment of a double series of cutters for cutting the stalks and stump, and thereby admitting of the delivery of the cut product without elevation.

No. 15,152.—WILLIAM S. TILTON.—*Improvement in Corn Harvesters*.—Patented June 17, 1856.

As the implement is drawn along, the two cutters G G are rotated by the chain H, and the standing stalks will be encompassed and drawn towards the knife J by the cutters G G, the stalks being cut between the cutters and knife. The frame E may be raised or lowered by loosening the screws *a* so that the cutters and knife may be placed the desired height from the ground.

Claim.—The rotating cutters G G and stationary knife J, placed within an adjustable frame E, arranged as shown for the purpose specified.

No. 15,533.—ANDREW SPRAGUE.—*Improvement in Corn Harvesters*.—Patented August 12, 1856.

Motion is imparted from the driving wheels N by means of gearing to the wheels D, attached to trunions E; the rod B passes through the side pieces of a frame C, which are provided at their rear ends with pivots *a*, which are made to slide in a horizontal groove *b*. The stalks or stems of grain pass between the knives A, and when the knives A arrive at the position marked in dotted lines, they bring the grain so near the thin edged guard K as to deliver it on said guard, whence it falls into the elevators L.

The inventor says: I do not claim the tongue steering wheel, or the drive wheels and elevators. But I *claim* the guard K, in combination with the knives A, operated in the manner and for the purposes set forth.

No. 15,409.—JOHN W. BATSON.—*Improvement in the Cutting Apparatus of Corn and Cane Harvesters*.—Patented July 29, 1856.

The nature of this invention consists in the peculiar construction of the cutting apparatus of corn and cane harvesters, by which the blades D, when set obliquely into a frame E, and held there tightly by the projections *b* and bar F, may cut the corn or cane by being drawn through the stalks, said knives being stationary and not movable, as in grain harvesters.

Claim.—The double-angled V-shaped cutters, composed of strips and under supports, substantially as represented and for the purposes set forth.

I also claim hanging said cutters to a pivoted bar, so that they may be raised up out of cutting position when the machine is drawn through the stubble, to prevent their catching against the previously cut cane or corn, as set forth.

No. 15,408.—JOHN W. BATSON.—*Improvement in the Raking Apparatus of Corn and Cane Harvesters*.—Patented July 29, 1856.

The corn or cane when cut falls on the endless belts $L L^1$ on the platform A, which are set in motion from the driving wheel B by the arrangement as represented in the illustration. The corn or cane is caught by the rake teeth d and conveyed up the shield M, over the pulley K , to the inclined shield M^1 , where it is discharged into a wagon fastened along side the machine.

Claim.—In combination with the endless rake belts $L L^1$, passing under and over the platform, and thence over the pulleys $K K^1$, the shield M placed between them, when said shield receives the corn or cane from the rakes at their highest elevation, and conveys it into a wagon or other receptacle alongside, substantially as set forth.

No. 14,761.—MILTON BARLOW.—*Improvement in Cradling Harvesters*.—Patented April 29, 1856.

The nature of this improvement in harvesting machines consists in so arranging the mechanism controlling the revolving cradles that by an eccentric I (secured to an upright journal E, on which the cradle arms revolve) the attendant is enabled to operate on the cradles by means of a yoke or ring K on said eccentric, through the agency of connecting rods $m m$ attached to the heel of the cradles, for the purpose of controlling the movement of the cradles, giving a drawing cut to the blades thereof. A further improvement is in delivering the grain gathered in the inside of the cradle fingers by a fixed rake q placed on the journal E, by which the cut grain is removed therefrom, and after being received on the rake teeth, by a partial revolution of said rake the grain is suffered to drop in suitable bundles for binding.

Claim.—Constructing and operating the cutting portion of the machine so that, by the use of the eccentric I, or a cam or crank as a substitute therefor, operating on the cradle, when in combination with the means of delivering the cut grain by the use of a rake, operated substantially in the manner and for the purposes set forth.

No. 15,205.—CYRIL B. WAGNER.—*Improved Cutting Apparatus for Harvesters*.—Patented June 24, 1856.

The sickle bar G, which rests upon the shoulders H H on each side of the oil reservoir b , is in contact with the sponge E, and thus constantly lubricates the places it slides over. Any moisture that would otherwise accumulate under the sickle is allowed to drip off into the channel C, and thence out of the openings $a a$.

The inventor says: I would state that I do not singly claim forming the finger or guard of a harvesting machine, with the hollow or depression C a ; but I *claim* forming the finger or guard A, having said depression C, with an additional depression as at b , and so uniting the sickle and sickle bar G thereto as to facilitate and render easy the cutting.

No. 15,677.—C. WHEELER, jr.—*Improved Cutting Device for Harvesters*.—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—Attaching the fingers C to the finger-bar B, and the cap D to the fingers as shown, and having a plate E placed on each finger, on which plates the teeth F of the sickle rest and work; the whole being arranged as herein described for the purpose set forth.

No. 16,134.—JOSEPH A. MOORE and ASAHIEL H. PATCH.—*Improved Finger-Bar arrangement for Harvesters*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—On folded sheet metal finger bars the combination and arrangement substantially as shown and described of the folded sheet metal bar A, with fingers B, when the latter are inserted through holes in the front and rounded folded portion of the bar, and gripped and pinched between and by the lips of the bar in the rear and secured essentially as specified.

No. 14,250.—JOB PHILLIPS.—*Improvement in Grain Harvesters*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The self-adjusting platform a hinged at front at a^1 , and so governed in its motions at the rear by the short arm d^1 of the regulating slide lever d , or equivalent thereof, as to maintain a fixed distance of the rear part from the ground, while the front part is raised or lowered by the adjusting lever e^1 , as set forth.

No. 14,556.—AUGUSTUS ELLIOTT.—*Improvement in Grain Harvesters*.—Patented April 1, 1856.

The machine is constructed in two similar compartments A and B, hinged together for the purpose of enabling it to accommodate itself to the transverse inequalities of the land. The bundling apparatus is shown on compartment B. The teeth upon the gatherer w^1 are so placed, with reference to the bundling apparatus, as to pass over the spring platform v^1 , and rake the grain therefrom on to the lower band $o^1 p^1$ at the same moment that the teeth upon the wheel i engage with the spur wheel u^1 , which gives motion to the rollers $o^1 p^1 s^1 t^1 q^1 r^1$, &c., and endless bands, during about one third of a revolution, which is sufficient to convey the grain (which has been accumulating on the platform during a whole revolution) through the compressing apparatus, and project the bundle about one half of its length out of the end

of the apparatus, where it stops during the remaining two thirds of the revolution, giving time to the boys to bind it.

Claim.—1st. Forming the cut grain into sheaves or bundles by means of a series of endless bands and rollers, having an intermittent motion as described.

2d. The spring apron *s*, constructed substantially as described and for the purposes specified.

No. 14,102.—WILLIAM F. KETCHUM.—*Improvement in Grain and Grass Harvesters.*—Patented January 15, 1856.

The bar D has a sufficient degree of elasticity to allow the cutter-bar to rise and pass over obstructions when cutting grass. When the implement is used for cutting grain, the cutter-bar and platform is supported in a firm and rigid state by the additional support of the bar G.

Claim.—Supporting the cutter-bar E and platform H, when the implement is used as a grain harvester, by the bar or rod G, in addition to the bar D, said bar or rod being arranged or attached to the cutter-bar E and frame A, as shown and described, for the purpose set forth.

No. 14,127.—GELSTON SANFORD, THOMAS HULL, and STEPHEN HULL.—*Improvement in Grain and Grass Harvesters.*—Patented January 15, 1856.

When the bearings *b* of the driving wheel are in the position represented by full lines, the sickle and platform will be near the surface of the ground, because the axis D of the driving wheel B will be at the furthest point from the frame A; but if the bearings *b* be turned in the eyes C, by moving the bars E around, (see dotted lines,) the axis D will be brought nearest to the frame A, and the frame and sickle, &c., will be elevated.

Claim.—Placing or hanging the axis D of the driving-wheel B in circular bearings *b b*, which are allowed to turn in eyes or straps C C, attached to the frame A, the axis being placed eccentrically or out of centre in the bearings *b*, substantially as shown, and for the purpose specified.

No. 14,148.—JOHN H. MANNY.—*Improvement in Grain and Grass Harvesters.*—Patented January 22, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. In connexion with a dividing piece L, for throwing the grain inwards from the extreme ends of the cutters or platform, a recess or space *s*¹, into which a portion of the grain may afterwards drop, and be cut, for the purpose of obviating the tendency to choke or clog at the ends of the cutters, substantially as described.

Also, the intermediate piece P, between the tongue and the cutter-

beam, for the purpose of providing a yielding or elastic joint, not only at or about the line of the cutters, but also at the heel of the tongue, substantially as described.

Also, in combination with the lever U, having its fulcrum pivoted immediately between the tongue and the frame of the machine, the strap V, and hinged supporting piece S, for the purpose of regulating the height of the cutters, substantially as described.

No. 14,212.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters.*—Patented February 5, 1856.

The nature of this improvement will be understood from two positions of the machine, represented in the engravings.

The inventor says: I do not claim oscillating the finger bar about an axis within itself, irrespective of the relations between the main frame and the master-wheel shaft. But I do *claim* so constructing the machine (as above described or otherwise, the result being substantially the same) that the driver is enabled, while the team is in motion, the master-wheel shaft being rigidly connected with the main frame, to change the angle of the fingers and cutters, without moving the finger-bar from the ground.

No. 14,266.—GEORGE W. N. YOST.—*Improvement in Grain and Grass Harvesters.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I do not claim springs for holding the cutter bar against the upper portion of the finger, as in the patent of Sylvester Colburn; but what I do *claim* is combining with the cutter bar *a* of harvesters a series of friction rollers *e e*, which said rollers are kept constantly pressed down on the cutter bar by means of springs *b¹ b¹*, for the purpose and substantially as set forth.

No. 14,409.—B. T. RONEY.—*Improvement in Grain and Grass Harvesters.*—Patented March 11, 1856.

This invention relates to that class of mowing and reaping machines in which the cutters are situated in advance of the horses, and consists in constructing a machine with two distinct frames, separate from but dependent upon each other. One frame is the permanent or gear frame A A¹ A², B B¹, C C¹ C² C³, E F, to which are attached the supporting wheels, the driving wheel L, and the gearing for producing the motion to be transferred to the second part of the machine, which the inventor calls the movable or cutter frame T T¹ U V W. The motion for operating the cutters is communicated by a chain from a pulley on the gear frame to a pulley on the cutter frame. These two frames are so adapted to each other that the cutter frame may be elevated or lowered and oscillate on the gear frame, allowing the cutters to

operate on level or uneven ground without disturbing the tightness of the driving chain.

As the rollers *y* rise over the ground and raise the cutter frame, the points of the lugs *t* on the bar *W* will bear against the tops *u* of the gear frame, and have a tendency to project the whole of the cutter frame slightly forward; thus the chain will be maintained tight around the surfaces of both pulleys.

The inventor says: I do not claim exclusively double cutters operating simultaneously, nor the use of vibrating cutters, nor belts for carrying off the grain to one side of the machine; but I claim the gear frame, with its lugs *u*, in combination with the movable or cutter frame, its bar *W*, lugs *t*, and bevelled projections *V V*, the whole being arranged and constructed substantially in the manner and for the purposes set forth.

No. 14,428.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters*.—Patented March 11, 1856.

From the front edge of the cutter bar *K* forward, the shoe *C* is about half as wide as in the rear, permitting the end of the cutter to play out of and return into the divider in the groove. *B* is another form of the shoe, having its front point terminate at the point of the blade which cuts against it, and having no top, but is cut against in the same manner as the side fingers *5 5*.

The points of the fingers terminate near the blades, in order to permit the blades when vibrated to cut off any grass that gets on them.

Claim.—1st. The narrow divider *C*, as described, and for the purposes set forth.

2d. I claim making the divider with that portion forming the under or upper side of the slot removed, as the case may be, as set forth.

3d. I claim terminating the shoe *B* at or near the point of the blade which cuts against it, to prevent it carrying grass.

4th. I claim extending the tops of the guards over the edges of the lower portions, as described, for the purposes set forth.

5th. I claim the double cap *6 6*, as described, *i. e.*, the caps of two guards in one piece, having one shank for attaching it to the finger piece; but I do not claim one cap, with two shanks for attachment.

6th. I claim attaching the shanks of the guard caps to the finger piece, as described, for the purpose of preventing straws or blades being carried beyond them to cause clogging.

7th. I claim terminating the points of the finger or fingers at or near the points of the blades, for the purpose set forth.

8th. I claim making one side and also one edge of the cutter bar, or either of them, a rasp or rough surface, as described, and as set forth.

No. 14,441.—THOMAS D. BURRALL.—*Improvement in Grain and Grass Harvesters*.—Patented March 18, 1856.

A pointed shoe *o* is attached at the end of the finger board *m* to separate the cut grass from the uncut grass; and beneath this is a movable

shoe *r*, jointed at its forward end to the shoe *o*; and at the back end a rack piece *14* is jointed to the shoe *r*, passing up at the back of the finger board, and having a slot through it, and a screw *15* passing through the finger board, by means of which the finger board can be raised or lowered to cut at the required height.

K is a face gear wheel on the sides of the driving wheel *a*, communicating motion to a pinion *i*, on the horizontal or line shaft *f*. *5* is a journal near the forward end of said shaft, and is fitted loosely to said shaft to allow the pinion *i* to be thrown in and out of gear by means of a lever *g*, jointed by a fulcrum pin to the frame *b* at *24*.

Claim.—The inventor says: I am well aware that single gearing has been used in a variety of forms; therefore I do not claim any such arrangement in itself: but I am not aware that any arrangement of single gearing has ever before been constructed in the manner herein described and shown, wherein by the use of a shaft with a bend arm on the end the line shaft *f* can be carried close to the main driving wheel, and the pinion *i* be so far removed from the fixed journal *5* that the same can be thrown in or out of gear with ease, and at the same time a small pinion and feet motion can be used, which could not be accomplished without the use of the bent arm *2* to the shaft *1*, in the manner set forth. Therefore what I desire to secure by letters patent is:

1st. The shoe piece *r* and rack *14* to adjust the height of the outer end of the finger board, substantially as specified.

2d. I claim the arrangement of the shaft *f*, in the journal *5*, with its pinion *i*, taking the wheel *K* when combined with the bent arm *2*, in the manner and for the purposes specified.

No. 14,448.—ELIAKIM B. FORBUSH.—*Improvement in Grain and Grass Harvesters*.—Patented March 18, 1856.

E represents the adjustable shoe that connects the finger-bar *F* and cutters to the frame. It is made in three parts. The upper or bonnet part *c*, the shoe *c c*, and the compressing part *c e c*. The two arms *s z* and *t r* form the segments of circles whose centres are in the joints *L n*.

Claim.—1st. I claim as my invention the adjustable shoe *E*, for the purpose of levelling the platform, constructed and arranged substantially as herein described.

2d. I claim suspending the pole *P*, to which the team is attached, from a lined journal *a b* upon the axle of the driving wheel, in order that the draft of the team when moving forward may be directly from the axle of the driving wheel, (leaving the frame *H*, finger-bar *F*, and cutters free to oscillate and independent of the pole and the draft of the team,) and also, when backing, the power of the team may be exerted upon the frame in rear of and below the axle of the driving wheel, substantially as herein described.

No. 14,541.—ABNER WHITELEY.—*Improvement in Grain and Grass Harvesters*.—Patented March 25, 1856.

The finger-piece T is braced by means of the rod U, to prevent its sagging.

I do not claim the segmental plates D D, separately as used to change the height of cut, in relation to the frame B B, or their use when attached to the main frame for the purpose of rendering the cut adjustable in height; but what I do claim is forming a joint at *a*, by means of the plates D D, plates E E, and the lugs as described, of sufficient strength to support the ground wheel A, and retain the driving cog wheel in gear while running, without any other connexion with the main frame C C.

2d. I claim placing the driver's seat Q on the opposite end of the frame B B, from the joint at *a* in such a manner that the driver's weight when seated on it shall balance some portion of the frame-work, &c., of the machine, and throw the weights thus made to balance each other on to the wheel A, while the angle of the cutters and fingers is preserved.

3d. I claim bracing the finger-piece T, so as to make it self-supporting, as described, and for the purposes set forth.

No. 14,582.—GEORGE W. N. YOST.—*Improvement in Grain and Grass Harvesters*.—Patented April 1, 1856.

To the cutter-bar *a* are fastened two projecting racks *b b*, the teeth of which gear with the teeth *e c* on the rim *d* of the caster. The racks *b b* on the rim *d*, gear with the teeth *c' c'*. The racks are placed together and secured by the king bolt *k*.

When the cutter-bar is to be raised or lowered, the king bolt is removed and the teeth of the rack are set at the required height.

Claim.—"The combination of the racks *b b b' b'* and king bolt *k*, arranged as set forth for adjusting the cutter-bar of harvesters."

No. 14,661.—WILLIAM H. HOVEY.—*Improvement in Grain and Grass Harvesters*.—Patented April 15, 1856.

The lips or projections *m k*, at the front ends of the finger and sickle bars form a close joint and prevent the grass from working underneath the sickle, and the lower end of the lip *k*, resting upon the ledges *l* on the fingers, causes the sickle to work with little friction, the sickle and cutter-bars not being in contact.

Claim.—Providing the front ends of the cutter and sickle bars with lips or projections *m k*; the lip or projection *k* bearing upon ledges *l* on the fingers, substantially as shown and for the purpose specified.

No. 14,694.—WILLIAM A. KIRBY.—*Improvement in Grain and Grass Harvesters*.—Patented April 15, 1856.

The nature of this invention will be understood from the claims and engravings.

The inventor says: I am aware that an angle-iron as a bar for the support of the fingers is not new; but I claim the manner of attaching the fingers F as constructed with semicircular reapers *x x*, whereby they are secured to the angle-iron finger-bar by bolts without reducing the strength of the bar *d* of the finger I, while the bolts themselves serve the double purpose of securing the fingers and as guides to the cutter-bar substantially as set forth.

I also claim the use of the rivets *g g*, when projecting above and below the cutters, and used with the interspace *f* and recesses *s s* of the fingers.

No. 14,980.—JAMES T. YOUART.—*Improvement in Grain and Grass Harvesters*.—Patented May 27, 1856.

The reciprocating motion of sickle C causes the square edged collectors D to vibrate about the pivots *a* which are attached to the frame A. The projections *a'*, as they vibrate, collect the grass and press it against the cutting edge of the sickle C, and cause it to be cut.

Claim.—The cutting device formed of the reciprocating frame B, with the straight edged sickle *c* attached, in combination with the square edged collectors D connected with the frame B, and having a vibrating movement.

No. 15,029.—ALLEN B. WILSON.—*Improvement in Grain and Grass Harvesters*.—Patented June 3, 1856.

As the machine is drawn along a reciprocating motion will be communicated to the bar E by means of wheel B and bar G, and the cutters D will act alternately against the sides of the strips *a* on the fingers C between which they are placed, the strips *a* preventing the cutting edges of the cutters from being injured or becoming dull, and forming a bearing for the grass or grain.

Claim.—The elastic strips *a* fitted in the fingers C.

No. 15,672.—OREN STODDARD.—*Improvement in Grain and Grass Harvesters*.—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim the pivoted cutters K, irrespective of the peculiarity of their relative position or movements with each other, as shown.

But I claim the cutters K pivoted to the finger-bar D, and operated by the cams *a* on the shaft L, when said cams are placed in varying positions, as described, for the purpose set forth.

No. 16,057.—MOSES G. HUBBARD.—*Improvement in the Cutting Apparatus of Grain and Grass Harvesters*.—Patented November 11, 1856.

The single cutter *c* is caused to vibrate between the upper and lower halves of the double cutter *b*, and the grass while being cut is sup-

ported both above and below the edge of the single cutter, by the double edge of the double cutter *b*, as effectually as it has heretofore been by the ordinary guard finger.

Claim.—The combination of a single cutter with a double cutter, when both are constructed substantially in the manner described, and made to reciprocate in directions opposite to each other, substantially in the manner and for the purposes described.

No. 16,097.—C. A. McPHETRIDGE.—*Improved Binder for Grain Harvesters.*—Patented November 18, 1856; antedated October 25, 1856.

A detailed description of this invention would take up too much space to be given here. The principal features of it will be understood by reference to the claim and engravings.

Claim.—The combination of the reciprocating arm *G*¹, with spring pliers *G*, attached with stationary arm *M*, revolving twister *r*, cutting plate *q*, friction brake *q*¹, spring *u*, and movable plate *o*, when the same are constructed and arranged to operate in relation to each other, and the main frame and driving wheel, for the purpose of binding grain from a continuous coil of wire, in the manner described and set forth.

No. 14,036.—GEORGE W. N. YOST.—*Improvement in Grain Binders for Harvesters.*—Patented January 1, 1856.

The nature of this invention can be understood by reference to the claim and illustrations.

Claim.—The double reciprocating compressor *a*² for gathering and compressing the grain against the stationary compressors *a a*, ready for binding, operating and operated substantially as described.

No. 15,264.—WALTER A. WOOD.—*Improved Guard-Finger for Harvesters.*—Patented July 1, 1856.

In this improved guard-finger, there is united in what is termed the wide guard elements not heretofore united in one guard, viz: the raised cutting edges *a a*, the narrow neck *C*, the rear depression *A*, and the forked cap *E*; all of which aid to facilitate the cutting, and readily pass the cut grass over the finger-bar *B*.

Claim.—The particular form and construction of the finger or guard, as herein represented, viz: with the forked cap *E*, recess or depression *A*, raised edges *a a*, and neck *C* behind them, by means of which the cutting is facilitated in the manner set forth.

No. 15,311.—C. WHEELER, jr.—*Improvement in Raking Attachment to Harvesters.*—Patented July 8, 1856.

When the rake *R*¹ is at the outer end of the platform *A*, the teeth *b* will be in gear with pinion *L*, and the rope *c* will draw the slide *R* and

rake *R*¹ across the platform, and will rake the grain off the end of the platform. When the rake reaches this point, the cam *U* will actuate the rod *T*, and said rod will turn the ways *P P*, so that the rake *R*¹ will be raised clear of the platform as shown in fig. 1, and the teeth *a* will then gear into the pinion *L*, and the slide *R* and rake *R*¹ will be moved to the outer end of the platform with a comparatively slow movement. When the rake *R*¹ reaches the outer end of the platform, the cam *U* again actuates the rod *T*, and the guides *P P* are turned sufficiently to cause the rake *R*¹ to assume a horizontal position, and return as described above.

The inventor says: I do not claim a reciprocating rake operated by the cords attached to a pulley *M*, having a reciprocating rotary motion, irrespective of the mode of operating said pulley, and the arrangement of the rake.

But I claim the disk *J*, with teeth *a b* attached and gearing into a pinion *L*, on the shaft *K* of the pulley *M*, in combination with the cam *U*, rod *T*, and guides or ways *P P*, between which the slide *R*, to which the rake is attached, moves.

The above parts, being arranged and operating as shown, for the purpose specified.

No. 16,131.—WILLIAM WHITELEY, jr.—*Improved Raking Attachment for Harvesters.*—Patented November 25, 1856.

As the machine is drawn along, the rod *H* is moved back and forth over the platform by crank *F* and pitman *I*, the rod *H* working from its point of attachment to the main frame, that point being the centre of motion. As the rod *H* is moved backward the teeth *c* rake the grain off the back end of the platform *B*, the rod and teeth being raised by the elevated outer part of the plate *J*, so that the teeth are disengaged from the grain and do not interfere with its proper discharge from the platform. As the rod *H* passes forward it catches into the fork of lever *K* which throws bar *H* upward, preventing the teeth *c* from coming in contact as the grain falls upon the platform.

Claim.—The combination of the balance lever *K* with plate *J*, for operating the rake *H c* in its forward motion, in the manner and for the purpose set forth.

No. 14,183.—A. H. CARYL.—*Improved Raking attachment to Harvesters.*—Patented February 5, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I do not claim a reciprocating rake placed underneath the platform *C*, for that has been previously used; but I claim operating the rake, that is, the rod *E*, provided with teeth *b*, by means of the weight *I* and pulley *G*; the weight and pulley being connected to the rod *E* by chains *F*, and otherwise arranged, substantially as shown and described.

No. 15,751.—JESSE WHITEHEAD.—*Improvement in Self-acting Rakes for Harvesters.*—Patented September 16, 1856.

In figs. 1 and 2 the rake is in position, just in rear of the cutters, to commence the gathering of a gavel; the latch O being down in the catch P, the arm I cannot move. As the pinion H turns, it draws, by means of the lever K, the carriage J and rake L with it along on the arm I, said rake forcing the cut grain along against its fellow M. This motion continues until the projection *b* strikes underneath the latch O, and raises it out of the catch P. The arm I is now released, and it swings around a quarter of a circle by the action of the lever K, until its end passes the spring latch R, (as shown in dotted lines in fig. 1,) when it is again locked, and the rake L is now ready to release its gavel and return back along the arm I, which it does by the reversed action of the pinion H, until projection *a* strikes against and pushes away the spring latch R, which again releases the arm I, and it immediately swings around into its former position and ready for the next operation.

Claim.—The combination of the swinging arm I and travelling carriage J, moving together and independent of each other, by means substantially such as described and for the purpose set forth.

I also claim the locking-arm I, at each end of its transverse movement, so that the rake cannot swing around while the carriage J and rake L reciprocate together and discharge the gavel, substantially as described.

No. 15,387.—SILAS G. RANDALL.—*Improved Self-Raker for Harvesters.*—Patented July 22, 1856.

The general construction of this machine needs no especial description, it being represented in the illustrations sufficiently for the present purpose. The carriage F bearing the shaft G of the rake H by means of the eyes *g*¹ and *g*², can move upon the ways *e*¹ by means of the friction rollers *f*. The eye *g*² is provided with a projection, against which the rake-arm *h*¹ comes in contact, and thus prevents the rake from falling below the platform when it traverses beyond it. The roller *i*¹, in connexion with the roller *i*², carries a belt I, upon which is an eye J which receives the arm *h*¹, and thus gives motion to the rake H and its carriage F. The eye J following the belt descends around the roller *i*¹, depresses the rake-arm and elevates the rake to a right angle with the platform. The rods *k*¹ are attached to a head K, carried by a slide L beneath the platform; the rods *k*¹ are pushed out over the gavel space *b* as the rake advances, and the latter compresses the grain on said rods against the spring guard M; and as the rods *k*¹ recede, the grain drops to the ground.

Claim.—The railway carriage F, when constructed, arranged, and operated in respect to the platform B, substantially as and for the purpose set forth.

Also, the described method of operating the rake H, and giving it at once its traverse and its tilting actions, viz: by the combination with

the bent rake-shaft G and arm *h*¹ of the endless belt I and its eye J, operating as and for the purpose set forth.

Also, the combination of the traverse rake H, the spring rods *k*¹, and the pressing guard M, substantially as and for the purpose set forth.

No. 14,784.—JOHN T. WHITAKER.—*Improvement in Self-Rakers for Harvesters.*—Patented April 29, 1856.

Motion being communicated to the shaft G, the crank-cam *e* revolves and causes the crank pin that works in the slot *o* to push the crank-lever I outward, carrying with it the connecting rod J and rake E, until the cam has traversed the whole length of the lower concave, at which point the rake F will have travelled over the entire length of the platform N, and deposited the grain in a bundle upon the cradle L.

The cam now begins to press upon the upper concave of the cam yoke H, raising it, which causes the shaft E to rotate upon its axis, throwing the rake round and clear of the platform. As the cam yoke is raised, it drags up the connecting rod *h*, which causes the cradle L to rotate backwards, dragging its fingers from beneath the grain, which is stripped off them by the stationary teeth M. Simultaneously with this movement of the cam yoke does the crank pin *e* press the lever I inwards towards the platform N, causing the rake F, in conjunction with the rotary motion of the rock shaft E to recede over the dotted line 1, 2, 3, 4, until the cam *e* again begins to press against the lower concave, causing the rock shaft E to turn until the rake is brought into the same position from whence it started.

Claim.—1st. The rock shaft E in combination with the rake F and connecting shaft J.

2d. I claim, in combination with the rack F, the cradle L, when operating in the manner and for the purposes set forth.

3d. I claim the method of adjusting the rake F, so as to enable it to rake from platforms of different widths of cut, substantially as described.

No. 14,861.—HUGH FORESMAN.—*Improvement in Self-Raking Attachments to Harvesters.*—Patented May 13, 1856.

The apparatus by which the raker is operated is attached to the reaper in such a manner that its top constitutes in itself the platform of the reaper, on which the cut grain falls. The teeth of the rake project through the platform, (which has been removed in the drawing,) and move in circular slots in said platform.

The operation will be readily understood from the engraving.

Claim.—The combination of the wheel D, adjustable crank E, slotted rake F, and the guides or ways *g m* for giving the rake its traversing and rising and falling motions, substantially as herein described.

No. 15,084.—J. C. PLUCHE and L. C. PLUCHE.—*Improvement in Attaching Teeth to Sickle-bars of Harvesters.*

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the teeth D of the sickle to the bar C by the cleats c, secured to the back ends of the teeth, the cleats c being fitted in a groove b in the bar C, substantially as shown.

No. 15,926.—PELLS MANNY.—*Improvement in Sickles for Harvesters.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim the employment of back cutting teeth on the cutter-bar, and operating between the cutter and finger bars, and over the fingers, whether the same be formed by the extension of the front cutters or be separately attached at their base ends to the cutter-bar.

But I *claim* as an improvement in the cutting apparatus patented to Henry Green, March 21, 1854, the arrangement at the back of the cutter-bar C, and for reciprocating operation with it, of a back set of cutters or clearers e between the finger and cutter-bars, when said teeth e are shaped and arranged to cut laterally forwards alternately in opposite directions through or over the backs of the fingers for joint action with the front cutter or cutters d, for the better clearance of the fingers and cutter-bar race, essentially as set forth.

No. 16,052.—GEORGE F. FOOTE.—*Improvement in Machines for Harvesting Grain.*—Patented November 11, 1856.

The operation of this machine is as follows: As the apparatus is drawn through the standing grain, the gathering bars P embrace the grain which is before the machine in two separate parcels, and bring it to the openings E¹ which are in front of the threshing cylinder A² in the case F; there the pins c and scrolls C force it between the concave g and the cylinder A², and the teeth of said cylinder comb off the grain, while the straw is discharged through the openings G in the rear of the cylinder. The grain is carried upwards by the threshing cylinder into the passage E, and passes down the box D to the screen H, whence the grain drops into the box Z, while the broken heads pass off into the box Y.

Claim.—The peculiarly constructed scroll cylinder A², in combination with the cylinder case F and the gathering wheels M M, when the same are constructed and arranged to operate in relation to each other and the main frame A, in the manner and for the purposes set forth.

No. 15,569.—LARKIN L. MOORE.—*Improvement in Harvesting Machines.*—Patented August 19, 1856.

The frame a of the harvesting machine can be adjusted for cutting

higher or lower by operating the screw-winch F, which works in a nut e fastened in the body of the tongue D. The tongue is connected to the frame by means of the pivoted hounds E and a standard C, the pin a of the latter passing through a slot f in the tongue D. Thus, by turning the screw-winch the frame A will be raised or lowered, while the tongue remains in the same position as before.

Claim.—Adjusting the frame on its supporting wheels for cutting higher or lower, by uniting the frame and tongue by means of the pivoted hounds E, screw-winch F, and pin a passing through a slot in the rear of the tongue into the standard C, the above parts being arranged and operating in the manner and for the purposes set forth.

No. 15,669.—JOEL Y. SCHELLY and JOSEPH STAUFFER, assignors to WILLIAM WATSON.—*Improvement in Harvesting Machines.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventors say: We do not claim the supporting of the frame of a harvester on two main wheels, in the manner of a cart, with a caster-wheel in front of them; as the frame of a harvesting machine patented to Edward Badlaw, jr., on the 18th day of September, 1835, is thus supported.

But we *claim* the combination of the driving wheel E, supporting wheel F, caster-wheel L, hinged-tongue K, and the main frame, when the said parts are arranged and operate in relation to each other in the manner herein set forth.

No. 15,659.—WILLIAM A. KIRBY.—*Improvement in Harvesting Machines.*—Patented September 2, 1856.

A, B, and C constitute the parts of the frame to which are attached the tongue D, cutter E, and driving wheel K. The plate H, which is attached to hub I, can be made to swing on the pivot G, and plays by means of a flange e in a groove of the rim L. The driver's seat R is connected with the plate H by means of a rod pivoted to it at N; and thus when the frame swings the seat R swings with it, and the two remain always in a parallel position.

Claim.—The combination of the main wheel K, single plate H, and rim L, when connected and operated together in the manner and for the purpose as described; I also claim the hanging the seat to the plates H, and to the standard S, as described.

No. 15,748.—GEORGE W. TOLHURST.—*Improvement in Harvesting Machines.*—Patented September 16, 1856.

The driving wheel A is provided on its inner rim with projections b, bolted to said rim, which work through the angular slot j of the

lever *h*, and thus vibrate said lever and its fulcrum *f*; the vibratory motion of this lever can be used for operating the cutting apparatus of a harvester.

The inventor says: I am aware that continuous zig-zag slots or ledges have been used, of various kinds; but when these become damaged by wear, they are irreparable. I do not claim any of these.

But I claim the combined use of the single row of removable pins with the adjustable angular slot *j*, for the purpose of procuring a vibratory motion, to be applied to the cutters as set forth.

No. 16,244.—ROBERT J. MORRISON.—*Improvement in Harvesting Machines*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Hinging the guard or shield *E* by one of its ends to the frame *A*, and supporting the other end thereof on the tongue *D*, so that it may run or move on said tongue when the machine rises or falls to accommodate itself to the inequalities of the ground, or for passing over water courses, substantially as herein described.

No. 16,313.—JOSEPH CARPENTER.—*Improvement in Harvesting Machines*.—Patented December 23, 1856.

By depressing the lever *L*, the finger bar *J* and sickle *I* will be raised, and they may be secured at the desired height by turning nut *o*. By depressing lever *G*, the right side of the frame and the front wheel *E* will be raised from the ground, the frame being supported by the two wheels *B* and *D*. The front wheel is raised in order to facilitate the turning of the machine.

Claim.—The employment or use of the two levers *F G*, connected by the strap *j*, and attached to the frame *A* and bars *d g*, to which the wheels *D E* are attached, as shown, for the purpose set forth.

No. 16,253.—WILLIAM H. SEYMOUR.—*Improved Finger-Bar for Harvesting Machines*.—Patented December 16, 1856.

The finger-bar *A B*, together with the double guard fingers *D*, is made of cast iron, in one single piece. This finger-bar is hollow, and is provided inside with inclined ribs *F*, which cause the grass or other substances which enter during the operation of cutting to be discharged through the openings in the rear.

The inventor says: I do not confine myself to the form of finger-bar I have described; for so long as it is made hollow, it may be varied in shape and proportions without any departure from the principle of my invention.

I claim, 1st, casting the finger-bar, composed of an upper and an

under plate, united by the guard fingers all in one piece, substantially as described.

2d. The openings in the back of the hollow finger-bar, in combination with the inclined ribs, for the purpose and in the manner described.

3d. Ribs or partitions constructed and arranged substantially as described.

No. 14,539.—A. W. WASHBURN.—*Improvement in Cotton Hillers*.—Patented March 25, 1856.

The earth thrown inwards by the ploughs *c c* has to pass under the plates *dd*; consequently, by elevating or depressing said plates, the quantity of earth to be thrown up around the cotton plants can be regulated. The lifting-up plates *ee* gather in that portion of plants that may have fallen outwards, and retain them in a standing position until they are supported by the earth thrown up by the hilling ploughs *c c*.

Claim.—The lifting-up plates *ee* of my improved cotton hiller, or their equivalents, when arranged and operating in conjunction with the governing plates *dd*, and the hilling ploughs *c c*, substantially in the manner and for the purpose herein set forth.

No. 15,269.—OLIVER P. STEVENS.—*Improvement in Machines for Hulling and Scouring Grain, Seed, &c.*—Patented July 1, 1856.

The machine being set in motion, the upper ends of the guides *i i* are moved towards the valve *F* by pushing in the rod *E*. The grain in the hopper-shaped spout *M* slides into the machine, where it is moved along by means of fan *f g*. The grain is continually divided, by the teeth *t* causing it to fly so as to come in contact with the perforated fans, when some of it passes through the holes and is thrown amongst the teeth, until it is carried over the fan wheel, and is thrown between the guides *i i*, and against the face of the vertical chimney *O*; from thence it falls down, passing another round of the fan case and advancing more or less at each revolution, according to the position of the guides *i i*, until it is discharged over the fan case head *a* and out through the spout *N*. The current of air in the chimney *O* can be regulated by the valve *V* in the vertical trunk *B*¹.

Fig. 2 represents a plan view of the upper section inverted.

Fig. 3 is plan view of the middle section taken at the line *x x*.

Claim.—1st. The perforated fans *f g*, in combination with teeth set in the fan case *c*, as described, for the purpose set forth.

2d. The arrangement of the upper section of the fan case *c*, in its relation to the chimney *O*, in combination with the fans *f g* and guides *i i*, in the manner described, for the purposes specified.

3d. The adjustable guides or deflectors *i i*, combined as described and operating in the manner and for the purpose herein described.

4th. The air passages or chambers *B B*, arranged in each end and on

the top of the fan case, in connexion with the vertical trunk B¹, as herein described, and for the purposes specified.

5. The valve F operated in the manner described, in combination with the chimney O, for the purpose specified.

No. 15,985.—WILLIAM H. SMITH.—*Improvement in Machines for Husking Corn.*—Patented October 28, 1856.

Motion is imparted to the disk wheel C, endless apron L, and brush cylinder A¹, by rotating shaft B. The ears of corn pass down between the apron L and the disk wheel C, and the husks are stripped from them by the teeth on the apron and wheel. The apron L is allowed to yield according to the size of the ears by means of the springs N, which have sufficient elasticity to allow the ears to pass down between the apron and wheel without causing the corn to be shelled from the ears. The brush cylinder A¹ strips the husks from the teeth *a* of the disk wheel.

Claim.—The combination of the toothed disk wheel C, elastic endless apron L, and brush cylinder A¹, arranged and operating conjointly, as shown, for the purpose specified.

No. 16,008.—HARLAN P. GERRISH.—*Improvement in Machines for Husking Corn.*—Patented November 4, 1856.

The ears of corn are placed upon the inclined plane F, and motion being imparted to the husking cylinder C, the stalk is first separated from the ear by the action of the knives I and K upon each other, as represented in fig. 1. The husking teeth *b* then separate the husks from the corn without injuring the latter; and as the husking cylinder keeps on revolving so as to come into the position of fig. 2, the husked corn drops down the inclined plane F, through the space between F and C.

Claim.—The use of the hooks *b b*, or their mechanical equivalents, arranged and made to operate essentially as described, in connexion with two knives I K, for the purpose of cutting off the stalk of an ear of corn and removing the husks therefrom.

Also, making the cylinder C, with the depression *c d e*, for the purpose as described.

No. 15,047.—OREN STODDARD.—*Improvement in Machines for Husking Corn.*—Patented June 3, 1856.

The stripping-rollers are formed of two parts *f g*: the parts *f* are permanently attached to the shafts L; but the parts *g* are placed loosely on the shafts, and have spiral springs *h* bearing against them; the springs *h* being placed on the shafts L L. *i* are flanches of India-rubber, for the purpose of stripping the husks from the ear.

The operation will be understood from the engravings.

Fig. 2 shows how the ears are cut from the stalks.

Claim.—The two stripping-rollers, constructed and arranged as shown, in combination with the cutting device formed of the gate or frame M, with the knife P attached, and the stationary knife Q on the platform N, the frame M being operated substantially as shown, whereby the husks are stripped from the ears, and the ears cut from the stalks.

I further *claim*, in combination with the stripping-rollers and cutting-device, the rollers W W, by which the ears are fed or guided into the inclined spout Y.

No. 16,023.—JOSHUA PERKINS.—*Improvement in Machines for Husking Corn.*—Patented November 4, 1856.

The operation of this apparatus is as follows: The ear of corn is first passed with the butt foremost through the aperture *g* into the trough G, so as to present the ear in a proper manner to the chisels A B. Motion then being imparted to the shaft H, and the frame E being at its highest elevation, the roller *i* forces back the bolt S, the frame E and chisels A B descend, and the chisels will pierce the stalk and separate it from the ear. By the continued movement of the gear *o* and its roller *i* the chisels will be forced simultaneously apart, so as to separate the husk from the ear and to press both in opposite directions, driving the ear out at the opening *g*, and the husk through the opening *h*.

Claim.—The improvement of so operating the two cutters or chisels A and B that, during their descent into the stalk of the cob, they may pass into it in contact with each other, so as to pierce but one hole, and thereafter receive a lateral motion simultaneously in opposite directions, so that, while one chisel or cutter is made to discharge the husk from the machine, the other is caused to discharge the ear therefrom in the manner described.

No. 16,201.—JOHN TAGGART and LEONARD A. GROVER, assignors to Themselves and E. W. BANKER.—*Improvement in Machines for Husking Corn.*—Patented December 9, 1856.

In operating this machine, an ear of corn, with the husk thereon, is placed between each set of jaws E when they are passing over the upper part of drum B. In passing by the drum B, the jaws will close together and grasp the ear of corn firmly. During the downward movement of the carrier the stalk will be separated from the ear by means of the rotary saw F, and the ear, with the husk thereon, will be discharged into the inclined grate P. The teeth of the drum R, passing through the grate P, will seize upon the husk and draw it between the grate-bars, and thereby separate it from the ear, which will be discharged at the lower end of the inclined grate P.

Claim.—The combination of the endless receiving and discharging carrier, constructed as described, the rotary cutter or saw F, the inclined grated-spout P, and the tooth-drum R, as arranged and made to operate together, substantially in manner and for the purpose as specified.

No. 16,204.—ROBERT BRYSON.—*Improvement in Machines for Husking Corn.*—Patented December 9, 1856.

The ears of corn are placed upon the apron G, and are fed along between the two aprons G and I. The corrugated rollers rotate in the direction of the arrows. The husks are stripped from the ears by the two inner rollers E F, and the portions of husks that are carried upwards by the teeth *a* of the apron I are passed over the inner and upper rollers, the guard J preventing them from following the apron I, and pass down between the two upper rollers, and out between the two outer rollers, while the husked corn passes down, between the lower and inner roller, and the endless apron G.

Claim.—The combination of the two endless aprons G I, corrugated rollers E, F, F, and guards J, when constructed, arranged, and operating as shown for the purpose set forth.

No. 14,864.—J. H. GOULD.—*Improved Husking-Thimble.*—Patented May 13, 1856.

Claim.—The device herein shown, resembling the end of a human finger, and formed by providing a thimble A, very similar in construction to a sewing thimble, and welding or otherwise forming an artificial finger-nail B on the upper side of its forward extremity.

No. 15,876.—J. W. BARNES.—*Improved Manure-Distributor.*—Patented October 14, 1856.

As the tappet-wheel G revolves, the lever E is raised and lowered, and gives a vibratory motion to the hinged-bottom D and side *a*¹ of the wagon. By graduating the length of the chain N, the amount of manure escaping through the open bottom can be regulated.

Claim.—I claim the hinged side *a*¹, combined with the hinged bottom, as set forth.

No. 15,629.—WILLIAM H. WHITMAN.—*Improved Implement for Milking Cows.*—Patented August 26, 1856.

In using this instrument, the operator grasps the handle B of the case A with the left hand, and the teats of the cow are placed in the holes *b*; the crank E is then turned with the right hand, and a vibrating motion is given to the fingers F, by means of the cams D and elastic bars G, and the teats of the cow are intermittently compressed by the fingers F in the holes *b*, and the milk is drawn from the bag, and passes down the holes *b* into the pipe C.

Claim.—Placing the fingers F within a case A, and at the sides of holes *b* in the case, the fingers being vibrated by means of the eccentric rollers D D and the elastic bars G G, the whole being arranged substantially as shown, for the purpose specified.

No. 15,265.—ANSON S. HATHAWAY, assignor to Himself and FREDERIC RUGGLES.—*Improvement in Machines for mowing Grass and cutting Grain.*—Patented July 1, 1856.

The fulcrum of each lever O (to whose opposite end a common scythe P is affixed) is so adapted to a strut S projecting from the axle A as to be capable of sliding or moving longitudinally thereon, such movement being produced by means of two connecting rods *h* and *i*, and a lever *k*, and operated by means of the lower crank *e* of an upright shaft K.

The scythe P will also receive a vibrating motion in addition to the above described sliding motion, by means of rod *f* and bell-crank *b*; this compound motion of the scythe P corresponding very nearly to that which is given to it when used in the hands of a farmer. The grass as it is cut falls between the guard rods Q, (fig 3,) which are moved through it, and as the scythes rest on them with the backs of their blades, they are kept down to the surface of the ground.

Claim.—The scythes P P, when arranged in relation to each other, and operated by mechanism constructed and arranged as above described, in combination with the peculiarly constructed and independently acting guards Q Q, operating substantially in the manner and for the purpose set forth.

No. 14,078.—HENRY PEASE, assignor to HENRY PEASE and JAMES ROBY.—*Improvement in Mowing Machines.*—Patented January 8, 1856.

This improvement refers to those machines where the line of draught is in the centre, and the cutter I extends to both sides of said line of draught. The knife *k* is fitted in the slotted arm J¹, in the centre of the cutter I, and receives rotary motion from shaft F by means of band *l*; the knife and arm divide and cut the grass so that it will pass each side of the driving wheel.

Claim.—The slotted arm J¹ and rotating knife *k*, arranged substantially as described, for the purpose set forth.

No. 14,138.—JOSEPH S. MANNING.—*Improvements in Mowing Machines.*—Patented January 22, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—Forming the teeth or fingers J J, with a central rib *g*, (closing the usual slot,) in combination with the cutter plate K, and reciprocating blades H, constructed substantially as described, for the purpose of more effectually preventing the clogging of the cutters, as set forth.

I claim the derrick for elevating the cutter bar or beam, consisting of pulley or windlass F, ropes *a a*, and straps *d*, passing over the shoulders of the horse, arranged and operated in the manner set forth.

No. 14,404.—JACOB J. MANN.—*Improvement in Mowing Machines.*—Patented March 11, 1856.

The nature of this invention consists in the peculiar manner of hanging the reel of the machine, whereby the cut grass is allowed to pass over the cutter-bar without any obstruction caused by the supports of the reel.

Claim.—The construction of the reel frame I J K K, the same being braced by the rod L; and the suspension of the reel E, at the outer extremity of the shaft G, by the pendant L.

No. 14,445.—SAMUEL COMFORT, jr.—*Improvement in Mowing Machines.*—Patented March 18, 1856.

The bar C and plate Q form a passage *f*, which communicates with the interior of the boxes D and B. An endless chain formed of angular cutters *d* and links *h* traverses the passage *f*, so that the cutters shall pass between and be guided by the lips *e* and by the cover-plate Q, which is attached to the bar C.

I do not desire to claim the use of endless chains of cutters for mowing machines, nor any particular method of constructing such chains.

But I *claim* the employment in mowing machines of an endless chain of cutters which shall traverse along the cutter-bar, and a sufficient distance above the same to allow the mown grass to drop between the said chain, being operated substantially in the manner set forth.

No. 14,961.—WILLIAM F. KETCHUM.—*Improvement in Mowing Machines.*—Patented May 27, 1856.

The nature of this invention consists in providing the means of raising the cutter-bar of mowing machines from the ground, so that the weight of the cutter-bar shall act upon a wheel and the machine may be easily moved when not in operation.

The inventor says: I am aware that Horace L. Emery, of Albany, has heretofore used an adjustable arm with a wheel thereon at the outer end of the cutter-bar behind the shoe, for the purpose of elevating and depressing the cutter-bar at pleasure to adapt it to working or travelling; and that a similar arm and wheel for a similar purpose have been placed at the inner end of the cutter-bar behind the shoe. These I do not claim.

But I *claim* attaching anywhere between the shoes to the back part of the cutter-bar A of a mowing machine an adjustable and jointed lever F B, either with or without a wheel, for the uses and purposes herein described.

No. 14,898.—JONATHAN F. BARRETT, assignor to ABRAM B. & JONATHAN R. BARRETT.—*Improvement in Mowing Machines.*—Patented May 13, 1856.

The front of the guard P conforms to the shape of the saws, and is furnished with teeth *h*, to prevent clogging. Behind these teeth the

guard is so formed as to consist of a rim *r*, enclosing the space occupied by the gearing. Fitting against this rim, and passing between the saws C and their pinions *a*, close to the saw and pinion connexion, is the covering plate *m*, forming the top of the chamber occupied by the driving mechanism, and excluding the cut product therefrom.

The inventor says: I make no claim to the rotary cutters, nor to the gearing driving them; but I *claim* the combination of guard plate P, covering plate *m*, and saw connexion to pinion, whereby the driving mechanism is effectually excluded from foreign matter.

No. 14,874.—C. M. LUFKIN.—*Improvement in Mowing Machines.*—Patented May 13, 1856.

As the shaft F rotates, the bevel wheels *d* will rotate the upper cutters D in one direction, while the bevel wheels *e* will rotate the wheels *c* and lower cutters D¹. The grass passes between the fingers L and is cut by the cutters, the teeth operating like shears; and the cut grass is carried over the cutting device by the endless aprons J, and falls on the ground back of the cutters.

Claim.—The employment or use of the endless aprons J, in connexion with the rotating cutters D D¹, arranged as shown, for the purpose specified.

No. 15,160.—CORNELIUS AULTMAN and LEWIS MILLER, assignors to BALL, AULTMAN, & Co.—*Improvement in Mowing Machines.*—Patented June 17, 1856.

The connexion of the cutter-bar R is affected by hinges F F¹, braces B and C, hinges E E¹, and brace G. The cutter-bar can thus be raised and lowered so as to adjust itself to the unevenness of the ground, and can also be raised up entirely, and fastened to the machine after the work is finished.

The inventors say: We do not claim connecting the cutter-bar to the machine by a hinge-joint, nor do we claim the joint at or near the extremity of the cutter-bar; but we *claim* connecting the cutter-bar to the machine by the double rule joint, or the double-jointed coupling piece B C in the manner and for the purposes set forth.

No. 15,354.—JOHN W. THOMPSON.—*Improvement in Mowing Machines.*—Patented July 15, 1856.

The nature of this invention consists in the arrangement of the frame *v* and sustaining arm *q* with the driving wheel A, by which the cutter-plates *r* can be operated in a box *o n* attached to the rear ends of freely vibrating hinged arms K *l*, which allow the cutter-plate box to rise and fall as the surface of the ground varies, for the purpose of keeping the points of the cutter-teeth at the proper distance from said surface.

Claim.—Connecting the cutter-plate box O M to the after ends of freely vibrating arms K *l*, in combination with the rectangular frame

v and the inwardly projecting and sustaining arm *g*, when the said parts, together with the cutter-plates and their gearing, are arranged in relation to the main wheel A, substantially in the manner herein set forth.

No. 15,507.—EPHRAIM BALL.—*Improvement in Mowing Machines.*—Patented August 12, 1856.

The cutter-bar D is connected with the frame A B of a mowing machine by means of the braces E C, which are hinged to the frame and cutter-bar, in order to permit the latter to be raised. The manner of uniting brace C, cutter-bar D, and plate L is represented in fig. 2; projection *g* fits into notch *e*, and *d* into *f*, *h* on the under side of plate L into *m n*—the connexion forming a lock fastening to prevent the cutter-bar from working loose in consequence of the strain upon it.

Claim.—The lock fastening for such cutter bar, made by the removed and upset portions of the brace and the extremity of the cutter-bar, as set forth.

No. 16,274.—ANDREW M. HALL.—*Improvement in Mowing Machines.*—Patented December 23, 1856.

The driving-wheel C transmits rotary motion to the crank-shaft F, and thence by means of short pitman *f* to rock-shaft G, which causes pitman H to vibrate and operate the cutter-bar.

The inventor says: I do not claim hinging the cutter-bar to the main frame by a hinge connexion, in order to enable the said bar to accommodate itself to the ground it may pass over.

I claim operating the pitman H by means of the mechanism described, when the same is constructed and arranged in the peculiar manner and for the purposes set forth.

No. 14,070.—GUSTAVUS STONE.—*Improvement in Blades of Mowing Machines.*—Patented January 8, 1856.

These blades can be cut from the sheet steel with little waste, and the clearing space J is larger than when a hole is punched through.

I do not claim the invention of mowing machines, or of the several parts thereof, generally; but I claim making the sections of which the grass cutting blades are usually made of two pieces of steel, A and B, with but one cutting edge D upon each, and so placing them upon the bar C that there shall be a wedge-shaped opening J between the backs, closed at the points, and widening out towards the bar.

No. 15,203.—WALTER A. WOOD.—*Improved Dividing Shoe for Mowing Machines.*—Patented June 24, 1856.

The point *a* of the shoe divides the grass that is to be cut from that which is to be left standing—that which is to be cut being bent over by the shield portion *i*, in proper position to be reached and covered by the sickle.

Claim.—The particular form and construction of a dividing shoe for mowing machines, by means of which the grass on either side of it is divided and bent over without breaking or crushing, so that the sickle will reach it all, and thus prevent "combing or ridging."

No. 16,247.—JEREMIAH W. MULLEY.—*Improved Mowing and Reaping Machine.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engravings; the arrangement of the parts mentioned in the second claim, serves for raising and lowering the cutting apparatus by operating lever 2.

The inventor says: I do not claim placing the platform lower than the wheel frame. Neither do I claim the large driving-wheel in connexion with an elevated main frame.

I claim connecting the frame of the platform with the frame carrying the driver's and raker's seat, in the manner substantially as set forth, namely, securing the relative position of the frames by means of the brace J in the rear, and the laterally inclined draw-shoe K in front, when the above parts are constructed and arranged as described.

I also claim the rod 4 and the rails 5, connected in the manner described, in combination with the pole N, the rocking-shaft 3, and the lever 2; the whole being constructed, arranged, and operated in the manner specified and for the purpose set forth.

No. 15,338.—MOSES G. HUBBARD.—*Improvement in the Frames of Mowing and Reaping Machines.*—Patented July 15, 1856.

This invention consists in the mode of constructing the parts connecting the driving-wheel with the cutting parts. A cone-shaped metal tube *a* is formed, having a depression on its upper side along which the axle *a'* of the driving-wheel *b* lies, attached to it by bearings *c*; thus the tube *a* is suspended under the axle, and projects downward nearly to the ground, having secured at the lower end the finger-bar *f*. An iron step or brace *g* is formed in the tube *a*, to which the finger-bar can be attached when it is required to raise it; the brace *g* also serves to strengthen the tube *a*.

Claim.—The cylindrical conical-formed metallic frame, as a support for the running gear and finger-bar, when constructed, arranged, and combined therewith in the manner and for the purpose set forth.

Also, in combination with said cylindrical or conical metallic frame *a* the step or brace-frame *g*.

No. 14,631.—E. P. LACEY.—*Improvement in Corn Planters.*—Patented April 8, 1856.

The nature of this invention consists in so constructing the machine that the driver can, by a slight pressure of his foot, drop the requisite quantity of seed at such distances apart as he may desire.

Claim.—The combination of the seat S with the treadle or foot-lever *f*, rod *r*, bar *m*, and rack and pinions P P; the whole operating in the manner and for the purpose set forth.

No. 14,776.—SILAS G. RANDALL.—*Improvement in Corn Planters.*—Patented April 29, 1856.

In moving the lever B to the position shown in dotted lines, the lid F is moved aside from the mouth of the tube E, letting out the seed. The slide H is moved upward by the connecting-rod C, and the measuring cavity *h*, being above the brush, is filled with seed through the slots. The machine is now lifted from the ground, and the lever is returned to its first position, thus causing a descent of the slide, so that the seed is discharged below the brush into the tube upon the lid.

Claim.—Combining with the seed-tube E a cut-off valve F, for closing or opening said tube, as the case may be; said valve moving edgewise against the soil when the passage is opened to allow the grains to pass into the ground, and operated from a lever B, substantially in the manner and for the purpose set forth.

No. 14,785.—SAMUEL WILT and GEORGE W. ALBAUGH.—*Improvement in Corn Planters.*—Patented April 29, 1856.

When the movable portion K has reached the opening through the hopper at *h*, the spring *n* throws its end into a recess *m*, whereby the receptacle *g* is enlarged so as to permit the liberation of the seed therefrom with great certainty.

The movement of the slide E is obtained by the arm *p*, the rod B, and crank S.

Claim.—The use of the slide E in corn planters, when provided with expanding grain receptacles *g g*, and when the divisions *o o* of the hopper are provided with strikers P, all operating substantially in the manner set forth, for the purpose of preventing the choking, from wedging of seed, and insuring its delivery to the drill tube.

No. 14,801.—REINHOLD BOEKLEN.—*Improvement in Corn Planters.*—Patented May 6, 1856.

The continued descent of the seed box A brings the inwardly inclined upper parts of the covering plates E E into contact with the inclined upper portions of the projections *n n*, and causes the parts *l l* to be thrown outwards, and the lower parts to be thrown inwards towards the plunger tube D, and to grasp a quantity of earth between themselves and the plunger tube; and it eventually brings the spring catch over the notch *o*, and locks the plunger tube to the seed box. During the lifting of the seed box with the plunger tube locked to it, the seed passes into the ground, and the earth *q q* is lifted until a shoulder *r* comes in contact with and forces out the spring catch *p*, so as to liberate the plunger tube, which falls by its own weight; and its projections

n n in passing the centres of motion *i i* of the covering plates, throws out the lower parts thereof and releases the earth, which falls back into the hole in the ground just as the plunger valve begins to be lifted by the stop *b* acting on the pin *k*, and covers the corn which has been deposited.

Claim.—The employment of one or more covering plates E E, applied in connexion with the seed box or tube and plunger, and operating to lift a quantity of earth and deposit it over the corn which has been planted.

No. 15,322.—MOSES BEMIS.—*Improvement in Corn Planters.*—Patented July 15, 1856.

The nature of this invention consists in attaching the frame of the machine to the axle and wheels by using bearings, as represented at N, which facilitate the operation of the machine in passing over inequalities of the ground; and also connecting the point of draft behind and below the axle at M, for the purpose of counteracting the downward pressure forward, and to facilitate regulating and governing the depth of planting by raising and lowering the frame A by means of the arm O and pins as connected with the tongue.

Claim.—Arranging the frame upon the axle and wheels, and connecting the point of draft behind and below the axle, and in combination with the arm O and pins.

No. 15,426.—JAMES D. JEFFERS, JOSEPH SPARKS, and JOHN H. JEFFERS.—*Improvement in Corn Planters.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventors say: We do not claim the tubes H H, nor do we claim operating inclined planes and vents together in a corn dropping box irrespectively of the peculiar construction and arrangement of the same, as described; nor do we confine our claim to any number of boxes A upon one carriage, nor to any number of dropping vents in each box.

Claim.—1st. The moving inclined planes *l l* and springs C C, when constructed and combined so as to operate together within the grain-adjusting recesses E E, substantially as and for the purposes set forth and described.

2d. The stationary inclined planes D D, when operating in combination with the said recesses E, substantially as and for the purpose set forth and described.

No. 15,755.—MALENDER BATES.—*Improvement in Corn Planters.*—Patented September 23, 1856.

In working this machine, the operator drops a hill at his pleasure from the valve *n*, by simply gripping the hand-lever with the right hand, when the spring *s* on the end of the axis *e* reverses the motion, which shuts the valve *n* and drives the wheel *l* far enough to discharge the

next succeeding aperture filled with the seed into the orifice of the tube.

The inventor says: I do not claim the application of a valve to the bottom of a tube.

Neither do I claim the construction of a tube for the purpose of conveying seed from the hopper to the ground; for these principles have been variously applied, for the same purpose, in various machines.

Nor do I claim operating an axis by means of a hand-lever and spring attached to the handle of seed planters; for these, also, have been used in other machines, to effect different purposes, such as drawing slides, reciprocating plates, and opening apertures.

But I claim the rotating ratchet-wheel *r*, provided with feeding apertures, in combination with the wire-screen *w*, or its equivalent, the spring pawl *m*, guard-pin *i*, and wire button *o*, acting in the manner and for the purpose described.

No. 14,134.—JOHN M. JONES, assignor to NEWTON FOSTER.—*Improvement in Cotton-Seed Planters*.—Patented January 22, 1856.

As the disk D revolves, its ratchet-teeth W act upon arm U, extending from rim I, and thus impart a vibratory motion to said rim. The seeds being placed in the hopper, the flexible arm G forces them through the cavities in disk D, the arms on the rim I taking them off as they pass through; the disk D and arm G having a reverse motion, the arm G passes each cavity twice every revolution; hence the necessity for double the number of arms on rim I that there are cavities in the disk, which arms are so arranged with respect to arm G that as soon as the said arm forces a seed through a cavity, (where it would be liable to hold by its fibre,) an arm on rim I removes it, and the vibratory motion of the rim and its arms causes its immediate liberation.

Claim.—The disk D, constructed with exit apertures K, cavities V, and ratchet W; and, also, the vibrating rim I, with flexible arms Y thereon; the said disk being rotated upon said rim in combination with, and in opposite direction to, the flexible arm G, in the manner and for the purpose set forth.

No. 14,240.—J. L. HORN.—*Improvement in Cotton-Seed Planters*.—Patented February 12, 1856.

The inventor says: I do not claim a distributing wheel running upon the ground, nor do I claim projecting rims or flanges upon such a distributing wheel.

But I do claim the arrangement of the back and front guards C¹ C², in combination with the distributing wheel A, provided with the flanges B B and chargers C C, placed at proper intervals, so that no seed can escape below the horizontal line X X, except at the proper or lowest point I, immediately in the rear of the opener E.

No. 14,529.—A. W. WASHBURN.—*Improvement in Cotton-Seed Planters*.—Patented March 25, 1856.

The channel-former F is connected to the set screws *b b*, in such a manner that it can be made to project more or less from the under surface of the ridge-former C. *i* is a perforated moveable band that serves to regulate the size of the discharging apertures; K is the hopper; M M are covering spurs; B is a roller to reduce the crown of the ridge to a smooth rounded form.

Claim.—1st. The peculiar shape and arrangement of the ridge-former C and the adjustable channel-former F, by which their forward movement enables them, when suitably loaded, to unerringly form a perfectly smooth channelled ridge, substantially as herein set forth.

I also claim the combination of the inclined flanches K K with the inner periphery of the rotating seed-dropper G, when they are placed in such positions with relation to the discharging apertures, and have such a degree of inclination, that the said flanches prevent the seeds from being discharged out of the front (or descending) side of the said seed-dropper, and cause the seeds to be freely discharged through the apertures in the rear (or descending) side of said seed-dropper in view of the operator, substantially as herein set forth.

No. 15,260.—J. A. STEWART.—*Improvement in Cotton-Seed Planters*.—Patented July 1, 1856.

The cotton seed is placed within the hopper or wheel G, and as the implement is drawn along, the hopper is rotated and the seed passes through the slots *d* into the furrow made by the share E, the seed being covered by the share F. The rod or spike H prevents the slots from being choked with the seed by forcing the seed therefrom, in case of any sticking in them.

The inventor says: I do not claim a rotating hopper or distributing wheel, irrespective of the form herein shown, for they have been previously used; but I claim the hopper or wheel G, formed of the discs *a a*, and zig-zag rim *b* provided with slots *d*, substantially as shown for the purpose specified.

Further, the hopper or wheel G, in combination with the clearing rod or spike H, arranged as shown and described for the purpose set forth.

No. 15,640.—D. I. BEECHER.—*Improvement in Cotton-Seed Planters*.—Patented September 2, 1856.

An endless conveyor C, made up of a series of plates *p*, armed with rows of teeth *t*, passes around the shafts S S' underneath the hopper H, which contains the cotton seed. The conveyor carries the seed downward into the tube T, whose rear upper extremity is provided with a series of slots *d*, as represented in figure 2. The teeth *t* of the plates *p* pass through the slots *d* and effect the delivery of the seed into the

tube; the passage of the teeth through the slots preventing the seed from being carried around with the teeth by the adhering of the fibres remaining upon the seed to said teeth.

Claim.—The combination of the endless series of arranged plates with the slotted discharge tube, constructed, arranged, and operating substantially as and for the purposes set forth.

No. 15,918.—CHARLES R. BELT.—*Improvement in Cotton-Seed Planters.*—Patented October 21, 1856.

As the machine is moved forward, the bar *f* is caused to oscillate on its centre, the connecting rod *g* on the end of said bar being operated upon by the gearings *m* and *h*, and the inclined bottom plates *a a'* are caused to vibrate, they being connected to bar *f* by means of the rods *e*. The rollers *F* and *G*, armed with pins *l*, prevent the seed in the hopper from packing, and deliver the seed to the bottom plates *a a'*, whence it is discharged, and drops into the furrow made by the point *r*.

Claim.—Effecting the seed discharge by the opposite reciprocation of the inclined plates *a a'*, constituting the bottom of the hopper, in combination with the armed rollers, or their equivalent, arranged and operating substantially as and for the purposes set forth.

No. 14,504.—WILLIAM JENKS.—*Improvement of Hand Corn-Planters.*—Patented March 25, 1856.

The feed-slide *A* is so arranged as to distribute the seed at *B*. When the plunger is drawn up, the seed falls into the chamber *D*. The plate *C*, with the notched chambers *h*, deposits the seed into the ground.

Claim.—The bolsters *E* and distributor *F*, in combination with point *C*, when arranged and operated for the purpose herein specified.

No. 15,035.—SAMUEL L. DENNEY.—*Improvement in Hand Corn-Planters.*—Patented June 3, 1856.

When the cylinder *C* is in the position shown in fig. 2, the weight of the pistons *a a a* will cause them to drop and form cups above the upper ends of *a* for the reception into each of a kernel of corn. A brush *B* shuts off the space above the cylinder from the four-way funnel *F*.

When the said cylinder is turned upon its axis to carry the seed-cups under and beyond the brush *B*, the projecting ends of the pistons *a a a* will strike against the cam *L*, and be forced inwards a sufficient distance to project the kernels of corn from the respective seed-cups.

When the slides *E E* and the handle *A* are elevated to their highest position, the said movement will turn forwards the cylinder *C* to discharge the kernels of corn from the seed-cups, and will elevate the piston-rods *P P* to enable the kernels of corn to fall into the planting receptacles. The downward movement of said slides and handle will

cause the piston-rods *a a* to descend and open the pouch pieces of the planting receptacles and discharge therefrom the kernels, and at the same time the cylinder *C* will be thrown into the position shown in fig. 4 to receive another charge of corn into the seed-cups *a a a*.

Claim.—The combination of the planting cylinder *C*, the pistons *a a*, and the funnel *F*.

No. 15,114.—GEORGE ATKINS.—*Improvement in Hand Corn-Planters.*—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Attaching the plate *E*, by a hinge or joint, to the lower part of the box *A*, the plate *E* having a curved plate *G* attached to its inner side, which plate is provided with a hole *g*, and works over the curved portion *a* of the plate *D*, which is attached to the lower end of the box *A*; the straight portion *b* of the plate *D* being fitted and working between plates *c c*, attached to the plate *E*, substantially as herein shown and described, so that the distributing device may be operated by merely throwing forward the box *A*.

No. 15,616.—CORNELIUS MARTRATT.—*Improvement in Hand Corn-Planters.*—Patented August 26, 1856.

By pressing the handle *H* downward, the hopper *a b* is made to slide down the shaft *A C* to the screws *i i*; the recess *e* is filled with corn, and by drawing the machine upwards, the hopper is also drawn upwards, and the seed in the recess *e* is discharged into the recess *f*. By placing the spade *A B* again upon the ground, and pressing downward, the cavity *f* passes down, and discharges itself through the orifice *E* into the hollow of the staff *A C*; the time of this discharge can be regulated by adjusting the set-screws *i*; and thus, when the spade *A B* penetrates soft or hard ground, the discharge of the grain can be regulated according to the time necessary to penetrate the ground.

Claim.—The combination of the staff *A C*, collar *g*, and spade *A B*, with reservoir *a a b b*; the whole being arranged and operated in the manner, and for the purpose described.

No. 15,696.—HEMAN B. HAMMON.—*Improvement in Hand Corn-Planters.*—Patented September 9, 1856.

As the plunger *C* descends, it forces seed which may be in the seed tube *A* into the soil, and at the same time causes the wheel *E* to turn one-sixth of a revolution, and to deposit the seed contained in the offset *a'* into the end of the tube for another descent of the plunger.

Claim.—The employment of an hexagonal or many-sided revolving wheel *E*, having offsets *a' a' a' a' a' a'*, applied in connexion with the plunger and seed tube, substantially as and for the purposes set forth.

No. 16,135.—THOMAS A. CHANDLER, assignor to Himself and HARLOW HERRICK.—*Improvement in Hand Corn-Planters*.—Patented November 25, 1856.

The machine being placed on the ground, the handle B is pressed down, which causes the digger R to operate, and the slides E and jaws K move out, and the corn drops into the hole previously made by the digger. As soon as the seed is dropped out of the cup, by raising the handle B, and by the counteracting weight of the machine, the movements of the slides, jaws, and diggers are reversed.

Claim.—The slides C E, diggers R R', and rod I, substantially as set forth, and operating in the manner and for the purpose described.

2d. The jaws K K, cut-off S, and arm L, when constructed and arranged as described, and operating substantially in the manner and for the purpose set forth.

No. 14,767.—EDWARD HOPKINS.—*Improvement in Hand Seed-Planters*.—Patented April 29, 1856.

When the block 11 rises, it moves with it the sliding plate 12, being attached to the block by a slot cut through the side of the case. The cylinder 3 is thus revolved by means of rod 6, and the hinged lid 9 is drawn close down to the case by a pin 10, passing through a slot cut in the lid; when the machine is withdrawn, the lid opens and drops the seed. The spiral spring 7 pulls the plate 12 down, and throws up the semi-circular cylinder 3, for receiving another charge of seed in the adjustable vessel 4.

Claim.—The arrangement of the rod 6 and spring 7, combined with the catch-block 11 and sliding plate 12, for operating the semi-circular cylinder 3 and lid 9.

No. 15,431.—A. C. MILLER.—*Improvement in Hand Seed-Planters*.—Patented July 29, 1856.

The rod H passes through the hopper lengthwise, and upon the end of it is a coiled spring c, to throw it back after it has been pushed up by the operator against said coiled spring. Upon this rod is fixed a series of agitators I, which travel past the openings a of the stationary seed rod B, as the rod H is vibrated by means of the hand-lever J, and thus prevent the seeds from choking in said openings.

Claim.—In combination with the reciprocating agitators I, the stationary bent adjustable seed bar B, with its wedged-shape openings a and inclined sides b, for the purpose of sowing seed broadcast, and adjusting the machine to the quality or kind of seeds to be sown, as set forth.

No. 15,610.—J. HERVA JONES.—*Improvement in Hand Seed-Planters*.—Patented August 26, 1856.

When this seed planter is lifted from the ground, by taking hold of the levers a, it will assume its contracted position, the points c c, being

nearest together. The seeding cavity will now have deposited a sufficient quantity of seed for a hill in the discharging recess near c; the machine is then struck down, the points expand and enter the ground, until the bottoms of the reservoirs press the surface. This allows the shoulders of the levers a to withdraw from their recesses at the top of the slots; and as the pressure of the hands continues, the cap pieces b b become fulcrums, the lower section of the points are withdrawn from the ground, and the seed falls into the receptacle thus made. The machine being now lifted, the lower sections of the points are returned upon the seed, the whole machine contracts, and the points are withdrawn from the earth, leaving the seed in the ground.

Claim.—The use of a hinge or joint B B, or its equivalent, for connecting two single hand planters at their tops, for the purpose of allowing them, like a pair of compasses, to contract and expand in their operation, as set forth.

No. 15,433.—JOHN MOORE.—*Improvement in Potatoe Planters*.—Patented July 29, 1856.

The potatoes are placed in the hopper N, and fall into the chambers a of the cylinder H, and are discharged from said chambers as soon as the latter have passed the guard M; the helical scrapers b serve to remove any pieces which may remain between the cylinder H and guard M.

The inventor says: I do not claim a seed planter wherein there is a furrow opener, a contrivance for dropping the seed, and one for covering the furrow.

But I claim arranging and combining with the chambered cylinder H and its spring guards M, so as to operate therewith, as set forth, a series of scrapers b b, the same being for the purpose specified.

No. 14,144.—FREEMAN PLUMMER.—*Improvement in Seed Planters*.—Patented January 22, 1856.

The seed cup z is formed in the upper part of the slot in slide f, by setting the hinge h (in the lower part of said slot) so as to form an elbow, the upper part of which, when in this position, forms a bottom to the said cup z; when wishing to drop, the aforesaid slide is drawn down, at which time the cup z is drawn below the hopper bottom, bringing a solid portion of the aforesaid slide opposite the point at which the seed cup is formed and filled. When in this position, the hinge h is drawn straight, allowing a discharge of seed thus measured.

Claim.—The seed cup z, as formed by slide f, conductor i, and hinge h, as herein described.

No. 14,235.—ROBERT GEBBY and WILLIAM L. GEBBY.—*Improvement in Seed Planters*.—Patented February 12, 1856.

The corn having been placed in hoppers A A, and the machine having been set in motion, the operator at intervals depresses the

hand-lever *q*, thereby elevating the other or trigger end *s* of the lever frame *q P r s*. The trigger then actuates levers *t* on their pivots *u u*, so as to depress the strips *z z*, which, being formed with feed vents, carry down the seed. As soon as the operator removes his hand from handle *q*, the strips *z z* rise back to allow the seed receptacle to be charged again with seed. The stirrer or spur pin 14, attached towards the end of the valve-rod, in moving up and down, serves to loosen the supply of seed and prevent clogging. The flap *D* hinged to fender *C* can be elevated or depressed by means of adjusting-rod *E*, so that more or less pressure may be given to the soil.

Claim.—Constructing a corn planter with compound or double graduating or feeding-rod device *Z Z Z Z*, having a stirrer pin or spur 14, and combined in operation with the actuating lever device *P P q q r r*, formed with the trigger *s s*, and spur *V U*, and spring-hook or catch device *W W* and *y y*, constructed and used substantially in the manner described.

2d. The skimmer fender *C C*, formed with a hinged flap or pressure-plate *D D* and adjusting-rod *E F G H*, as described.

No. 14,465.—ELIJAH MORGAN.—*Improvement in Seed Planters.*—Patented March 18, 1856.

A shield *a* is fastened to the front inside part of the hopper *D*, and extends back, first horizontally, then downward, leaving a space *c* between its lower edge and the bottom of the hopper. The seeding-bar *F* vibrates under this shield, the grain passing through *c*, thence into the recesses *e* on the under side of the seeding-bar, and through the openings *f* into the ground.

Claim.—In combination with the dead hoppers *E E*, the chamfering or bevelling of the ends *i* of the seeding-bar *F*, and the scolloping of the shield *a*, so that any grain that may be carried to the ends of the seeding-bar may be forced by it into said dead hoppers, substantially as described.

No. 15,101.—PLYMON B. GREEN and EDWARD A. KENNEDY.—*Improvement in Seed Planters.*—Patented June 10, 1856.

Fig. 1 represents the planter as being forced down into the ground, with the orifice *o* in seed-slide *b*, which receives the corn at the bottom of the corn box *F*, and retains it until the machine slides down on seed-slide *b*, when orifice *n*, at the top of groove *m*, comes in connexion with orifice *o*, and the corn passes down to mouth *E*. On raising the planter from the ground, the mouth *E* is thrown open, depositing the corn into the ground; the spring *C* forces down at the same time the slide *b*.

Fig. 2 is a sectional front view, representing side springs *h h* and catches *l l*, which prevent the machine from sliding down on the seed-slide *b* until the mouth is closed.

Claim.—The seed-slide *b*, in combination with the foot *A*, side springs *h*, and catches *l*, arranged and operating in the manner and for the purposes set forth.

No. 15,106.—GEORGE A. MEACHAM.—*Improvement in Seed Planters.*—Patented June 10, 1856.

The machine being strapped to the foot, and the seed bag fastened to the waist of the farmer, and combined with the hopper *B*, the farmer rests his foot upon the ground and exerts pressure upon the step, and causes thereby the plunger *E* to ascend along with his foot, which forces the seed contained in the spring end of the tube *A* into the soil. As soon as this occurs he withdraws the pressure, and the slide rises by the action of the spring *F*, and carries up another hill of seed to be discharged into the spring end of the tube ready for the second descent of the plunger.

Claim.—1st. A machine for planting corn, constructed so as to be applied to and operated by the foot.

2d. The employment of the self-adjusting step *G*, applied in connexion with the plunger and slide *E*, seed tube or box *A B D*, and flexible seed conductor *C*, substantially as and for the purpose set forth.

No. 15,182.—GEORGE HALL.—*Improvement in Seed Planters.*—Patented June 24, 1856.

The nature of this invention is: Each cam *F* is hinged in a recess on the body of the driving-wheel *H* in such a manner that it can be turned on a pin *d*, and that the part *b* can be pushed into the recess *C*, so as not to project from the sides of the driving-wheel *H*.

Claim.—Hinging the cams *F* that operate the seed-slides to the face of the drive-wheel *H*, so that they can be swung into or within recesses *C* cut in the face of said wheel for the purpose of adapting the machine to planting at variable distances apart.

No. 15,691.—JOHN FORDYCE.—*Improvement in Seed-Planters.*—Patented September 9, 1856.

The seed passes from the hopper *A* through the apertures *i* and *e* down to the blocks *d*, and as the hinged board *B*¹ is vibrated by means of the handle *C*, the seed is discharged. The size of the openings can be adjusted by means of the slide *f*, which is provided with openings *i*. The finger *r*, attached to the blocks *d*, cause the grain, and in particular oats, to pass readily out of the hopper.

Claim.—In combination with the hopper and its adjustable openings the hinge-board *B*, and its blocks and figures, for regulating the discharge of the grain from said hopper, and insuring regular feeding, substantially as set forth.

No. 15,822.—JOHN F. SEAMAN.—*Improvement in Seed Planters.*—Patented September 30, 1856.

The seed is placed in the hopper *M*, and, as the machine is drawn along, the share *T* makes the furrow, and the driver causes the seed

to be deposited by operating the rod *l*. The rotary covering shares *L* cover the seed; those on one side of the frame being stationary while covering the seed, while those on the opposite side are rotating in order that they may free themselves of weeds or grass, &c.; the shares on the two sides of the frame turning alternately, so that all of them may be kept perfectly clean.

Claim.—The shares *L*, arranged substantially as shown, so that they may rotate intermittently, in order to free themselves of weeds, grass, and other incumbrances.

No. 15,810.—B. KUHNS and M. J. HAINES.—*Improvement in Seed Planters.*—Patented September 30, 1856.

The seed in the hopper *H* fills the pockets *i* of the rotating cylinder *g*, and the contents of said pockets are discharged in regular succession into cells *a*, whence the seed passes to the seeding tube. The quantity of seed in the pockets *i* is regulated by means of the pocket-clearer *R* swinging on a pivot *m*.

The inventors say: We disclaim, of itself, the pocketed roller, and also the cells surrounding the discharge openings.

But we *claim* the combination of the cell and pocketed roller with the pocket clearer, actuated by the rotation of the roller, operating as and for the purposes set forth.

No. 15,955.—JOSEPH H. SHIREMAN.—*Improvement in Seed Planters.*—Patented October 21, 1856.

As the machine is moved forward, the slide *x* is reciprocated by means of pitman *h*, which receives its motion from the driving-wheel, at the same time that the seed is prevented from clogging by the movement of the stirrer *n*, operated by levers *u* and *v*. The clearers *n* force the seed which is contained in the holes of the slide *x* out of said holes, thus keeping a free passage for the seed.

Claim.—The slide *x* and clearers *n*, in combination with the stirrer *n*, constructed and operated substantially in the manner and for the purposes set forth.

No. 15,974.—JESSE D. HAVIS.—*Improvement in Seed Planters.*—Patented October 28, 1856.

The seed in the hopper *B* passes down the inclined bottom and escapes through the aperture *p* into the seed tube *F*, whence it drops to the ground. The motion of the machine causes the hopper *B* to vibrate, and the seed to run freely through the opening *p*, the size of which can be regulated by means of the tapering pin *g* and screw *r*, and thus the discharge of the grain can be regulated at pleasure.

Claim.—The vibrating hopper *B*, in combination with the pin *g*, constructed and arranged substantially in the manner and for the purpose set forth.

No. 16,198.—HENRY WYANT.—*Improvement in Seed Planters.*—Patented December 9, 1856.

As the machine is moved over the ground, a reciprocating motion is imparted to slide *H*; when the slide moves to the left, the cup *a* is drawn up the inclined plane *m n*, and, passing under the brush *M*, the surplus seed is scraped off, and as the slide advances further, the cup *a* arrives over the seed tube *S*, where the seed drops to the ground.

Claim.—The employment of the seed cup or ring *a* and spring *b*, attached to and moving with the slide *H*, in combination with the inclined plane *m n* of the beam and brush *M*, operating in the manner and for the purposes set forth.

No. 16,314.—N. C. SHERMAN and J. MASON.—*Improvement in Seed Planters.*—Patented December 23, 1856.

When the plunger *E* is drawn upwards, the corn with which the opening *b* is filled passes through the opening *b*¹ and falls down at the lower part of the jaws *B C*, which are closed by spring *D*. The jaws being forced into the ground, plunger-bar *G* comes down, and, coming in contact with jaw *C*, causes it to turn on its pivot *a*¹, permitting the seed to drop into the pocket made by blades *B* and *C*.

The inventors say: We disclaim the wedge-shaped jaws, to be opened after having been thrust into the ground, thus forming a pocket or cavity into which the seed may fall. Devices of this kind are old, and an example is seen in Hughes's patent, November, 1855.

We *claim* the double plunger *E*, having bars *F G*, operating and combined with the seed box *A* and jaws *B C*, in the manner substantially as set forth.

No. 14,533.—MICAHAH CRENSHAW.—*Improved Cultivating Plough.*—Patented March 25, 1856.

The stock *F*, to which the digging hoes *H* are fastened, is held down by the springs *G G*. A cam wheel *I* is fastened to shaft *D*. The arm *J* rests upon the cam wheel for the purpose of imparting a vibrating motion to the stock *E*.

The inventor says: I am aware that rotating hoes have been used in connexion with ploughs and cultivators in various forms; this, therefore, I do not claim. But I *claim*, in combination with the series of cutting plates or disks *E*, the series of reciprocating hoes *H*, when the hoes are so arranged as to work in lines parallel with the cutters or disks, and so inclined downward and rearward as to readily rise up over any obstructions, without danger of clogging or choking, as set forth.

No. 14,726.—PELLS MANNY.—*Improvement in Sub-soil Ploughs.*

As the implement is drawn along, the coulter *G*, as it rotates, cuts the furrow slice in advance of the separating wing *H*; the separating

wing spreads or opens the furrow of the surface soil, while the mould-board D throws up the sub-soil, the mould-board being sufficiently narrow to take up only half of the sub-soil at each ploughing, and being relieved from the weight of the surface soil by the action of the separating wing.

Claim.—The combination of the circular rotating coulter G, separating wing H, mould-board D, and bar F, arranged substantially as shown.

No. 14,013.—GEORGE W. COOPER.—*Improvement in Ploughs.*—Patented January 1, 1856.

The nature of this invention can be understood by describing the manner in which said plough can be operated and adjusted. The handles B are secured to the beam A by means of screw bolts *a*; when the plough is raised up or let down by adjusting the stirrup H and bolt *i*, the standard C swings *a c*, and the joint *e* is raised or lowered, and takes up or lets down to the extent of the adjustment, whilst the handles, very slightly moving at *a*, maintain practically their same relative position in regard to the beam.

Claim.—Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by letters patent is, uniting the handles of the plough to the standard thereof by means of the self-adjusting elbow joint *e*, so that both the handles and the plough shall be susceptible of the same relative adjustment to the beam, as described.

No. 10,044.—BENJAMIN F. AVERY.—*Improvement in Ploughs.*—Patented January 8, 1856.

Fig. 2 represents the land side of the plough, the projection *e* of which fits into a corresponding cavity in the short land side represented in dotted lines in fig. 1; the hook *n* is intended to pass through a right-angled opening in the same, and the shoulder *f* of flange *h* to fit into the bottom part of the short land side in fig. 1.

Claim.—The lock joint, for holding the land side to the short land side, and mould-board; the same consisting mainly of a shaped projection *g*, hook *n*, and flange *h*, and their counterparts in the short land side.

I also claim the ears or lugs *d d*, cast on the inside of the mould-board, for the purpose of fastening the mould-board handle.

No. 14,224.—JOHN CLARK and GEORGE W. N. YOST.—*Improvement in Ploughs.*—Patented February 12, 1856.

By the forward motion of the plough the pressure of the sward on the surface of the circular cutting shares will cause them to revolve around their pivots *e e*, and cut away the earth before them speedily, thereby facilitating the draught of the plough.

Claim.—The revolving share-cutters B B¹, attached to the mould-board in combination with the bearing-plate or strap D, and the extension of the land side (or the equivalent of said bearing-plate D and extension of said land side) for securing the free and certain revolution of the series of revolving share-cutters B B¹, substantially in the manner and for the purpose set forth.

No. 14,288.—JAMES B. MELL.—*Improvement in Ploughs.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The standard A with braces B, in combination with the braces I C and beam D, constructed in the manner and for the purpose set forth.

No. 14,346.—JAMES T. CADENHEAD.—*Improvement in Ploughs.*—Patented March 4, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The adjustability of the brace K, in combination with that of the bar O and that of the beam C, for the purpose of regulating the pitch of the beam and the height of the beam and handles, together or separately.

No. 14,989.—GEORGE W. ZEIGLER.—*Improvement in Ploughs.*—Patented May 27, 1856.

By moving lever *p* towards handle B, arm *m* of shaft *l* will be moved in slot *i*, pressing against the upper face of said slot, turning the coulter about *f* by lifting arm *g*, and consequently depressing point *q* of the coulter.

The inventor says: I am aware that Harrison Norton obtained a patent, dated October 9, 1855, by which he regulated the depth of the furrow by a movable plough point, acting upon the same principle as that shown in my specification. I do not claim, therefore, to have been the first to invent that method of accomplishing this object; but I claim simply an improvement upon the invention of Norton, by combining with land side E and mould-board C a coulter F, jointed to the land side, and movable between land side and mould-board, independent of the mould-board and share D.

No. 15,137.—N. S. LOCKWOOD and J. D. WINN.—*Improvement in Ploughs.*—Patented June 17, 1856.

By this improvement no bolt-heads are exposed on the outer side of the mould-board, and the latter may be hardened so that it will retain its original shape.

Claim.—Welding the post A or breast A², to the mould-board B, and attaching the share C and land side C¹ to the mould-board and post, or "breast," by means of the flanch A¹, at the lower end of the post or breast, and the plate C² of the share and land side, through which flanch and plate screw-bolts F F pass, substantially as shown for the purpose specified.

No. 15,344.—JOHN RICH.—*Improvement in Ploughs.*—Patented July 15, 1856.

The braces *g* and *h* proceed from the land side, curving backwards and upwards to sustain a piece extending back from the bed piece *b*. This piece carries upon its rear portion the after end of the beam, and contains in its substance the sockets *i* and *k* for the handles *l*. It will be perceived by the drawing that the sockets are cast without setting any cores.

Claim.—The sockets *i* and *k*, when arranged and combined with the body of the plough.

No. 15,321.—ALVIN BARTIN.—*Improvement in Ploughs.*—Patented July 15, 1856.

The nature of this invention consists in attaching the body A of a plough to the coulter B in such a manner, by means of bolts *a* and *d*, as to allow the body to be moved to the right or left, for a side-hill plough or reverse plough, and by confining the body to any desired angle with the beam by a cross-bar F and cam lever G attached to the hind end of the beam, and also by forming the lower end of the coulter into a wedge-shape on which to place a self-sharpening socket-point H, which can be reversed as it becomes worn, and replaced by another one when worn out.

Claim.—I claim jointing the upper and front points of the body of the plane to the coulter, the whole being arranged and operated substantially in the manner and for the purpose set forth.

No. 15,654.—BENJAMIN C. HOYT.—*Improvement in Ploughs.*—Patented September 2, 1856.

This plough can be used to turn one or two furrows, and can also be readily converted into a cultivator. To turn but one furrow, the point M is attached to standard A, and the beam D is placed on a line with the land side of the point M. To turn two furrows at the same time, the point represented in fig. 3 is attached to the standard, and the beam and handles are fastened on a line between the two mould-boards K. To convert the plough into a cultivator, the point represented in fig. 2 is fastened to the standard, the mould-boards K are removed by withdrawing the bolts *z* at the top end of the braces R¹ and N, and the short bolts P that pass through the mould-board K in the prongs X are also withdrawn.

Claim.—The adjustable rotary mould-board K K, combined with the beam D and frame R, the whole being arranged in the manner described.

No. 15,649.—JOSEPHUS P. HARRIS.—*Improvement in Ploughs.*—Patented September 2, 1856.

By shifting the bolts *b* to different holes in the hind brace B, and the end of the mould-board E to different notches in the front brace B, the mould-board can be moved in position so as to turn a furrow slice of variable thickness, while the sub-soil blade D continues at a constant depth, or the mould-board may be placed so as to constitute a continuation of said blade, and thus change the sub-soil into an ordinary plough.

Claim.—Combining with a sub-soil plough a mould-board, moveable to different heights, substantially in the manner and for the purposes specified.

No. 15,887.—SAMUEL A. KNOX.—*Improvement in Ploughs.*—Patented October 14, 1856.

This invention relates to a mode of constructing the form of a mould-board on geometrical principles, by means of arcs and straight lines, which are to be modified according to the nature of the soil in which the plough is to be used. An explanation of the rules of this method would take up too much space to be given here.

The inventor says: I do not claim the formula or rule by which the form of the working surface of the mould-board is determined or obtained, as I have only described such rule or formula as a mode of determining and defining the form which does constitute my invention, that it may be distinguished from all other forms of mould-boards known prior to my invention.

I claim the form of the working surface of the mould-board of ploughs, substantially such as described, and composed or combined of the several characteristic features specified.

No. 16,277.—JACOB HECKENDORN.—*Improvement in Ploughs.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim a reversible or self-sharpening point.

I claim the twisted, four-coultered, double-ended, and reversible self-sharpening point F F F F, as described, formed of one piece or casting, and operating as point and coulter, as specified.

No. 16,260.—JONATHAN ADAMS.—*Improvement in Ploughs*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The peculiar manner of holding the slotted mould-board, share, or hoe, to the stock A, viz: by means of the curved brace E, with its shank and shoulders extending from the beam B, and against and through the hoe and stock, as set forth.

No. 14,075.—WILLIAM E. WYCHE.—*Improvement in Cultivating Ploughs*.—Patented January 8, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The arranging upon the share of the plough of one or more vertical cutters E, with a curved or inclined plate F at or near the rear outside of the share, for the purpose of dividing the furrow-slice vertically, and turning the outer portion towards the plough, as set forth.

No. 14,333.—WILLIAM E. WYCHE.—*Improvement in Cultivating Ploughs*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engravings.

The cutters arranged behind the shield are in such a position that a plane drawn to meet their edges would have the form of a mould-board.

The inventor says: I do not claim one or more cutters on the ordinary mould-board, or on the standard of a plough, with a mould-board on the opposite side, as these are not new.

But what I do claim is, substantially, a series of knives or cutting-blades D E on the standard, in the place or and for a mould-board, for dividing, cutting, and turning the furrow-slice horizontally, or nearly so, and depositing the pulverized soil mostly in the furrow, and turning the sod or turf upon the surface; and this I claim, whether said knives be made adjustable or otherwise, substantially as described.

No. 15,919.—EDMUND C. BILLS, jr.—*Apparatus for cleaning Coulters or Ploughs*.—Patented October 21, 1856.

The nature of this invention consists in suspending upon and in front of the coulters C, and above the cutting-edge of the same, an inverted ribbed cone D, capable of rotation by the pressure of grass against it, so as to carry off said grass laterally, and thus free the coulters from the grass.

The inventor says: I expressly disclaim smooth cones and cylinders, and those that are ribbed in the direction of their elements, as coulters

cleaners; I also disclaim the employment of mechanical devices for rotating such cleaners.

But I claim the employment upon the front of a coulters of an inverted cone, having spiral flanges thereon, self-acting by the upward pressure of the grass to free the coulters, substantially as set forth.

No. 14,287.—ABRAHAM MARQUISS, EZRA MARQUISS, CHARLES MARQUISS, and CHARLES EMERSON.—*Improvement in the Mole of Draining Ploughs*.—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventors say: We are aware that mole-ploughs for forming subterranean drains have been used, and therefore we wish it to be understood that we do not claim the principle of forming underground drains by the use of such implements.

But we claim the peculiar shape of the mole A, which enables its forward movement to form a subterranean perforation whose top and sides will be smoothly and densely compressed, and whose bottom will be left almost entirely uncompressed, substantially in the manner and for the purpose herein set forth. Also, the giving tail a of the mole such a shape and position that it will serve to close up the slit cut by the mole shank B in forming a perforation; and also serve to lead the mole upwards to the surface of the ground as soon as the beam E is allowed to turn on its axis, substantially as herein set forth.

No. 14,373.—AARON and THOMAS S. SMITH.—*Improvement in Gang Ploughs*.—Patented March 4, 1856.

Any number of shares may be used, and the front axle B may, by loosening the nut e on the bolt, be adjusted so that the shares will be in line with the centre of the axle.

Claim.—Combining the axle B and wheel J with the bed piece A, when constructed and arranged substantially in the manner and for the purpose set forth.

No. 15,039.—CYRUS GARRETT and THOMAS COLTMAN.—*Improvement in Sub-soil Ploughs*.—Patented June 3, 1856.

The cast-iron standard 3 is provided with a slot 6, in which a flat bolt passes up for the purpose of attaching the land side 2 to the beam. The bolt q serves to steady the land side. s represents a steel mould-board which is riveted to the flange 4 of the standard. Such a mould-board of wrought metal is capable of being placed on the plough at any required angle by bending it.

Claim.—The arrangement of the standard 3, flange 4, share 1, and mould-board 5, and these arranged with the brace-bar 9 and stay-bar 6, for purposes mentioned in the specification.

No. 14,810.—ABRAM HEULINGS.—*Improvement in Potato Diggers.*—Patented May 6, 1856.

The cutter F throws off the top of the ridge and cuts the tops loose from the roots, its inclined faces carrying them out of the way of the excavator. The excavator passes through the ridge and under the potatoes, which, as soon as they enter the scoop, are caught by the rakes and rapidly drawn up the open bed *e*, and discharged upon the reciprocating grating H, whence they pass into the receiver R. In their transit along bars *e* and *e*¹, the potatoes are separated from the earth.

The inventor says: I disclaim all systems of teeth or brushes which have radial positions upon revolving carriers at the time of action, whether they be upon an endless band, or on a cylinder, as in Schaffer's patent of 1853, as their action is altogether different from that of my construction.

But I do *claim* the combination of the excavator E and inclined open bed *e* with the series of rakes R¹, so connected with the endless carrier P that the rake-teeth will be projected to the front of the excavator, at or nearly at a right-angle to its surface, and have a motion of translation along the bottom of the same, previous to reaching the inclined bed.

No. 15,100.—AMOS L. GRINNELL and JOHN Z. WILLIAMS.—*Improvement in Potato Diggers.*—Patented June 10, 1856.

The implement is used in the following manner: The handles H are raised by two attendants, one being at each end of the frame A, and the two rakes G G will consequently be distended or forced apart. The rakes are then pressed into the ground, and by pressing upon the handles H the rakes are made to meet underneath the potatoes. The implement is then raised and shaken vertically till the earth falls between the teeth of the rakes, leaving the potatoes within them.

Claim.—The two rakes G G attached to the frames F F, the frames being hung on the shaft E, which is connected to the frame A, and the handles H of the frames passing through the side pieces of the frame A.

No. 15,628.—SILAS WOOLSON.—*Improvement in Potato Diggers.*—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The employment of an open concave digger, arranged and combined with a movable standard, as and for the purpose set forth.

No. 16,184.—WILLIAM MUSSEHL.—*Improvement in Potato Diggers.*—Patented December 9, 1856.

As the machine is drawn over the potato ground the mould-boards *m* catch the stalks and weeds and throw them on both sides of the furrow opened by shovel *f*. The shovel *f* by its progress carries the

soil with the potatoes upwards into the separator S, where, by the rotation of said separator, the earth is loosened from the potatoes, and falls out between the interstices of the wires, while the potatoes drop out at the rear end of the separator.

Claim.—The revolving separator S, in combination with the adjustable inclined shovel *f* and mould-boards *m*, arranged and operated in the manner and for the purpose set forth.

No. 14,097.—W. W. HARVEY.—*Improvement in Implements for Pruning Trees.*—Patented January 15, 1856.

The cutter, by pushing the handle F, is forced a sufficient distance into the limb of the tree to be cut off, so that it will be held in the cut, and the handle F and socket E is then drawn backwards and the upper end of the socket E is forced against the collar B, which blow will of course force the cutter still further into the limb. This operation is repeated until the limb is severed from the tree.

Claim.—Having the shank or bar C of the cutter or chisel A fitted within a socket E, attached to a proper handle F. The socket being allowed to work on a shank or bar, substantially as shown for the purpose specified.

No. 16,016.—PELLS MANNY.—*Improvement in Automatic Rakes for Reapers.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Pivoting the rake B, for curvilinear play over the platform, to the up and down moving lever or supporting beam D, arranged to operate together and separately at intervals in relation to the platform and each other, in the manner and for the purpose set forth.

No. 15,601.—CHARLES P. CARPENTER.—*Improvement in Hay Rakes.*—Patented August 26, 1856.

The horse by which the machine is drawn being attached to the loops in the forward ends of the tugs D D, and the machine being in position as represented in fig. 1, the hay will be caught by the teeth I, and collected. When the teeth are loaded with a sufficient quantity of hay to form a windrow, the driver releases the catch F from the handle, when, as the tractive power is applied to the movable head B, said head will be drawn up on the guide-rods C, until its motion is stopped by the links *n* coming in contact with the forward end of the brackets E, as represented in fig. 2, by which motion the hay is discharged.

The inventor says: I am aware that a rake has been constructed with a fixed head, (similar to the one which I employ,) into which spring steel teeth are inserted, and drawn by power applied to such

fixed head; therefore, I do not claim such a rake head, nor such spring teeth.

Neither do I claim such a rake head, nor such spring teeth; neither do I claim the wheels or the handles by which said rake is guided, nor the arms K K; neither do I claim the tug (attached to such a fixed head) of itself alone; but I claim the slotted bed-plank A, the movable head B, the guide-rods C C, the catch F, and the connecting of the tugs D D to the brackets E E by the links *n n*, or their equivalent device or devices, arranged as described and for the purposes set forth.

No. 15,653.—HANKLES HEABERLIN.—*Improvement in Hay Rakes.*—Patented September 2, 1856.

When it is required to discharge the load from the rake teeth, then the operator from his seat E tilts the lever G, which swings together with frame Q and spring bow V on pivot *b*. By this motion the rake-teeth are released from the pressure of the foot *g*, the rake revolves and discharges its load. By letting down the lever G, the rake will resume its former position and be ready for raking another wind-row.

Claim.—The combination of the revolving rake with the adjustable spring bow V, so that said rake may be set to trip, and be tripped with such variable motion of the foot *g* as may be desired; the whole being arranged and operating in the manner and for the purpose set forth.

No. 15,777.—ISAAC J. ROBBINS.—*Improvement in Hay Rakes.*—Patented September 23, 1856.

When this machine is in operation, the hinged arms D rest on the horizontal bar J, and the blocks *a*, by operating the lever G, have been slid so as to prevent the teeth E from turning; by withdrawing the blocks *a*, by means of the lever G, the teeth E are caused to revolve. When it is required to draw the machine over the ground without the teeth E being in contact with the same, this can be accomplished by operating lever I, rod *i*, and lever *h*, as represented in fig. 2.

Claim.—I do not claim, exclusively, the use of independent teeth for horse-rakes; the same having been described in the patent granted to Calvin Delano, February 7, 1849.

Neither do I claim the exclusive use of revolving teeth for horse-rakes.

But I claim the hinged arms D D, with their revolving teeth E E, in combination with the sliding-blocks *a a*; the whole being constructed substantially in the manner and for the purpose specified.

No. 16,025.—THOMAS R. ROACH.—*Improvement in Hay Rakes.*—Patented November 4, 1856.

The object of this invention is to make a revolving rake, the teeth of which, by rising and falling vertically at their points independently of each other, can accommodate themselves to any unevenness of the surface over which they pass, and thus gather the hay or grain much

better than can be done by the ordinary revolving rake. The rake-teeth B are fitted at their short end in a cast-iron socket *b*, and can vibrate on the pins *c*; the India-rubber strips *e* are placed between the ends *a* and the socket *b*, and the latter is entered in the mortise of the bar A and fastened by screw *g*.

Claim.—The springs above and below the teeth, operating in the manner and for the purpose substantially as set forth.

No. 16,318.—JOHN J. SQUIRE.—*Improvement in Hay Rakes.*—Patented December 23, 1856.

If it is desired to raise the arms G so that the rake M shall discharge its load, the driver on seat A moves lever B forward, which, turning on fulcrum *a*, throws clutch D in gear with wheel N, and causes shaft L to turn with the wheels, so that the arms C, with their attachments J and K, are raised. The arms C having been lifted sufficiently to discharge the load on the rake, the chain on the lever F draws lever B back to its former position, detaching clutch D, and allowing the rake to drop to the ground.

Claim.—The clutch and levers, operating the same in combination with the arm F of the rake-shaft, and the connexion between said arm and lever B, whereby the rake is lifted by the moving power, and automatically released, substantially as specified.

No. 14,321.—NATHAN MARTZ.—*Improvement in Horse Rakes.*—Patented February 26, 1856.

Very slight lifting power applied to handle H or foot-treadle L will raise the rake from the ground and disencumber it of the hay it may have gathered.

Claim.—The combination of the coiled spring S, axle B, rock-shaft E, and rake-teeth T, when arranged in the manner and for the purpose herein described.

No. 14,067.—RANDAL PRATT.—*Improvement in Horse Hay-Rakes.*—Patented January 8, 1856.

The rake being put in motion, the teeth D D proceed to gather up the hay. The rake being full, the operator, standing upon the board T, applies his foot to H, and simultaneously the teeth are raised from the ground, and the prongs F brought down upon the contents of the teeth, which are thus cleared, and made ready to renew the operation.

Claim.—Hanging the prongs or clearers F F so that they can vibrate, and connecting them to the devices which operate the teeth, so that they will vibrate in an opposite direction simultaneously with the teeth, to clear them of the crop gathered, and press it together on the ground, as set forth.

No. 16,156.—JESSE WHITEHEAD.—*Improvement in Self-acting Rakes for Harvesting Machines*.—Patented December 2, 1856.

As the machine is moved along, the driving-wheel B imparts a reciprocating motion to the pulley N, by the arrangement of crank-pin *a*, pitman *b*, lever *c*, shaft *d*, toothed-sector K, and pinion L. The rope P, which passes over the pulleys N and O, is fastened at both ends to the rake-head H of the rake J. By this arrangement, the rake J rakes the grain towards the rake I, when both rakes, holding the grain between them, pass over the movable cam S, and thence over the stationary cam R, and deposit the gavel behind the platform, when both rakes recede into the position represented in the engraving.

Claim.—The combination of the rakes I J and rod F, when said parts are made to operate together, and independently of each other, substantially as described.

Also, in combination with the rakes and rod F, the permanent cam R, and yielding cam S, which causes said rakes to advance in one line and return in another line, as set forth.

Also, in combination with the rake-head H, the rod *g* having its support alternately in Q *h*, for the purpose of preventing said rake-head from binding on its ways, as set forth.

And, finally, giving the rake I a movement varying to the size of each and every gavel as set forth.

No. 16,145.—STEPHEN R. HUNTER.—*Improved Raking Apparatus for Harvesters*.—Patented December 2, 1856.

As the machine is drawn along, the grain is cut by the rotating cutters C, and passes between the two cutters and upon the endless apron I, by which it is conveyed by the side of bar J. The bar J, every time the projecting plate *l* passes through the box M, is moved outward to the edge of said plate, and forces the cut grain therefrom; the ball *k* is raised to the top of box M by the plate, and the chain *j*, to which the ball is attached, draws the bar J to the edge of the plate, as represented in dotted lines in fig. 2. As soon as the ball is freed from the plate *l*, the bar J is forced back to its original position by spring L.

The inventor says: I do not claim the rotating cutters C C and the hinged or jointed plates A A; for they have been previously used, and were formerly patented by me.

But I *claim* the bar J attached or hinged to the arm K, on the platform H, and operated by the spring L, chain *j*, ball *k*, which is fitted in the box M, and the plate *l* *n*, the wheel G, when the parts are arranged to operate in combination with rotary cutters C C, and endless apron I, as described, for the purpose set forth.

No. 15,237.—JOHN C. HICKS.—*Improvement in Raking Attachment to Reapers*.—Patented July 1, 1856.

The shaft L being rotated in any proper manner from the driving-wheel, the rack J will be moved back and forth by means of crank K.

When the rack is forced outward, the rake G will be drawn inwards over the platform A, and the grain will be clasped between the rake G and holding rake O; the crank K will then turn the rake J and shaft B, with the two rakes G O, around; the crank then draws the rack J inwards, and the rake G is thrown outward, as shown in dotted lines fig 2, the grain falling from between the two rakes upon the ground. The rake G, when thus extended, is turned around, the crank K again turning the shaft B, and the rake G is drawn inwards as before.

The inventor says: I do not claim the general construction and operation of the above described raking attachment, for I am aware that the same has been accomplished before.

But I *claim* operating the rakes G and O by means of the segment H and rack J, with pin C attached, in combination with slotted arm or crank K, and groove *e* in platform P, when arranged and operated in the manner and for the purpose set forth.

No. 15,046.—JOSEPH SMITH.—*Improvement in Machines for Raking and Loading Hay*.—Patented June 3, 1856.

As the rakes rise to the place of discharge, the rake-teeth *v* force out a guard plate S¹, secured to arms *g g*; and when the rake has passed it, this plate springs back under the rake, and prevents the loose hay from falling on the ground behind the wagon. Below this spring guard-plate S¹ is a stationary plate S², which keeps the hay on the wagon. After the rake passes this guard S¹, it raises one arm of the trip-dog *v*²; the other arm *u*¹ being connected with the fork, brings it directly over the rake S; now the teeth of the fork, being of a V shape, gather the hay, and as the rake rises it forces the fork back by means of projecting piece *r*¹, so as to drop the hay directly on the wagon, and the next rake draws the fork back for another supply of hay.

Claim.—The spring guard-plate S operated by the rake.

No. 14,538.—D. H. THOMPSON.—*Improvement in Machines for Raking and Loading Hay*.—Patented March 25, 1856.

When the rake D¹ is thrown forward, the cams *o* will act upon the levers K, and the rake F will grasp the hay and bring it between the teeth *n* of the rake G and the front end of the body A. When the cams *o* pass the inner lever *k*, the upper end of the same lever will act upon arm *n*, and cause the teeth *m* to take hold of the hay. When a succeeding quantity is brought upward, the previous quantity will be thrown into the body A.

Claim.—The combination of levers K with rakes F and G, when operated substantially as shown, for the purpose specified.

No. 15,174.—OWEN DORSEY.—*Improvement in Reapers*.—Patented June 24, 1856.

To the outer end of the driving-shaft E there is attached a crank-pulley G having a pitman H connected to it, said pitman being attached

to an arm I at the upper end of a vertical shaft J on the frame A. The lower end of the shaft J has an arm K attached to it, said arm being pivoted to a pitman L which is attached to the cutter bar M. By this arrangement four vibrations or strokes of the sickle are obtained at every revolution of the crank-pulley G; for arm K and pitman L form a toggle which gives a double movement, or increases the movement of the sickle one half more than the usual direct connexion by a pitman attached to the sickle and crank-pulley.

The inventor says: I do not claim the raking attachment, for that was formerly patented by me.

But I *claim* driving the sickle, or communicating motion thereto, by means of the crank-pulley G, pitman H, arms I K L, and shaft J, arranged as shown, whereby four vibrations of the sickle are obtained at every revolution of the crank-pulley G.

No. 15,655.—M. G. HUBBARD.—*Improved Raking-Attachment for Reapers*.—Patented September 2, 1856.

As the pulley C is rotated, the part *c* of the rake being fitted in said pulley, the rake-bar B will be vibrated upon the upright *f*, the teeth *a* being down upon the platform A, and swept over the platform, while the inner end of part *c* is passing over the axis of pulley C, and the teeth raised and passed over to the front end of the platform and depressed, while the inner end of part *c* is passing underneath the axis of said pulley.

Claim.—The jointed rake-bar B, attached to the upright *f*, and connected with the pulley *c*, as described, for the purpose set forth.

No. 15,096.—GEORGE W. N. YOST.—*Improvement in Reaping and Mowing Machines*.—Patented June 10, 1856.

After the projection *h*¹ on the cam H makes one passage of the horizontal line through the centre of the cam, having carried the yoke J, and at the same time the cutters, to one extreme of their stroke, it revolves without touching the yoke until it acts against the other side, when the yoke, and consequently the cutters, are suddenly carried in the opposite direction. Thus, the cutters E at each end of the stroke remain for a time stationary, and, when moved, traverse the space between the fingers B, partly cutting the grain intervening, and partly pushing it towards the stationary cutters D, against which it chops it off with what may be called a shear and chop blow.

The inventor says: I do not claim giving an abrupt and intermittent reciprocating motion to the cutter-bar of grain and grass harvesters.

But I *claim* the above described operating mechanism, or its equivalent, to produce an abrupt and intermittent reciprocating motion, in combination with the inclined-edged cutters D and the straight-edged cutters E, whereby I obtain the shear and chop blow, substantially as and for the purpose above set forth.

No. 15,252.—JOHN REILY.—*Improvement in Reaping and Mowing Machines*.—Patented July 1, 1856.

The object of hinging the standards L of the raker's seat M is to keep it in an upright position and to prevent vibration, as the drag-tongue J would, if not hinged to them, press it forward, causing it to describe the arc of a circle when the cutter-bar A is raised, &c; the pivoting of the end of the brace at the axis of motion allows it to compensate for the motion of the machine, the distance of the seat to this axis being under all circumstances the same.

The manner of raising the cutter-bar A will be well understood by the engravings.

Claim.—1st. The method of raising and lowering the cutter-bar A, either from the driver's or raker's seat or from both simultaneously, by means of the rod *u* and lever *x*, in combination with the lever X, substantially as described.

2d. Hinging the driver's seat M to the drag-tongue J, when combined with a brace N, pivoted at *i*, to the axis of motion of the machine, substantially in the manner and for the purposes described.

No. 15,796.—WILLIAM P. WOOD, assignor to SAMUEL DE VAUGHAN and WILLIAM P. WOOD.—*Improvement in Reaping and Mowing Machines*.—Patented September 23, 1856.

This invention consists in the manner of combining with a main frame H, rigidly supported at its forward end by a pair of truck-wheels P to prevent the oscillation of the driver's seat and to relieve the horses' necks from the strain exerted upon them in raising the cutter-bar, a balanced frame A, for the support of the platform and cutting apparatus mounted upon two independent wheels O and B in a line with and in rear of the axis of the driving-wheel, and of equal diameter, so that when the cutter-bar is raised it will rise evenly or in a line parallel with the surface of the ground, and in connexion with the lever Q that raises the machine, it having its fulcrum upon the main frame; the finger-bar can be raised or lowered without throwing any strain upon the tongue of the machine. As the frame to which the cutter-bar is secured is not mounted upon the axis of the driving-wheel, it will be apparent that the teeth on the driving-wheel must be cut at a peculiar angle, as represented in the illustration, to operate the knives.

The inventor says: I do not claim a balance-frame supported and turning upon an axis of motion, independent of the axis of motion of the driving-wheel, of itself.

But I *claim* a balance-frame A supported and turning upon an axis of motion back of the axis of the driving-wheel, when used in connexion with angular or oval-shaped gearing, or its equivalent, and the bifurcated stanchion-brace Q, in combination with a main frame H, rigidly supported at its forward end upon a truck-carriage I or wheels, the whole being constructed, arranged, and operated in the manner substantially as described.

No. 16,251.—DANIEL C. SMITH.—*Improvement in Reaping and Mowing Machines*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The combination of rock-shaft H with hollow rock-shaft K, when the same are connected for joint operation in moving two sickles at once, by means of mechanism described, and arranged and operated, in relation to each other, from main wheel A, as set forth.

No. 16,258.—THOMAS D. BURRALL.—*Improvement in Reaping and Mowing Machines*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the cutter-bar, cutters, or guards in themselves as these are well known.

Neither do I claim bringing a notched or turned edge in contact with the lower side of the vibrating cutters, as this has been used when the stationary cutters were made in one piece of sheet metal, and said metal folded over to serve as a finger-board; but I am not aware that the finger-board has before been formed with a continuous lip or rib, at the front edge, coinciding, or nearly so, with the front edge of the vibrating cutter-bar, when free space is allowed below and behind said cutter-bar for any extraneous substance to free itself, and pass away with the grass or grain to the rear of said finger-board, as the machine advances.

I claim placing the front edge of the cutter-bar *c* on the line, or nearly so, of the front edge of the finger-board *a*, when said finger-board is formed with the raised front edge or lip *e*, leaving free space below and behind the cutter-bar for any extraneous substance to escape from beneath said cutter-bar and pass freely away to the rear with grass or grain, as specified.

No. 14,781.—PLINY THAYER.—*Improvement in Reaping Machines*.—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—In combination with the raker's stand C and the usual platform B for receiving the cut grain, the rearward inclination and extension of said platform from the line *a*, so that the raker may move his rake with the natural sweep of his arms or body, in raking the gavel from the platform, and deliver it clear of the gearing.

No. 15,044.—JACOB J. MANN and H. F. MANN.—*Improvement in Reaping Machines*.—Patented June 3, 1856.

When the grain is cut and has fallen upon the apron E, this being by means of the bar G and strip *e* brought close up to the cutter-bar,

the butts are not retarded by friction, but are carried up by the slats or cleats *c* on the apron, while the heads, which, being generally the heaviest, naturally hug the apron closest, and would, were it not for the bar H, be carried up first, are somewhat retarded by friction against said bar, upon which they fall to some extent. Thus the effect otherwise resulting from the difference of weight in the heads and butts of grain is counteracted, and it is delivered in a straight and even manner to the action of the revolving-rake J, which divides it into gavels.

Claim.—The combination of the bar or plate H, or of other equivalent device at the back of the apron, with the strip *c* beneath the apron, and the bar or plate G upon the finger-bar, under which the said strip *e*, and over which the apron extends, or with other equivalent device, substantially as and for the purpose above set forth and described.

No. 16,183.—M. G. HUBBARD.—*Improvement in Teeth for Reaping Machines*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings, in which figure 1 represents a perspective view of the tooth; figure 2 the upper side, and figure 3 the under side of the core to be used in casting the tooth; figure 4, core-box, the upper part *y* being removed.

Claim.—Forming a tooth, substantially as described, by constructing the core thereof, in the manner set forth, and for the purposes specified.

No. 14,673.—W. J. MCINTOSH.—*Improved Implement for Reaping Rice*.—Patented April 15, 1856.

The arm B terminates to a sickle-blade D, working between two guide-plates E F, the lowest one of which plates F has a sharp edge, so as to operate upon the standing rice, in combination with the blade D. The wire G answers the purpose of bending the stalk over the edge of plate E towards a horizontal position, so as to deposit the cut rice upon the cradle G¹. A slider I, provided with an arm K and spring L, is made to traverse the length of the cradle backwards and forwards in order to push the rice over the edge P on the stubble.

Claim.—The cutters D F, in combination with the wire G and the cradle and slides G I, or their equivalents, for the purposes set forth.

No. 14,540.—A. W. WASHBURN.—*Improvement in Cotton Scrapers*.—Patented March 25, 1856.

The frame rests upon the axles K L, which are combined with the wheels E E¹ and F F in such a manner that they can be secured in any desired position by means of the set screws *ll*. The peripheries of the wheels are bevelled for the purpose of adapting them to the shape of the sides of the cotton plant ridges. The cutter G is fastened to the end

of a lever C which is vibrated by means of the pins *t* and plate *m*. The forward pair of ploughs H H perform the operation of barring off the base of a ridge; the scrapers I I shave off the sides of the ridges, and the cutter G performs the operation of bunching the cotton plants.

Claim.—The bevel wheels for supporting and guiding the machine, when they are arranged in combination with the side scrapers I I, and the thinning-out cutter G, or either of them, substantially in the manner and for the purpose herein set forth.

No. 14,543.—THOMAS C. BALL, assignor to NATHANIEL LAMSON.—*Improvement in Scythe Fastening.*—Patented March 25, 1856.

The shank S is inserted between plate B and ring C upon notch *b*. The cylinder E is thus placed between S and B, (as shown in fig. 1,) and turned, thus causing the cylinder to extend its greater diameter between S and B.

Claim.—The cylinder E constructed, arranged and operating substantially as set forth.

No. 14,842.—DENISON W. GREEN, assignor to himself and ARETAS FERRY.—*Improvement in Scythe Fastening.*—Patented May 6, 1856.

When the cam-lever G is turned around, so as to project beyond the end of the snath, the shank of the scythe-blade may readily be passed through the binding stirrup E and have its stud or projection fixed in its recess in the bed D. The cam-lever is next to be turned around so as not only to carry its cam *e* against the wedge, but its long arm *f* close up to the handle or snath A. By this action of the cam against the wedge F, the stirrup will be drawn down close upon the shank *a* of the blade, and will force said shank against the bed-piece D so as to confine the blade to the snath.

Claim.—The combination of the adjustable wedge F and cam-lever G, as applied to the binding stirrup E and snath A, as arranged and made to operate therewith, substantially as specified.

No. 15,849.—DAVID ALLEN GOODNOW.—*Improvement in attaching Scythes to Snaths.*—Patented October 7, 1856.

By operating the screw D, the dog E, and the end of the shank of the scythe, which fits into a notch of dog E, can be adjusted to suit the convenience of the operator.

Claim.—The screw D and dog E, in combination with the projection C, the whole being arranged in the manner and for the purpose described.

No. 15,194.—SILAS G. RANDALL.—*Improvement in Hand Seeding-Machines.*—Patented June 24, 1856.

When the lever J is in the position shown in fig. 1 the seed-slide E is down at its lowest position, entirely filling up the sheath B; said slide

is also in that position locked, by means of its shoulder *e* passing under the guide G, it being forced there by the spring *f*. In this position the tongue and sheath may be forced into the ground by the bar A alone.

Claim.—In combination with the reciprocating motion of the seed-slide E, the locking and unlocking of it at each planting operation, so that the tongue shall be firmly held against the resistance of the earth in forcing it and the sheath therein.

No. 14,073.—JOHN S. SNYDER.—*Improvement in Seeding Machines.*—Patented January 8, 1856.

The nature of this improvement will be understood from the claims and engraving.

The inventor says: I *claim* the so arranging of the openings in the seeding-plates *h g* that the machine can be converted from a drilling to a hill-planting one, or *vice versa*, by changing the running direction of the movable plate, as herein set forth. (See arrows 1 and 2.)

2d. I do not claim a secondary box or receptacle for the excess of grain; but I *claim* as an improvement upon the machine of Snyder & Young, patented 28th February, 1854, viz: the arrangement of the convex seeding-plate *h*, segmental opening L, and seed receptacle or drawer M, for admitting of the location of said drawer outside of the hopper and in more convenient position for the attendant, as set forth.

No. 14,284.—STEPHEN GORSUCH.—*Improvement in Seeding Machines.*—Patented February 19, 1856.

By employing the screens I J the operator is enabled to see the seed as it passes down; and if the spout becomes choked, it will be detected at once.

The inventor says: I do not claim the distributing device, for the same plan is well known and in common use; but what I do *claim*, is placing the screws I J in the conveying tube or spout G, the front and back sides of the tube or spout being open, substantially as described for the purpose specified.

No. 14,450.—JOHN GERMAN and C. B. HOYT.—*Improvement in Seeding Machines.*—Patented March 18, 1856.

The nature of this invention will be understood from the claim and engravings.

We do not claim the reciprocating slide D, nor operating said slide by an elbow lever and pins attached to the wheels B; but we *claim* having the elbow lever G upon a screw rod H, so that said lever may be moved in and out of line with a portion or all the pins *a* on the wheel B, for the purpose of causing the slide D to be operated faster or slower, or to remain stationary, as described.

No. 14,703.—THOMAS A. RISHER, assignor to Himself and I. K. COOPER.—*Improvement in Seeding Machines*.—Patented April 15, 1856.

By operating the right and left screw D the plates $a a^1$ are either drawn towards each other, or the spaces between the plates a and a^1 are increased. The reciprocating slides H are provided with apertures n , through which the seed is discharged; g are apertures in the bottom F of the hopper, through which the seed passes to the slides.

Claim.—Bars A A^1 and plates $a a^1$, in combination with the reciprocating slides H, and the double-holed bottom F; the whole being constructed in the manner and for the purpose described.

No. 14,707.—GEORGE I. BITLER.—*Improvement in Seeding Machines*.—Patented April 22, 1856.

The pulley K may be fitted more or less eccentrically on the shaft F, so as to give a greater or less length of stroke to the slide H. The discharge of seed is regulated by adjusting the slide H by means of arm J and notches g . The adjusting plate I serves to bring the apertures d in proper relative position with the apertures $c b$.

The inventor says: I do not claim a perforated reciprocating slide H, for it has been previously used; but I *claim* the reciprocating slide H, having different sized holes c made through it, in combination with the adjustable bottom G^1 and adjustable plate I; said slide H being also arranged in combination with and operated by the pulley K, substantially as shown, for the purpose specified.

No. 14,894.—HOSEA WILLARD.—*Improvement in Seed Machines*.—Patented May 13, 1856.

The seed to be sown is placed within the frames or screens J J, and as the implement is drawn along, the screens will rotate; the seed will pass through the screens or sieves e , and will fall upon the inclined board or plate K, and thence upon the ground. The teeth on the cylinders G harrow the seed into the soil; and as these cylinders rotate in a reverse direction to the wheels B, their motion may be quite slow compared with that which would be required provided they rotated in the same direction as the wheels B.

Claim.—The rotating cylindrical frames or screens J J, in combination with the inclined board or plate K, with pivoted cleats K^1 attached for the purpose of distributing the seed, and the cylinders or rollers G G, having teeth c or shares d attached to their peripheries.

No. 15,104.—C. O. LUCE.—*Improvement in Seeding Machines*.—Patented June 10, 1856.

As the machine is drawn along, a reciprocating motion is given to the slides or valves N N, O O. When the apertures h in the upper

sides are in line with the tubes L L, the seed will pass through the apertures in the upper slides and down upon the lower slides O O, the apertures i of which, are out of line with the tube L L; and when the apertures h in the upper slides are thrown out of line with the tubes L L, the apertures i in the lower slides are brought into line with them, and the seed passes through the apertures i into the spaces formed by the plates e in the wheels I I, and is thrown from them by centrifugal force.

The inventor says: I do not claim separately the distributing wheels I I, for they have been previously used.

But I *claim* the distributing wheels I I, in combination with the slides or valves N N, O O, arranged and operating as shown, for the purpose specified.

No. 16,219.—MOSES D. WELLS.—*Improvement in Seeding Machines*.—Patented December 9, 1856.

The reciprocation of rod D produces the vibration of agitators B sufficient to produce the discharge without the risk of the moving parts being choked by seed. As the seed leaves the discharge opening it falls upon the scatterer E, and thence drops to the ground.

The inventor says: I make no claim to the use of reciprocating bars for causing the movement of either rigid or elastic clearers and discharge apertures of seed planters.

But I *claim* the combination of the case with the swinging protruding agitators thereof, and the reciprocating bar contained within the case and actuating the vibrating agitators, substantially as and for the purposes set forth.

No. 16,209.—JAMES M. KERN.—*Improvement in Seeding Machines*.—Patented December 9, 1856.

For sowing coarse and fine seed, or seed and fertilizers, at the same time, the centre-board E is secured by means of key-slide F in the position drawn in full lines. The compartments B and C being respectively filled with fine and coarse seed, motion is imparted to the agitators d and n by vibrating lever L, and the fine seed will pass through the passages m , and the coarse seed through the passages h . If it is desired to sow fine or coarse seed only, then the slide F is withdrawn, and the centre-board E turned to one or the other side, as represented in dotted lines.

Claim.—Combining with a seed-box provided with a double set of passages, substantially as described, a hinged centre-board, for the purpose of sowing both small and coarse grain separately, or both at the same time, or grain and fertilizers, as set forth.

No. 16,195.—ANSON THOMPSON.—*Improvement in Implements for Rolling Seeds in the Earth*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim separately either a jointed roller-frame, or two sets of rollers with the one set in advance of the other, and the rear set following in the spaces untrodden by the forward set; neither do I claim a roller made up of a series of wheels, arranged parallel to each other, at a suitable distance apart, and hung so as to rotate separately of each other; but I *claim* the combination with the two series of separately revolving wheels or narrow rollers *b b*, arranged (the several rollers and each series) relatively to each other, as specified, and of the frames *A A* constructed of slats *c*, arranged as described, for operation, in connexion with the wheels, as set forth.

No. 14,570.—THOMAS E. MARABLE.—*Improved Machine for Gathering Seeds or Grain in the Field*.—Patented April 1, 1856.

A represents a receptacle for receiving the seeds to be gathered. The projections *a a* on shaft *E* acting upon lever *F* impart to the rubber *H* a transverse rubbing motion over the stationary board *I*, while the cams *e e e e* on the axle *J*, together with levers *f f*, cause said rubber to rise and fall. The rubbing board *I* consists of a series of slats *h*, through which the seeds pass when rubbed out, and, falling upon an inclined board *K*, are directed into the receiving box *A*.

As it is necessary for the reel to deliver the heads at the exact time that the board *H* is raised, it should be geared to the driving axle *J*.

Claim.—In combination with a gatherer for drawing in the heads, the rubbing board having a vertical movement for receiving the heads under it, and then dropping down and having a transverse rubbing motion for rubbing out the seeds or grain, as herein described.

No. 14,517.—CYRUS ROBERTS and JOHN COX.—*Improvement in Grain Separators*.—Patented March 25, 1856.

A represents the frame which supports the threshing cylinder *B*, the winnowing apparatus *C*, and a conveyor and separator between *B* and *C*. The conveyor is suspended by the two radius bars *L*, and receives motion by means of rod *D* and crank *E* on shaft *E*¹. The connexion of the bars *L* with the crank *E* is such as to cause the bars to rise during the forward motion of the conveyor. The fingers *f* are secured to a head *g*, which turns on journals confined in boxes on each side of the bottom. One end of the head of each set of fingers has an arm *N*, which is connected with an adjustable guide *O O*¹ secured to the frame. The motions caused by this arrangement, together with the divergency of the bars, will agitate the straw thoroughly, so as to leave but little, if any, loose grain in it. The winnower *C* is provided with an adjustable tail-spout *P* for the purpose of catching the unthreshed heads and delivering them into a receiver at the side of the machine.

Claim.—1st. The method of facilitating the separation of the grain from the straw by means of diverging bars *I*, substantially as herein described.

2d. Constructing the rear portion of conveyor with a solid ridged

bottom, in such manner as to form a series of diverging channels *K* to spread the grain preparatory to delivering it to the winnower *C*, as herein set forth.

3d. The employment of shaking fingers *f*, arranged and operating in such manner that they will rise on the forward movement of the conveyor, and thus lift and shake the straw as it is thrown forward, in combination with the carrying bars, whereby certain advantages are attained, as herein set forth.

4th. The arrangement of shaking fingers *h* in recess *M* in the bottom of the conveyor, in such manner that they can be alternately protruded above and retracted below the carrying bars, to shake the straw thoroughly, and at the same time not interfere with its conveyance, as herein described.

5th. The adjustable turning tail-spout *P*, arranged substantially in the manner and for the purposes herein set forth.

No. 15,948.—J. V. JENKINS.—*Improvement in Machines for Shearing Sheep*.—Patented October 21, 1856.

As the shaft *G* is rotated, rotary motion will be communicated to the shaft *e*, by means of the compensating shaft composed of shaft *F* and tube *E*, and by means of the universal joints *g* and *h*. The cam *d* on shaft *e* will cause the plate *D* to vibrate, and the teeth *f*, as they pass over the fingers *a*, cut the article which passes between them. The tool is moved along by hand by means of the handle *J*, and may be moved in either direction. The socket *B* protects the hand from the lower universal joint *g*.

Claim.—Operating the lever or plate *D*, by means of the eccentric *d* upon the shaft *e*, said shaft being connected by a universal joint *g* to the compensating shaft formed of the tube *E* and rod *F*, the rod being connected to the driving shaft *G* by a universal joint *h*, as shown and described.

No. 14,354.—LUTHER B. FISHER.—*Improvement in Machines for Shearing Sheep*.—Patented March 4, 1856.

The nature of this improvement consists in a series of bars or braces *f, g, h, i, &c.*, so combined with a spring which comes within the grasp of the hand as to increase the motion, doing away with the necessity of complex gearing.

The inventor says: I am aware a sheep-shearing machine has been devised, in which a combination of racks, pinions, pawls, spur-wheels, &c., are used for vibrating the cutters. I do not, therefore, lay any claim to such a machine; but I *claim* so constructing the shears that the mere clasping of the hand, or operating of the fingers, in which the shears are held and controlled, shall produce a multiplied motion of the cutters; and this I claim, whether said multiplied motion be produced through the jointed levers herein described, or their equivalents.

No. 14,840.—ROBERT M. WILDER.—*Improvement in Sheep-Shears.*—Patented May 6, 1856.

By moving the handle A in the same manner as the ordinary spring-handle shears, the machinery is set in motion, giving a circular motion to cutter G.

The inventor says: I do not claim operating the shears by the grasp of the hand, as this has been done; but I *claim* the rotary cutter, in combination with the spring-handle A, coupling-rods B, levers C, spring-pawls D, spur-wheel F, and wheels connecting spur-wheel with cutter wheel, or equivalents thereof, arranged and operating substantially as and for the purposes set forth.

No. 16,264.—WM. W. BRYAN.—*Improved mode of securing Braces in the Snath of a Grain-Cradle.*—Patented December 23, 1856.

The braces of the fingers where they pass through the snath, are secured in said snath by means of the wedge-formed pins C, as represented in the engraving.

Claim.—I do not claim the form or construction of the bolt, separately considered.

I claim the application of a wedge-formed bolt or pin, in the manner and for the purpose set forth and described.

No. 14,629.—JESSE LINCOLN.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented April 8, 1856.

The teeth *i i*, on the hub of one of the wheels, and the spring *n*, in combination with the rod J and arm I, give the roller H a rocking motion, that causes the slots *c c* to enter the hopper G, to receive and discharge the grain.

The slide L serves to regulate the size of the openings in the bottom of the hopper.

Claim.—In combination with the hopper G the seeding roller H, provided with open cells *c* passing through it, and rocked through the hopper to receive and discharge the grain broadcast, substantially in the manner described.

No. 14,274.—EDWARD F. BERRY.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The perforated sowing cylinder C, and the secondary internal perforated distributing cylinder I², connected with the hopper G at its centre by the tubes I I, with its central portion or tube enlarged, so as to distribute the seed evenly to the whole length of the lower portion of the sowing cylinder, in order that the seed may be cast or sown evenly broadcast over the soil, essentially in the manner and for the purpose fully set forth.

No. 14,630.—PETER LAWRENSON.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented April 8, 1856.

As the carriage is drawn forward, the feed-screw brush-wheel G revolves, and the screw L feeds out the seed from the hopper A through the opening D into the fan case C, where it is operated upon by the brush wheel and discharged by the blast of the fan E through the opening F. The vanes H prevent the seed from being scattered to too great an extent.

Claim.—The employment of a fan blower in connexion with a brush wheel, and in proper relation to the discharge of a seed hopper, substantially as and for the purpose set forth.

No. 14,837.—ENOS SRIMSON.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented May 6, 1856.

As the machine is drawn along, the hollow arm or tube F will be rotated by means of the gearing as shown, and the grain in the hopper A will pass down through the tube *d* into the hollow tube F, and will be thrown out by centrifugal force. The valves L are kept closed by springs *e*¹, while the ends of the arms are passing round one half of its revolution at the front of the machine; but as they perform the other half revolution, the friction rollers *h* pass into the recess *i* in plate M, which recess acts like a cam, and the valves are thereby opened and the seed thrown out.

Claim.—The rotating horizontal arm or tube F, provided with valves L at its ends, and used in connexion with the adjustable board or plate M provided with the semi-circular recess *i*; the above parts being constructed, arranged, and operating substantially as shown, for the purpose specified.

No. 16,322.—E. K. HAYNES, assignor to A. M. MOORE, and N. H. and E. K. HAYNES.—*Improvement in Machines for Sowing Seed Broadcast.*—Patented December 23, 1856.

As the machine is drawn along, the shaft B is caused to revolve, and the upper end of it agitates the seed in hopper G, which then drops through the passages *a* down on the scattering wheel A, which also revolves with shaft B, and the grain is scattered by the action of the fan-wings *i* and the oblique directing boards *n*.

Claim.—The scattering-wheel, armed with air-agitating wings, when located between obliquely arranged parallel directing boards *n n*, for the purpose substantially as set forth.

No. 16,007.—ORMROD C. EVANS.—*Improvement in Spading Machines.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of a series of forks or spade blades *m* with

an endless chain L, and with a drum I and rollers K, arranged in such an order upon a carriage, that, by the progressive onward motion of the machine, the said spades or forks will first be forced by a direct or nearly direct thrust into the ground, and afterwards, in the act of being lifted by the chain out of the ground, shall be made to turn at such short angle with the surface as will cause the breaking and upheaval of the ground, substantially as described.

No. 15,171.—WILLIAM CROASDALE.—*Improvement in Lime and Guano Spreaders*.—Patented June 24, 1856.

There are notches *k* in the circular ends of the cylinder B into which the movable strips S are forced by rubbers M, so that the part of the cylinder B which is brought in contact with the hopper (not shown in the engraving) may have its movable strips so depressed as to form a cavity of any required depth, and thus admit the proper quantity of the material to be spread. When the cylinder B is turned, the movable strips S are freed from the pressure of the rubbers M, and forced out again by the springs G.

Claim.—The combination of the cylinder B, composed in part of the movable strips S, with the rubbers M.

No. 15,320.—WARREN S. BARTLE and EBENEZER VAUGHAN.—*Straw Cutter*.—Patented July 15, 1856.

By the combination of the knife E, lever F, main pitman H, and secondary pitman L, when the fly-wheel is made to revolve in a direction opposite to the operator, the knife performs a downward drawing stroke, variable in obliquity and draught; being most oblique and of greatest rapidity of draught at the points in the stroke where the resistance of the straw is greatest, which stroke is the most effective that can be obtained for cutting straw.

Claim.—I claim the mode of operating the knife by means of the lever F and secondary pitman L, in combination with the knife and main pitman H, by which a variable downward drawing stroke is effected.

No. 15,342.—OREN MOSES.—*Straw Cutter*.—Patented July 15, 1856.

The nature of this invention can be understood by reference to the claim and illustration. The wheel K can be adjusted on shaft *f* by means of set screws *l* working in circular slots.

Claim.—Constructing the auxiliary cylinder *h* of an iron skeleton, combined with fillings *g g* of wood, horn, or other suitable material, when the shaft *f* of said cylinder is secured to its driving pinion K in such a manner that the relative position of the cutting cylinder *b* and auxiliary cylinder *h* can be so adjusted as to cause the edges of the knives *d d* in the former to act equally and uniformly upon every portion of the face of each of the fillings in the latter cylinder, for the purpose of preventing the formation of deep channels in said fillings, substantially as herein set forth.

No. 15,333.—COTTON FOSS.—*Straw Cutter*.—Patented July 15, 1856.

The nature of this invention consists in attaching to the handle V of a cutting blade W an arm *d*, in which a friction roller *e* is secured; the said roller is made to travel up and down an inclined track *f*, which is secured to the front of the machine, by which means a drawing cut is given to the blade, and the operation of cutting the feed performed with less labor, the serrated blade *c* serving to hold the feed during the process of cutting.

Claim.—The stationary arm *d*, friction roller *e*, and inclined track *f*.

No. 14,116.—SAMUEL T. SHARP.—*Improvement in Straw Cutters*.—Patented January 15, 1856.

The knife A, and the slotted guard B, through which it is to work, are fastened to the same pivot C; they are made to revolve towards each other by means of straps F F and G G, which pass over pulleys H K and I J, and connect the knife and guard to a lever L fastened to rock-shaft P: U is the feed trough.

Claim.—The arranging a circular knife and a circular guard upon a common pivot, so that they will revolve one towards the other until they meet, each travelling the same distance, or the arranging two knives (circular) upon a common pivot, so that they will revolve towards each other until they meet.

No. 14,410.—EDWIN P. RUSSEL.—*Improvement in Straw Cutters*.—Patented March 11, 1856.

In the operation of the box A, by means of the cams C¹ and friction rollers *h*, the box is elevated, while the movable bottom sinks to allow the lower knife to cut; and when the cut is made and the box falls down, the bottom comes up flush with the knife, and thus aids in feeding the straw to the knives.

Claim.—1st. The wheels C, with the rim and cams C¹ on the inside of the rim, in combination with friction rollers *h*, for raising the box, with the knife *b* attached, and causing it to pass the edge of the stationary knife, which is placed in such a position as to give them the shear cut, as set forth.

2d. Setting the box at an angle of about forty-five degrees, and hung on a hinge or pivot, with a joint or hinge *d*¹ in the bottom, for feeding the straw to the knives, and for allowing the knife *b* to cut, as set forth.

No. 15,108.—THOMAS WILES.—*Improvement in Straw Cutters*.—Patented June 10, 1856.

As the projection *p* of the cutter K passes to the right of bar *b*, bottom B falls into position shown in dotted lines, and discharges the cut straw. Raising lever *l*, and carrying knife K back, causes projection

p to bring bottom B into a horizontal position to receive the end of the straw, which falls through trunk A.

Claim.—The feed and discharge bottom B, in combination with the reciprocating knife projection *p*.

No. 15,485.—J. H. GOOCH.—*Improvement in Straw Cutters.*—Patented August 5, 1856.

The knives D are secured to the knife-heads C, which turn loosely on the stationary shaft B; the bracket-shaped support F projects horizontally from the shaft B to such a distance as to nearly touch the rear end of the bottom of the feed-trough A, and the knives D pass freely through the space left between the trough A and the bracket F, and, as the latter serves to support the ends of the straw, the knives will effect a clean and sure cut.

Claim.—Providing a support F on the axle B, and having the axle stationary and the knife revolve on the same, substantially as and for the purposes set forth.

No. 15,674.—SHELTON M. THOMPSON.—*Improvement in Straw Cutters.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I am aware that the moving knives of straw cutters have been held up to the fixed knives thereof by means of springs, set-screws, and other devices. I therefore make no claim to an adjustable or a yielding knife.

But I *claim* the arrangement of the fixed knife B, the shaft A, and spring F, as described, whereby the revolving cutters are held as rigidly parallel to the fixed cutter as if they were unyielding, and are as free to yield for the passage of obstacles as those cutters which yield independently of the arms and shafts by which they are carried.

No. 15,761.—ALEXANDER GORDON.—*Improvement in Feed-Rolls of Straw Cutters.*—Patented September 23, 1856.

This feed-roller consists of the fluted-roller B, which plays loosely on the shaft S, and is rotated by said shaft by means of projection *a* passing through a slot in the body of the feed-roller. The roller exerts a sufficient pressure on the straw by its own weight, while any variation in the thickness of the layer of the straw is provided for by the play which the roller has on shaft S.

Claim.—The construction and arrangement of the feed-roller B and shaft *s*, in the manner substantially as described, whereby the advantages set forth are secured.

No. 15,349.—GEORGE W. SWIFT.—*Improvement in Machines for Threshing and Cleaning Grain in the Field.*—Patented July 15, 1856.

The machine is confined to the ground by a pin through the piece *f*, and the team attached at right-angles to the pole A, the horses turning the machine about the securing stake, and causing wheel B to move forward and wheel C to rotate rearward. Motion is transmitted from driving-wheel C to pinion H, and from pinion H to pulley J, accelerating the latter according to the relative diameters. The driving-wheel B, turning in a reversed direction to driving-wheel C, transmits motion to pinion I, the latter meshing also with pinion H; and a double accelerating motion is thus imparted to the pulley L, which communicates motion to the threshing shaft N, and by means of the belts *d* and *b* to the fan R, and straw-carriers P and Q. The grain is fed by openings T, and, after cleaning, falls into the box U, whence it is discharged through the outlet covered by slide *e*.

Claim.—The pinions and pulleys, in combination with the travelling wheels; the double axles and the pivoting attachment *w f* for giving the driving pulley L an accelerated rotation from the rotation of the travelling wheels, either by the forward motion of the machine, or by a circular motion about its attachment.

No. 15,116.—ALFRED BELCHAMBERS.—*Improvement in Machines for Threshing and Winnowing Grain.*—Patented June 17, 1856.

The grain passes through the apron C and falls upon the chaff-screen J and then upon the wheat screen K, the blast from the fan G¹ blowing the chaff out. The grain passes through the screen K, and falls upon the screen L, and from thence into the spout M, and passes into the elevator. The tailings, heads, &c., pass off the outer end of the screen K and fall upon the screen R, and pass between the corrugated plates U V, the plate V, in consequence of the shake motion of the shoe I, working back and forth, and causing said plate to thresh or loosen the grain from the heads.

Claim.—The plates or rubbers U V, placed in the shoe I, when the upper plate or rubber V is hung upon a shaft *m*, so that it may vibrate laterally by the shake motion of the shoe.

No. 15,786.—ISAAC S. SPENCER.—*Improved Grain Threshing Machine.*—Patented September 23, 1856.

The grain to be threshed is placed transversely on the apron B, and is fed by said apron between the cylinders F and G, and passes from between said cylinders down between the cylinders G and H, and the straw is discharged off the end of the apron D, the grain being threshed from the straw in a perfect manner, and without breaking the straw, as the ribs pass over each other similar to a pair of shears and detach the grain from the straw.

Claim.—I do not confine myself to any precise angle of the ribs or

flanches *c*, nor to the precise form, as they may be either curved or straight.

I *claim* the cylinders F G H, provided with ribs or flanches *c* placed obliquely or angularly with their axes, substantially as described, for the purpose specified.

No. 15,917.—JOHN BARNES.—*Improvement in Grain-Threshing and Separating Machines*.—Patented October 21, 1856.

The grain is fed into the hopper *a* and passes under the threshing cylinder B, by which it is forced into the reticulated bolt C, which is slightly inclined, as represented in the engraving. The grain, as it enters the revolving bolt C, is brought in contact with a blast issuing from a branch *d* of a fan D, which blast strikes the grain and straw on the other side of the mouth of the bolt and prevents it from being carried under the cope *e*, said blast urging the passage of the straw down the bolt and separating the grain from the straw.

The inventor says: I do not claim as new a threshing cylinder B and revolving screen C, in transverse relationship to each other, when the said cylinder occupies a central position across the mouth of the screen, as such has been used; neither do I claim the introduction of a blast into the mouth of the screen to assist the separation, and urge the straw down through the screen, irrespective of the lateral and relative arrangement of the blast described.

But I *claim* the arrangement in its transverse relationship to the screen C, and across the mouth thereof, of the threshing cylinder B, on the falling side of the screen, when in motion, or mainly on said side, in combination with the introduction of the blast (by branch *d*) on the rising side of said screen, and between said side and the inner end of the cylinder's throw or action, for the better clearance of the grain from under the cope, and the more easy and effectual separation of the grain as it rises and falls, and is kept free and loose by the lift of the screen, as described.

No. 14,444.—HIRAM CLARK.—*Improvement in Threshing Machines*.—Patented March 18, 1856.

A A is a frame, with feed-rollers B B and C C and endless aprons D D. F¹ and H are pieces composed of a series of elevations and depressions, which fit into each other. The depressions of F contain openings to allow the grain to fall through. The piece E is attached to the slides I I, which receive motion from the crank-shaft J through the connecting-rods K K, the shaft J and the rolls B and C receiving motion from the driving shaft O by means of gear P R S V and T.

The inventor says: I do not claim the precise form of any of the parts, nor the use of feed-rolls and aprons in threshing machines, as I am aware such have been used; but what I *claim* is, the use of the pieces H and F for separating the grain by an action similar to that of a flail, in connexion with the rolls and aprons, or similar device, when constructed and operating in the manner and for the purposes as above set forth and described.

No. 15,074.—WILLIAM HOLMES.—*Improvement in Threshing Machines*.—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use of a series of cams H, constructed and arranged as described, for the purpose of operating beating levers D by revolving in the curves I I, or their equivalent, and striking both the arms of each of the levers D in rapid succession, giving to the downward motion of the longer arm or beater a quick whipping stroke, the whole arranged and operating substantially as described.

No. 14,462.—EBENEZER MATHERS.—*Improved Machine for Felling Trees*.—Patented March 18, 1856.

The nature of this invention will be fully understood from the claim and engraving.

Claim.—The method of straining the saw by means of the curved elastic arms C C and the adjustable bar D, as above.

No. 14,654.—ABEL H. GRENNELL.—*Improvement in Mode of Protecting Vines*.—Patented April 15, 1856.

Fig. 1 represents a perspective view, with the lattice frames extended, and fig. 2 a perspective view of the grapery as closed.

Claim.—The so constructing the lattice frames A A, B B, C C, D D, that they may be swung, with the vines upon them, into a compact form, and be protected by closing around them the double doors G and H, to protect the vines from the weather.

No. 14,865.—HORACE N. GOODRICH.—*Improvement in Winnowing Mills*.—Patented May 13, 1856.

The inventor says: My invention relates to that part of the machine above D, which in an ordinary fanning mill would be the top or outside case, and I lay no claim to the arrangement of parts below the point or line of the screen or screen-board D, as the case may be. The screens, of course, are to be graduated for their special purpose, and the grains or grooves into which they slide should be such as to admit of their ready removal and replacement.

Claim.—The arrangement of the screens A, B, C, D, above the ordinary screens and shoes of a common fanning mill, and furnishing a regulated blast to said series of screens, either from the main fan-wheel or an auxiliary wheel near thereto, for the purpose of comprising within one machine or frame the facilities for cleaning all kinds of grain or seeds, and separating them from each other and from the impurities mixed with them.

No. 15,444.—MIRON SMITH.—*Improvement in Ox Yokes*.—Patented July 29, 1856.

The operation of this improvement is as follows: The block *g* is adjusted so as to give the pin *p* a position over or on either side of the central line, as may be desired. By placing the pin on one side of the centre, the arm of the lever with which the ox on that side acts will be increased, and the arm of the lever on the other side correspondingly diminished. Then, as the slides *J* move in the slots *d*, this relation between the arms of lever is maintained for every position of the bow slides.

The inventor says: I do not claim the devices for the simultaneous movement of the bow-slides, as such are not new; but I *claim* the adjustable fulcrum block *g*, in combination with the bow-slides *J J*, as and for the purposes set forth.

II.—METALLURGY.

No. 15,037.—JAMES W. EVANS.—*Improved Amalgamator*.—Patented June 3, 1856.

The connecting rod *K* is attached to the head of the rake-bar *H* at one end, and at the other end to a fixed point, in order to hold the head of the rake bar in a fixed position while its axis *G* and lower end is being moved, as the body of the rocker *B* is vibrated by means of connecting rod *L*.

Claim.—The use of the rake *J*, in combination with the rocker *B*, whereby a compound agitating motion is obtained.

No. 15,619.—ALVA M. STETSON.—*Improved Amalgamator*.—Patented August 26, 1856.

The auriferous dirt mixed with water flows from the trough into the upper box, the spaces between the tubes *b* being covered with quicksilver. The boxes are so arranged that, as the water flows through the tubes *b*, it will fall on the spaces between the tubes in the succeeding box. The motion of the water falling on the quicksilver causes the latter to amalgamate with the gold in the dirt, the latter being carried off through the tubes *b*. The same operation goes on in each box successively until the dirt passes through the lower box *g*, which is inclined, leaving the gold on the bottom of said box.

Claim.—The employment of the boxes *a a a*, placed in vertical succession, when said boxes are fitted with tubes or pipes *b b b*, as described, for containing the quicksilver and distributing the water, as set forth.

No. 14,023.—DANIEL LEIBEE.—*Improved Gold Amalgamator*.—Patented January 1, 1856.

The pans *b* and *f* being filled to the brim with quicksilver, the main shaft *a* is rotated; and the gates of the reservoir being opened, the pulverized and watered mass is allowed to descend into the hopper *j*, and thence through the pipe *k* into the top pan *h*. The stationary scrapers *h* and *i* serve to shove off and discharge the metallic debris into the trough *f*. As the pan *b* becomes charged with amalgam, a portion of its metallic contents will overflow into the pan *f* along with the debris removed by the scrapers, and the debris from this are again scraped into the trough *l*, and, being stirred by the agitators *m*, the metallic substances precipitate to the bottom, while the sand or water escape over the edge.

Claim.—I *claim* as new, and of my invention, the use of the reservoir and spout in connexion with the revolving pan and scrapers operating with the stationary trough and agitators, constructed and arranged in the manner and for the purpose as set forth.

No. 15,524.—WARREN S. PIERCE.—*Improved Gold Washer and Amalgamator*.—Patented August 12, 1856.

Quicksilver is placed between the ledges *a* and the top of the furnace *B*, and as the quicksilver thus becomes heated it is better adapted to form an amalgam; the fine particles of gold that escape over the ledges *a* pass through the screen *C*, and are arrested by the sponge *E* enclosed between the screens *D*. As the sides of the case *A* taper, the stream of water passing through it is retarded in its velocity as it approaches the discharging end, so that the fine gold will have an opportunity to pass through the screen *C*, and not be carried over it.

Claim.—Constructing the washer or separator substantially as described, viz: having the furnace *B* placed within the case *A*, which has oblique or taper sides, the ledges or plates *a* placed on the top plate of the furnace, and the screen *C* and the sponge *E*, which is fitted between the screens *D*, placed in the case *A*, the whole being arranged as shown, for the purpose specified.

No. 15,147.—N. C. SANFORD.—*Improvement in Auger Handles*.—Patented June 17, 1856.

By turning the screw *C*, the plate *D* will be brought snugly up against the under side of the handle, which will, in consequence, be firmly secured in the eye.

Claim.—Fastening the stick or handle in the eye of the auger shank by means of the screw *C* passing through the eye *B*, handle *E*, and into a recess *a* in the shank, in combination with the clamp or screw-plate *D* on the underside of the stick within the eye, and operated by the screw.

No. 14,561.—GEORGE G. GRISWOLD.—*Improved Method of Manufacturing Augers.*—Patented April 1, 1856.

The plate *a* is about one-quarter thicker at the shank B and flat, while the remainder of the plate is formed in a convex shape. A plate of this form will be much stiffer when twisted.

Claim.—The form of the plate required for making the twist to the auger or bit.

No. 15,656.—WARREN HUNT.—*Improved Machine for Testing Axes.*—Patented September 2, 1856.

The axe to be tested is slipped up upon bar C, towards the standard B, until it fits tight. The gauge-plate E is then allowed to descend upon the edge of the axe D, when, by placing the eye over slot *f*, the smallest variation from truth may be detected.

Claim.—The described method for testing the trueness of axes, consisting essentially of the bar *c* and slotted gauge-plate E, operating in the manner substantially as set forth.

No. 15,880.—DAVID B. ESTEP.—*Improvement in Making Axe Poles.*—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The manufacture of axe poles by compressing one half only of the axe pole at each operation between dies or swages of the shape described, projecting from the face of the rolls in which they are set, so that the axe pole can be inserted and withdrawn without coming in contact with the rolls, in combination with the use of the adjustable guide *g*, either attached to the dies or separate therefrom, for the purpose of applying the pressure necessary to form the axe pole, in such a manner as to leave any excess or deficiency of iron in the head of the axe pole, thus securing exact uniformity in the two sides of the axe pole, and enabling axes of various size to be made from the same dies by simply adjusting the distance of the rolls and the gauge, substantially as described.

No. 14,704.—BENJAMIN JAMES, assignor to ROSWELL E. JAMES.—*Improved Awl Haft.*—Patented April 15, 1856.

The chamber D within the instrument is intended to hold awls or other tools of different sizes. By means of the hammer head I, the tool may be used for making a hole for the insertion of a peg or nail, as it is calculated that the whole of the shaft will be constructed of metal.

The inventor says: I do not claim making an awl haft with a chamber within it for the reception and holding of awls or other tools; but I *claim* my improved mode of constructing an awl haft, viz: of two levers A B, crossing one another, turning on a common fulcrum C, and

provided not only with jaws *a b*, like a pair of pincers, but with a chamber D, in one or both of the handle arms of said levers.

I also *claim* joining the rear end or part of one of the levers with an extension S, and so as to lap over the end of the other lever and receive an entire hammer head I upon it.

No. 14,695.—JAMES McLELLAN.—*Improvement in Repairing Railroad Bars.*—Patented April 15, 1856.

The rail being fitted in the groove *a* of the cooler, has only its upper flanch, and the bar or piece of metal to be welded to it, exposed to the action of the fire, the lower flanch and this centre of the rail being protected by the cooler D.

The inventor says: I do not confine myself to any precise form of cooler or groove therein, for it is obvious that the cooler and groove must be varied according to the nature of the work to be done; but I *claim* placing the rail or bar H to be heated, within a cooler D, which is fitted within the furnace A, and supplied with water from a reservoir E, at the outer side of the furnace, the cooler being so formed or arranged as to encompass or be in contact with the parts of the rail or bar not designed to be heated, substantially as described for the purpose specified.

No. 15,687.—JOSEPH D. CAWOOD.—*Improvement in Repairing Railroad Bars.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the anvil bar or its recesses; but I *claim* the movable press block D, having its edge formed to the side of the rail G, in combination with another block D, with its edge of a similar but reversed form, the movable block to be operated by two cams, or in any other convenient manner, for the purpose of pressing between them a T or otherwise shaped rail, thereby facilitating the difficult operation of welding or renewing the ends of such rails after they have been damaged, in the manner described and for the purpose set forth.

No. 14,876.—HORACE LETTINGTON.—*Improvement in Fastening Bits.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The rod or arbor D passing transversely through the stock or bit A and a portion of the socket B. The rod or arbor having a notch *d* in one side, and the shank *b* of the bit C also having a notch *e* in one side, and the rod having a bolt E pressing against it.

No. 15,500.—LINUS YALE.—*Improved Bolt for Vault and Safe Doors.*—Patented August 5, 1856.

The door A and jamb B are provided with an offset or rebate a^1 and b^1 , which match and close flat against each other; across the shoulder joint are angular hooks c^1 attached to a bolt-bar C. The bolt d^1 of the lock D shoots into a notch of the bolt-bar C and holds it from a downward or end movement, which is necessary to allow the door to open, as the hooks c cannot be drawn straight out of the holes e^1 in the jamb B, but must have a downward and outward motion, to be freed from their hold upon the jamb. This motion is given by the motion of the door upon its hinges, the closing motion raising the bar, and the opening or outward motion depressing the same.

Claim.—An arrangement of bolts or bars, which are self-acting, in the manner or an equivalent manner to that described, and for the purposes set forth.

No. 15,729.—EBENEZER COLEMAN and PHILEMON COLEMAN.—*Improvement in Heading Bolt.*—Patented September 16, 1856.

The blanks to be headed are placed between the jaws F, and motion being given the shaft B, the cam b is depressed by means of the lever N, and the projection a on shaft B, will strike against the pitman b , and the slide D will be shoved forward, the die E partially forming the head on the blank; the jaws F are closed so that the dies E will grasp the blank while the head is being formed by bars a^1 attached to the slide D. The slide D and die E are drawn back in consequence of the projection n on shaft B striking against the arms o , and the lever L is also drawn back, being connected with the slide D, the jaws F being expanded by a spring a^2 , and the incline K actuates the pawl l ; and the treadle I being depressed by the foot of the attendant, the rollers h grasp the blank which is rotated between the jaws in consequence of the pawl l rotating the ratchet roller i , the rollers bearing against the blank. The blank is rotated a quarter of a revolution, and the operation of heading, as described, is repeated until the head is formed.

Claim.—The levers H H, with rollers h h attached to them, and the ratchet roller i attached to the pendant plate G; the above parts being arranged and operated as shown, for the purpose specified.

Further, the heading die E and jaws F F, provided with dies e e , when arranged as shown, so as to operate conjointly with the rollers h h and i , for the purpose set forth.

No. 14,258.—TIMOTHY F. TAFT.—*Improved Bolt Machine.*—Patented February 12, 1856.

The iron employed is of the size of the shank of the finished bolt, a portion of the metal being upset to form the head; the bolt-holder P being thrown forward, as represented in fig. 3 by dotted lines, a heated blank is dropped into the hole in the heading-tool Z¹. The lever Y¹ is

then depressed, and the cam W¹, operating upon projection b , returns the bolt-holder to its position beneath the upsetting punch M, which now descends to upset the metal for the head; the punch M is then drawn up, and the side punches i come up and form two opposite sides of the bolt-head; as these recede, the bolt-holder is caused to make one fourth of a revolution, the wheel Z taking into wheel B¹, and D¹ into E¹. If a six-sided bolt is required, wheels Y and A¹ are made use of, which gives the bolt-holder one sixth of a revolution between each operation of the punches. The upsetting punch now descends again, and the side punches are brought up to form two new faces of the head. The side and top punches thus alternate with each other until the bolt-head is completed, when the operator raises the lever Y¹, and the sleeve U¹ is caused to descend, and the cam W¹ (which previously operated upon pin b to throw the bolt-holder in the position represented in fig. 2) is brought to bear upon the pin c , by which means the bolt-holder is thrown into position represented in fig. 3 by dotted lines, when the rod A² (supported at g) will rise within the bolt-holder and force out the bolt, as will be understood from fig. 3.

Claim.—1st. The two side punches operating simultaneously and equally upon opposite sides of the bolt, in combination with the intermittent rotary motion of the bolt-holder, for the purpose of finishing the bolt-head, with its centre in the axis of the shank, as set forth.

2d. The forward and back motion of the bolt-holder when the rod A², which ejects the bolt, is supported at a point in advance of that on which the bolt-holder vibrates for the purposes of ejecting the finished bolt, as set forth.

No. 16,228.—WILLIAM E. COPELAND.—*Improved Spring Bolt.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not claim combining a lever with a bolt, and for the purpose of moving the said bolt rearward, because such is a very old application of a well known device.

Nor do I claim so combining a lever with a spring bolt and its case as to operate the bolt, substantially in the manner as described in the specification of the patent of Bush—that is to say, so it shall operate not only as a cam lever, but as a stop.

Nor do I claim applying to a bolt or a rod a lever and a stop, and in such manner that the bolt or rod not only may be moved by power applied to the lever, but may be stopped or held in place by the stop acting against the lever; for such is an old and well known contrivance.

But I claim, as an improvement on the invention as patented by the said Bush, my improved arrangement of the stop lever H with respect to the bolt, and so as to operate therein, and into and out of the bolt case, substantially as specified.

I also claim combining with the main spiral spring D the secondary and separate spiral spring E, or its equivalent, when the bolt is ap-

plied to its case, and the springs are arranged within a trapezoidal recess, or chamber of the bolt, and made so as to operate essentially as specified.

No. 14,381.—GEORGE WOODWARD.—*Improvement in Heading Bolts.*—Patented March 4, 1856.

In heading a long bolt, after the upper end of it has been heated, the lower end of the bolt is passed through the passage M, and the upper part is inserted between the jaws *c d*. The bolt being regulated to the required length, the workman depresses the treadle N so as to move the levers A and B and to confine the bolt between the jaws, while he hammers down and forms the head on it.

Claim.—The two oscillating shanks or levers A B, when combined in the manner as specified with the suspended and bent toggles K L and the perforated treadle N.

No. 14,086.—H. M. CLARK.—*Improvement in Machines for Heating Bolts.*—Patented January 15, 1856.

The general features of this improvement will be understood from the claims and engravings.

Claim.—1st. The arrangement herein shown and described of the two heading dies N *n*, when operating together, in such a manner that, while neither die is in motion nor at rest, without a like action of the other, the one or internal heading die *n* receives an abrupt accelerated motion towards the close of the joint advance movement of the two dies, by means of the arrangement of the dies in the general slide O, in combination with the lever *q*, or its equivalent, acting in concert therewith, essentially as and for the purposes set forth.

2d. Giving the gauge *f* the several intermittent movements specified—upwards, downwards, and laterally—whereby, after performing its office of gauging, it moves away to give room for the heading dies to operate, and afterwards suddenly descends to detach the bolt from the clamp, and by said action or blow to clear itself of any adhering scale or dirt, as described.

No. 16,301.—WILLIAM HANNAH, assignor to L. H. BOWEN and WILLIAM HANNAH.—*Improved Machine for Trimming Bolts.*—Patented December 23, 1856.

In using this instrument, the eccentric lever C is raised sufficiently to allow the cutting edge of the sliding die *a* to recede sufficiently and to open the space to allow the article to be cut to pass through; then by holding firmly the lever A, and pressing down the eccentric lever C, the sliding face plate B, with the sliding die, is pushed forward, cutting off the screw as desired.

Claim.—The arrangement of the sliding and stationary dies *a a*, as described, and operating with the sliding face-plate B, in connexion with the horizontal lever A and eccentric lever C, for the purpose set forth.

No. 14,633.—ROBERT G. PINE.—*Improved Machine for Polishing Buckles.*—Patented April 8, 1856.

Motion is given to the shaft J¹, and the shafts E E B are rotated by their respective belts L H; the spiral springs *f* keeping the face of the buckles A¹ against the periphery of the polishing wheel C, and the guide wheels D D preventing the buckles from bearing too hard against the polishing wheel. As the shafts E E rotate, they gradually move longitudinally, in consequence of the screw-threads *d d* in the bearings *e e*, and consequently the whole outer sides of the buckles will be polished.

Claim.—The combination of the polishing and guide wheels C D D with the rotating and longitudinally moving shafts E E, provided with clamps F¹, the shafts E E working in yielding or elastic bearings, substantially as shown, for the purpose specified.

No. 14,442.—WILLIAM BUTLER.—*Improvement in making Chilled Castings.*—Patented March 18, 1856.

A is a cast-iron box; B is a sand core; C¹ C² are the hollow chill cores; D D are the ends of the box; its inner surface D D is chilled at each end by means of the chill cores C¹ C². The hollow chill cores C¹ C² are placed a sufficient distance apart to form the chamber by means of the sand core B. The sand core B is formed by forcing the sand through the hollow chill cores C¹ C² into the chamber, after which the cores are dried and set in the mould ready for casting.

Claim.—The combination of the hollow chill cores C No. 1 and C No. 2 with the sand core B, for the purposes of obviating the difficulty of warping and springing attending the casting of iron boxes on chills, and thereby a chamber in the box, and in the manner and for the purposes within described.

No. 15,427.—F. R. LANGWITH.—*Improved Clamp for Plumbers.*—Patented July 29, 1856.

The pipe G is clasped by the box A B, while the lever H is inserted in place of the barrel *a* of the cock F. If, however, the lever C is used, it will clasp the cock at its lower end by the box J, as shown in fig. 1; and by the nuts E E on the bolts D D acting on the levers H or C, can be adjusted and firmly held while soldering the shank of the cock to the pipe at C.

Claim.—The combination and arrangement of the clamp box A B, the clamping levers C and H, when either is used; and also in combination therewith the screws for adjusting the cock in a proper position during the process of soldering with the main pipe, when arranged and operating substantially as described.

No. 16,115.—EVAN L. EVANS.—*Improvement in Curry-Combs*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim simply constructing curry-combs with flexible backs, for this has been previously done.

But I *claim* constructing the curry-comb with an elastic or flexible back A, formed of India-rubber, and securing the teeth *a* permanently in the back, by having the India-rubber, which encompasses the teeth, project from the face of the back, in the form of ridges *b* and cones *c* projecting to the point of the teeth, substantially as shown and described.

No. 15,560.—GEORGE FETTER and JOHN S. MCCLINTOCK.—*Improvement in Coupling-Pipes*.—Patented August 19, 1856.

C represents a tapering ferrule, having a raised portion *b*, with six or eight sides, and on the inside a number of projections *d*; this ferrule is placed on the end of the pipe B, and a tapering plug G is driven into the end of the same, which forces the lead against the inside of the ferrule, and causes the projections *d* to penetrate the lead in such a manner that the pipe cannot turn without the ferrule. The stop-cock D is then connected with the pipe by screwing it into the same, and the end of the cock is provided with a small smooth portion *a*, for the purpose of guiding said screw, and preventing the lead from burring up inside the pipe.

The inventors say: We do not claim exclusively the enclosing of the ends of lead pipes, in a tapering ferrule of metal harder than lead, for the purpose of attaching connexions thereto, and the use of right and left-handed screws on such connexion.

But we *claim* the tapering screw, terminating in a smooth and rounded end on the connexions, for the purpose of guiding the said screw, and preventing the lead from burring up inside the pipe, in combination with a tapering ferrule on the end of the lead pipe, said ferrule having any convenient number of projections for preventing the pipe from turning within the ferrule, while the end of the said connexion is being screwed into the pipe.

No. 15,512.—CHARLES R. GARDNER.—*Improvement in Dies for Screw Blanks*.—Patented August 12, 1856.

The shape of these dies is represented by the illustration figure 1, representing a top view of the face of the die, the oblique parallel lines showing the grooves in the face; figures 2 and 3 represent transverse sections. The blank is placed between the two dies, and by moving the upper die over the lower one, under a heavy pressure, the impression of the screw thread is produced on the blank; figure 3 represents the shape of the blanks for cutting gimblet-pointed screws, and figure 4

represents the sides of the dies, the slope *b* and elevation *a* being required to point said screws at the same time that they are threaded.

Claim.—The elevation *a* and the slope *b*, each substantially as described, and for the purposes specified.

No. 15,278.—WILLIAM M. BOOTH & JAMES H. MILLS.—*Improvement in Dies for Stamping or Pressing Sheet Metal*.—Patented July 8, 1856.

The blank is placed upon the face of the lower die; the upper die is forced upon it; the movable part B and C resting upon the springs I and D, recede until they find their bearings in the solid part of the die, thus constantly affording support to the sheet metal, until the impression or form of the die is given; and when thus forced together, become as they were two solid dies, and effect with a single blow or operation what, in the ordinary method of stamping with a solid die, requires a number of successive operations.

Claim.—Pressing, stamping, or forming metal by the upper and lower dies A and E, or their equivalent, the said dies being movable parts B and G, supported by springs. The whole being constructed and operated in the manner herein set forth.

No. 15,080.—PATRICK MCGLEW.—*Improved Die-Stock for Cutting Screws*.—Patented June 10, 1856.

If the set screw *n* is turned so as to allow the spring *l* to set the pawl D in operation, the ratchet B with its dies H H' will be turned when the handles are vibrated; but if D is thrown out and C let in, the dies will be turned in the opposite direction. If both pawls are let into the teeth, then the dies will vibrate with the handles.

The inventor says: Ratchet drill stocks, auger handles, and wrenches are in use, and I do not broadly claim attaching screw cutting dies to a two-way or double ratchet moved in either direction as desired by adjustable pawls, which are operated by vibrating handles.

Nor do I broadly claim the employment of a cam or cams E for tightening screw cutting dies. Neither do I claim adjusting the pawls by set screws *m* and *n*. But I *claim* the arrangement of one or more dies H H' within a circular two-way ratchet B, which is moved by adjustable pawls C D, as herein described.

No. 14,834.—WILLARD H. SMITH.—*Improved Door-Fastener*.—Patented May 6, 1856.

To apply the fastener to a door, place the hooks of the staple *a* against the rebate of the frame, the wings *e e'* being folded out of the way, then close the door, forcing the hooks of *a* into the frame, open the wings, placing them square across the line of the door; then turn

the screw nut *d*, and the wings of the plate will accomodate themselves to the jamb, moulding and door.

Claim.—The use of the screw nut *d*, working on the hinged stem *b*, as a means of adjustment of the plate *e e*, when employed in combination with the staple hook *a*, all operating in the manner and for the purposes substantially as set forth.

No. 16,048.—LEGRAND CROFOOT.—*Improved Door-Fastener*.—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Combining the two plates A and B, constructed in the manner described, with the spring-bolt of the plate A and the eye-hook of the plate B.

No. 16,282.—JAMES LETORT.—*Improved Door-Fastener*.—Patented December 23, 1856.

The blade 1 is placed, as far as the shoulder *b* thereof will allow, with the hooks *a* towards the jamb; the door is then closed, and if the blade 1 is not thick enough to force the hooks *a* into the wood of the jamb, then the blades 2 and 3 may be turned over that of 1. The door A being now closed from the inside, the lever-bolt 4 is inserted in the square hole 5 of the blade, thus fastening the door.

Claim.—The employment of the bent lever-bolt 4, when in combination with the blade 1, or the additional blades 2 or 3, substantially in the manner and for the purposes set forth.

No. 14,594.—G. H. LINDNER.—*Improvement in Door-Fasteners*.—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The two catches *a b* provided with hooks or curves *d e* at their ends, which hooks or curves pass around the pin D attached to the sill or lintel of the door or window frame; the catches being fitted within the case B which is attached to one of the doors or windows, the catch *b* being provided with projection *g h*, against which the bar *c* attached to the other door or window acts, substantially as shown, for the purposes specified.

No. 14,773.—ELISHA P. MOULTON.—*Improvement in Door-Fasteners*.—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Constructing turn buttons or fasteners, the stem E and head of the button B being in one piece, and having a collar F at its end that

prevents the button from being withdrawn from its frame by the strain brought on the head of the button by the door which it secures, the stem of the button having a square part that is pressed against by a spring C.

No. 14,112.—REED PECK.—*Improvement in Door Fastenings*.—Patented January 15, 1856.

The standard is made in two parts A and B, which are guided in their motions up or down by straps *a a* fastened to the door. By means of the pinion *d* the upper end of B and the lower end of A will move simultaneously into or out of the mortises in the floor and top beam. A spring *b*¹ is fastened to the door, and the spring-latch *a*¹ prevents the standard B from rising as long as the door is open. In closing the door the top of the spring strikes the beam before the door gets to its place; and as the door is carried along, the lip on the spring is drawn from the top of the standard, when (by reason of the gravity of the lower standard A) the standards will fasten the door at the top and bottom.

Claim.—The combination of the spring with the gearing, by which the standard is rendered self-fastening, substantially as described.

No. 15,332.—HENRY H. ELWELL.—*Improved Door-Knob*.—Patented July 15, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

Claim.—Dividing the spindle diagonally and providing a screw-hole *b* in one end of each of its sections *c c* at right-angles to the division line.

No. 15,357.—JEREMY W. BLISS.—*Improvement in Door-Knobs*.—Patented July 22, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

Claim.—The employment of the intermediate piece *c*, having a cut or ricket surface corresponding to and secured upon the spindle *b* by the set screw *d*, at any desired point, in the manner herein described.

No. 14,595.—NATHAN BENHAM.—*Improvement in Fastening Door-Knobs*.—Patented April 8, 1856.

The nature of this invention consists in the fastening of knobs of doors of different thickness to any distance on the shaft without the aid of washers.

The screw C, being screwed down in the slot E, presses outwards the sides *s s* of the shaft B, to fit the wedge-shaped holes D in knobs A.

Claim.—The use of the slotted shaft E with the wedge-shaped hole D, said shaft being opened by a screw, or its equivalent, in the manner substantially herein set forth.

No. 16,047.—ALMON COOLEY, assignor to RODERICK TERRY and HIMSELF.—*Improvement in Fastening Door-knob Spindles*.—Patented November 11, 1856.

The spindle S passes through the door D and lock in the usual manner. The slide C is placed on the spindle and pushed up to the washer of the door. The knob K is then screwed on to the slide C, and the shoulder in the socket forms the flexible part of the conical slide down to the sides of the spindle and holds it fast.

Claim.—The conical slide C, when combined with the spindle S and knob K, and constructed in the manner described for the purposes specified.

No. 14,326.—DAVID G. SMITH.—*Improved Door-Spring*.—Patented February 26, 1856.

One end of the arm E is laid into the hook *f*, so as to move together with the door B, whereas the other end of it is hinged at *i* to the spring-barrel *b*.

Claim.—The use of the lever E, in connexion with the barrel *b* and spring *c*, constructed and operated in the manner described.

No. 14,691.—GEORGE W. GRISWOLD.—*Improved Door-Spring*.—Patented April 15, 1856.

The nature of this invention consists in making the arm or rod F itself the spring, and so pivoting it at C to the loop E of the plate D that it may be furnished with a friction-roller *i*, whereby torsion of the metal is prevented.

Claim.—The arm F, with its attachments to the door and frame, when said arm serves the purpose of spring and lever for closing, holding, or opening the door, substantially as described.

No. 14,686.—GILBERT L. BAILEY.—*Improved Door-Spring*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I do not claim a coiled spring in connexion with a crank, for these are well known devices. Neither do I claim having the spring act most powerfully when the door is closed as new. I am also aware that a toggle-joint has been used heretofore for various purposes, and I do not claim this in itself as my invention.

But I *claim* the spring E, crank-arm H, and rod D, constructed and operating in connexion as described, so that the crank-arm turns inward whilst opening the door.

No. 15,555.—JOHN BROUGHTON.—*Improved Door-Spring*.—Patented August 19, 1856.

A A represents a portion of the door, B a portion of the door-jamb. The door is hinged, as at *a*, to the jamb in the ordinary manner. Fig. 1 represents the door as being closed. By opening the door the leaves *c* are caused to unfold in the manner illustrated in figs. 2 and 3, and consequently the quadrantal projections *e* are turned so as to cause the elastic tugs *f* to coil round them, and thereby to become shortened, and consequently to draw the end of each of the springs D towards the edge of door and jamb, and thus bring the springs D into action and cause them to exert a powerful strain upon the leaves *c* of the hinge, and when the door is set free cause them to fold together and close the door.

Claim.—The employment of an additional hinge C, unfolding and folding the reverse of the hinges *a*, and having formed on each side of its leaves a quadrantal or other suitable production, in combination with the flat or other suitable springs D D¹, substantially as and for the purpose set forth.

No. 14,583.—ALVIN BARTON, assignor to HIMSELF, A. R. MORGAN and J. M. PARSONS.—*Improvement in Door-Springs*.—Patented April 1, 1856.

The case A contains a spiral spring R, which acts upon the shaft of the wheel E. The two gear-wheels F and E having their shafts out of their centres, are made of an elliptical form. One end of the rod L is attached to the shaft of wheel F, and the other end to the pulley T. As the door opens, the pulley T runs on the rod towards the hinge-side of the door, and consequently its power is lessening, while it increases when the door closes. This effect is attributable partly to the eccentricity of the gearing and partly to the changeable point of action of the lever on the rod T.

Claim.—The employment of eccentric cog-wheels E and F, as described, in combination with the coiled spring-lever and guide-rod attached to the door or gate, as set forth.

No. 15,864.—ALEXANDER J. WALKER.—*Improved Bracket for Door-Springs*.—Patented October 7, 1856.

The part A of the bracket is intended to be inserted into the socket C. The holes B and C are made of the same size and shape as the end of the spring H, and are to receive and hold it when in operation. They are so placed that the corner of one faces a side of the other, so that, by changing the spring from one to the other, its power can be regulated by eighths instead of by fourths of a turn. The socket C is to be fitted into the door or casing K.

The inventor says: I do not claim the application of steel rods to doors to act as springs.

I *claim* constructing one of brackets, used for attaching such rods, with

an additional hole for receiving and holding them when in operation, said additional hole bearing such a relation to the first that, by changing the spring from one to the other, greater nicety can be observed when applying it, in regulating the power with which it shall act, and of attaching to said bracket a lever to assist in twisting the spring when applying it.

I also claim securing said bracket in its place by means of a socket inserted in the door or casing, or any other means substantially the same, that will instantly secure it, after it has been applied to the spring, and the necessary power obtained, and will also allow of its being easily removed and reattached when it is desirable.

No. 15,493.—ANSON H. PLATT.—*Improved Door-Stay*.—Patented August 5, 1856.

When the lever *a* is pressed downward so as to stay the door, the dog 5 passes over the notches *b*, and retains the bolt in any desired position from moving upward. To liberate the door, the upper end of the dog 5 is pressed inward, the lower end will be raised from the notches, and the spring *d* will carry upward the lever *a* and the bolt connected therewith.

Claim.—The use of the bolt 6, the lever 7, and the dog 5, arranged and operating in the manner and for the purposes set forth.

No. 15,912.—STEPHEN A. WHIPPLE and HERNAN WHIPPLE.—*Improved Machine for Cleaning Emery Wheels*.—Patented October 14, 1856.

The nature of this invention consists in bringing the surface of the emery wheel *F*, or emery band *H*, in contact with the upper surface of a revolving roller *D*, that is partially immersed in water, whereby, as the roller *D* rotates, only the surface of the band or wheel is moistened, and the emery or polishing material as it is washed off is deposited in the water of the trough *C* and saved for future use.

The inventors say: We are aware that rollers partially immersed in water or other fluid have heretofore been used for a variety of purposes, therefore we do not claim the same. But we *claim* the use of the roller *D*, revolving in contact with the water, and the superincumbent wheel *F*, substantially as and for the purpose set forth.

No. 14,881.—JAMES L. NORTON.—*Improved File-Cutting Machine*.—Patented May 13, 1856.

The spiral worm *k* being in gear with a rack *R* of the carriage-block, the latter advances until a projection or trigger *m* comes in contact with a projection *o* of the lever *S*, which, being up to that moment hooked into another lever *T* of the fulcrum *p*, is thus made to trip, and detaches the latter. The lever *T* thus detached is drawn by spring *V* towards the pillar-block *P*, and brings the up-

right *U* under the tooth *h*, which movement stops the motion of the chisel by disconnecting said tooth *h* from the action of the cam-plate *Q*. This short end of *T* is forked, and holds with its fork the bolt *q* of the pillar-block *O*, and thus, by the movement just described, the latter is moved in the direction of the arrow, and turns at the same time the pillar-block *P* on its fulcrum *f*; this latter movement turns the cam-plate *Q* and spiral cam *k* obliquely to the rack *R*, and thus disconnects them. The carriage-block now slides backwards by the falling of the weight *W*.

Claim.—1st. Hanging the worm-wheel shaft *N* in movable bearings *P O*, so that the worm may be disengaged from the feeding rack without stopping its motion to do so, for the purpose of allowing the carriage to run back and be set for the next series of nicks.

I also claim, in combination with the movable shaft, the adjustable projection *m* and levers *S T*, for first holding and then disengaging the shaft to admit of its swinging.

I also claim, in combination with the sliding-carriage *C*, the projection *t* and adjustable former *Y*, for keeping the blank at a uniform distance from the nicking tool for the purpose of equalizing the force of the blow, notwithstanding the taper of the blank.

I also claim the use of the spaces 1 2 3 for regulating the force of the spring upon the nicking tool.

No. 15,525.—GEORGE M. RAMSEY.—*Improved Files*.—Patented August 12, 1856.

The nature of this invention consists in making flat files in pairs, with right and left cutting corners, with grooves in accordance with the same, for the purpose of working in sharp angles or sharpening saws, in place of using three cornered files.

Claim.—Constructing flat files in pairs, or with right and left cutting edges or corners, as described. Also in making the grooves to run in the manner described, in combination with said files, all substantially as set forth.

No. 14,189.—MAJOR H. FISHER, assignor to JOSEPH A. HYDE.—*Improvement in Cutting Files*.—Patented February 5, 1856.

The nature of this improvement will be understood from the engravings, wherein *c* represents the chisel.

Claim.—The sliding and self-adjusting chisel-holder *g*, constructed and operating substantially as described.

No. 16,064.—CHARLES MILLER.—*Improvement in Cutting Files*.—Patented November 11, 1856.

Motion being imparted to the shaft *J*, the cam *I* operates on the under side of stop *d*, and raises the chisel *H*, and the descent of the

chisel to strike the blow is produced by the action of spring *c*. As the chisel strikes its blow, the nut *f* comes in contact with the top of stock *G*, which serves as a stop thereto, and thus serves to prevent the further movement of the chisel, and hence regulates the depth of the cut.

The inventor says: I do not claim the mere employment of a stop to regulate the depth of cut of the chisel.

But I *claim* fitting the chisel to work in a stock which rests upon the file blank itself, or on a pattern of similar form moving with it throughout the whole length of the movement of the blank under the chisel, and serves as a stop to the chisel, substantially as and for the purposes described.

No. 15,867.—MILTON D. WHIPPLE, assignor to A. B. ELY.—*Improvement in Cutting Round Files*.—Patented October 7, 1856.

The blank being sustained in an angular bearing *a* (fig. 2) in the bed *R*, which is secured to the top of the standard *Q*, rising from the table *C*. Motion being imparted to the shaft *D*, the wipers *b* operate the arms *X*, which thus cause the shafts *V* to vibrate; to these the helms *U* carrying the cutters *T* are attached. The cutters are thrown against the blank *H* by means of the springs *Z*. At the smaller portion of the blank, the cutters having a longer distance to travel, will be more resisted by the springs *A*², and a lighter blow will be transmitted to the blank.

Claim.—Operating upon the blank immediately beyond its point of support, in the manner and for the purpose substantially as described.

2d. Feeding the blank forward and rotating it upon its axis as the cutting proceeds, when it is operated upon by the vibrating cutters, in the manner substantially as set forth.

3d. The method described of operating the cutters by means of the wipers *b* and the springs *A*² and *Z*, whereby the force of the blow is diminished as the size of the blank decreases, as set forth.

4th. Forming the cutters of circular disks or of portions thereof, in the manner and for the purpose substantially as set forth.

No. 14,575.—WILLIAM RODGERS and ABRAHAM BANNON.—*Improvement in Forge Fires*.

A is an additional twee, on the opposite side of the fire. This twee is constructed like the other, with the exception of its being made to move back by means of lever *B*, in order not to interfere with the taking out of the loop. The bottom of the hearth *C* diverges from a straight line.

Claim.—We claim the forge-hearth *C*, as described, when employed in connexion with the tweers *D* and *A*, operated by the lever *B*, the whole constructed as set forth.

No. 15,571.—CHARLES PARKHUST and CHARLES WEED.—*Improved Machine for Forging Horse-Shoe Nails*.—Patented August 19, 1856.

The main features of this invention will be understood by reference to the claims and illustrations, a detailed description of which would take up too much space to be given here.

The inventors say: We *claim* that of making the nail-guide *M* movable up and down, with respect to the anvil *B* and its top hammer *D*, and the lateral hammers *E* and *F*, when said anvil is made stationary, as specified, said improvement being advantageous in several respects. We do not claim moving the nail-guide *M* towards the cutter *P* and *Q*; but what we do *claim* is, the combination of mechanism for operating said nail-guide, or moving it from the anvil to the cutters, and retaining it between the cutters during the descent of the vertical slider *L*, far enough to separate the nail from the rod, such combination consisting of a lever, latches *R* and *W*, the eccentric *S*, the rocker lever *N*, and the springs *V* and *X*, applied to the guide-tube *M* and the vertical slider *L*, constructed and operated essentially as described.

No. 14,280.—GEORGE H. CORLISS and ELISHA HARRIS.—*Improvement in Forging Thimbles*.—Patented February 19, 1856.

The shafts *C* can be moved in the direction of their axes by pushing rod *J* in the direction of the arrow, for the purpose of withdrawing the eccentrics *E* from the stocks *F*, and allowing them to be moved up their guides *h* by means of depressing the outer end of the lever *K*, so as to cause the lever end *g* to act upon the levers *b*¹ *b*. As soon as the stocks *F*, together with the hammers *a*, have thus been moved out of the way, the finished thimble can be withdrawn.

Claim.—1st. The employment for forging thimbles of an anvil *O* and hammers *a*, operating substantially as herein set forth.

2d. In combination with the arrangement of the shafts of the eccentrics to slide the eccentrics out of the stocks *F* *F*, which carry the hammers or squeezers; the inclined guides *h* *h* to receive the said stocks after the withdrawal of the eccentrics, and the levers *b* *b*¹ *b*¹ and *K* for the movement of the stocks up the said guides to withdraw the hammers or squeezers from the interior of the thimble to admit of its removal from the machine; all arranged and operating substantially as herein set forth.

No. 15,118.—NATHAN BRAND.—*Improved Machine for Bending Hay-Forks*.—Patented June 17, 1856.

The fork is placed in a heated state on the stationary jaw *A*, a tine extending along each side of the jaw *A*. The spring handle *H* is then depressed, and the wings or side levers *D* *D* are forced against the sides of the stationary jaw *A*, and the tines of the fork are bent laterally of the desired form, corresponding to the shape of the jaw *A*. The movable jaw *C* is then brought down over the jaw *A*, and the edges of the jaw *C* bend the tines downwards, corresponding to the form of

the ledge *a*, the tines being pressed between the ledge *a* and the edge of the jaw C. The shank of the jaw is also properly formed, the proper inclination being given it by the ledge *f*, which compresses it upon the die B.

The inventor says: I am aware that numerous machines have been made with a former and vibrating arms or levers for bending pieces of wire and metal for various purposes; therefore I do not claim such devices when so used; but what I do *claim* in the above described machine for bending and giving a proper form to hay-forks which are made with two tines and a shank is, the combination and arrangement of the following devices, consisting of the stationary-jaw A, provided with a ledge or side projection *a*, the die B with a score for the shank of the fork, the hinged wings or side levers D D, operated so as to bend the tines around the jaw A, the hinged jaw C, so arranged as to give the tines the curve required and press the shank into the score in the die B, and give it the proper position in relation to the tines.

No. 15,541.—WILLIAM WRIGHT and GEORGE BROWNE—*Improvement in Blast-Furnace*.—Patented August 12, 1856.

The blast passes from the pipe A through the cupola wall at B into the central portion C of the cupola. This chamber being thus filled with air under pressure, the air is restrained from passing upwards by the material in the furnace; the air escapes from said chamber and passes through the arches E and lateral apertures I into the furnace; and as it passes over the heated metal which is on the bottom of the cupola it becomes heated, and thus any blast which enters the furnace is heated in the furnace, without using any of the devices heretofore known for supplying furnaces with heated air.

Claim.—The general arrangement and construction of cupolas and smelting furnaces for the self-heating of the air blast by the arrangement of the chambers and air passages, as described.

No. 14,257.—CHRISTIAN SHUNK.—*Improvement in Fluxing Blast Furnaces*.—Patented February 12, 1856.

The salt is introduced through valve *e* into box *c*, and is carried to the common tuyere *b*, and through it into the furnace, by means of the blast entering through pipe *a*.

The inventor says: I do not claim originality in the use of common salt in treating of iron; but I do *claim* applying and introducing common salt as a flux or solvent, or its equivalent, into blast furnaces at the tuyere or any point below the tunnel head, in the manner and for the purposes described.

No. 15,907.—GUILLAUME H. TALBOT.—*Improvement in Gimlet Handles*.—Patented October 14, 1856.

In boring with this gimlet, the operator presses the handle away from him and towards the gimlet, and by so doing brings the rag wheel *a*¹

in contact with the pin *d*¹, which holds it out of gear with *c*¹, while the rag wheel *a* is brought into gear with *c* by the spring *e*. To withdraw the gimlet the operator pulls the handle towards him, and by that means brings the rag wheel *a* in contact with the pin *d*, which holds it out of gear with *c*, while *a*¹ is brought into gear with *c*¹ by the spring *e*¹. The teeth of the ratchets *a c* are set to engage and turn the gimlet when the handle turns to the right, and those of the ratchets *a*¹ *c*¹ to engage and turn the gimlet when the handle turns to the left, the spring allowing the wheel *c* or *c*¹ to move back and disengage itself from *a* or *a*¹, when the handle turns in the opposite directions to those above named under each condition of the rag wheels.

The inventor says: I do not confine myself to the particular arrangement or rag wheel gearing represented; but I *claim* the application within the stock or handle of the gimlet, or other tool or instrument, of an arrangement of ratchet or rag wheel gearing, operating substantially as described, so as to enable the tool or instrument to be rotated in either direction, at the pleasure of the operator, by turning the handles back and forth in opposite directions, and at the same time pushing it from or pulling it towards him—the direction of the rotation being varied by the pushing or pulling of the stock or handle.

No. 14,316.—EDWARD N. KENT.—*Improved Machine for Separating Gold and other Precious Metals from Foreign Substances*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—The employment of what I term a grain separator, for separating the grains of metal from the earthy substances, or crushed gauge, substantially as described, preparatory to, and in combination with the crusher or equivalent therefor, when the separator is employed as a hopper to the crusher, and combined therewith by a feeding tube or equivalent therefor, for conducting the substances to be crushed below the surface of the column of water in the crusher, substantially as and for the purpose specified.

I *claim* also an improved Chilian mill, consisting of a deep outer vessel A, holding a high column of water, in which the double acting vertical wheels B B combined therewith are wholly or nearly submerged for the purpose substantially as specified. And I wish it to be understood that I do not claim a shallow vessel in which single acting horizontal stones are used; neither do I claim the ordinary Chilian mill.

No. 14,847.—OSSIAN G. AULD and JASPER S. WHITING.—*Improved Riffle for Gold Washing*.—Patented May 13, 1856; antedated February 20, 1856.

The nature of this invention consists in making the openings in the riffle of such a shape that, in gold washing, with a current of water, an

eddy is created, whereby all the gold is brought into contact with the quicksilver, while all tendency to escape is overcome by the action of said eddy and the shape of the flanges.

Claim.—The use of circular cavities or receptacles, constructed in the manner herein shown, having the neck of one diameter and the lower portion of an enlarged diameter, so as to operate in the manner specified.

No. 14,058.—CHARLES HAMMOND.—*Improvement in Attaching Hammer-Heads to Shafts.*—Patented January 8, 1856.

The socket C is secured to the top of the shaft B. It is provided with two projecting lips *a*; these, together with the socket, are inserted into the eye of the hammer head A, and then a wedge D is driven in, which secures said socket firmly to the head A.

Claim.—The socket C, with its projecting lips *a*, and the wedge D, arranged and employed in connexion with the head A and shaft B, substantially in the manner and for the purpose set forth.

No. 14,167.—GEORGE M. RAMSAY.—*Improved Hinge.*—Patented January 29, 1856.

A is an anti-friction roller near the centre of wing B, and when applied or in use is provided with a concave groove (in the back of the hanging stile) equal to the convex surface of said roller, and in which it is free to roll up and down, while the wing B communicates with wing C in front of the hanging stile, by and through a small groove leading from the concave groove to the front of said hanging stile, while the wing C is made fast to whatever is desired to be hung and swung.

Claim.—The anti-friction rollers A in combination with a joint hinge, substantially in the manner and for the purposes herein set forth.

No. 14,349.—ISAAC DAVIS.—*Improved Hinge for Shutters.*—Patented March 4, 1856.

By making the screw K conical, the screw can be placed within the plane of the outside surface of the window frame behind the radical line *e*, so that the screw is entirely enclosed. The wheel G has flanges J by which it is attached to the window shutter H. By turning the knob M, the screw K, gearing into the teeth of G, will turn the latter, and with it the shutter H.

Claim.—The use of the conical screws K, operating in combination with the wheel G, held in position by and turning on the pin E; the whole being constructed so as to operate in the manner described.

No. 16,272.—JOHN T. GARLICK.—*Improved Spring-Hinge.*—Patented December 23, 1856.

The leaf A is secured to the casing of the safe, and the door of the safe is rivetted to the spring C; this arrangement keeps the door a suffi-

cient distance from the casing for the introduction of a packing, which renders the safe perfectly tight and prevents the admission of water or dampness.

The inventor says: I do not claim the use of a hinge with springs attached thereto, so that the article to which it is attached may be adjusted to the different distances from it.

I claim a hinge, or series of hinges, attached to a double-leafed spring, in the manner described and for the purposes set forth.

No. 15,241.—CYRUS KENNEY & WILLIAM GURLEY.—*Improved Machine for grinding Butt-Hinges.*—Patented July 1, 1856.

The cam *a*, with its handle *h*, is hung to the elastic arm *a'*, so as to turn in a plane perpendicular to the bed B and stop G. When the operative places a folded butt on the bed with its knuckles to the stop G, as shown in fig. 4, and then brings down the punch-block upon the butt, the punch-block will slide along the flap of the butt until it strikes the knuckles, and will force the butt against the stop G; the punch-block will there remain, holding the butt for grinding, by the pressure of the elastic support *a'* alone.

The griper is fastened to the rock-shaft C, not only to avoid the friction which attends sliding the griper on ways, but to enable the operative to place conveniently the butt in the griper, and to slide the butt across the face of the stone D, so as to grind its edge square.

The inventors say: We do not claim any part or arrangement of the herein-described apparatus which has been before used or known.

But we claim the improvement of hanging the punch-block or cam *a* on or to the elastic support *a'*, arranged in combination with the bed B and stop G, substantially as herein described for the purpose specified.

Also, mounting the griper upon the rock-shaft C, arranged in combination with the grind-stone, as herein set forth for the purposes specified.

No. 16,273.—C. B. GALENTINE, SAMUEL GALENTINE, & ANDREW J. RUSSELL.—*Improved Hoof Expander.*—Patented December 23, 1856.

By placing one of the serrated edges C on either side of the frog and by turning the thumb-screw A, the instrument attaches itself to the hoof, and any degree of expansion is readily accomplished and maintained during the application of the shoe.

Claim.—The application of the instrument described, or any other substantially the same, worked by a thumb-screw, or other form of lever, so small as not to interfere with the operation of nailing the shoe to the hoof of the animal.

No. 14,193.—ELISHA HARRIS.—*Improvement in Machines for Bending Ship Hooks*.—Patented February 5, 1856.

The hook blank properly heated is brought between the rollers A A¹, and the clamp C screwed down upon the eye of the hook as represented in fig. 1. Power is then applied to turn the rollers about half a revolution, by which means the hook is bent round the lower roller A as shown in fig. 2. The rollers are then turned back to their first position, the clamp unscrewed, and the hook removed.

Claim.—The roller or former A of the intended form of the interior of the hook, provided with a pocket or clamp for securing the eye of the blank during the bending operation, substantially as herein described.

No. 14,852.—NELSON B. CARPENTER.—*Improved Horse-Shoe*.—Patented May 13, 1856.

The nature of this invention consists in the construction of a horse shoe which may be fastened to the foot of a horse without the use of nails or other device penetrating the hoof.

The inventor says: I do not claim any particular construction or form of a horse shoe with a rim or flange, although the latter is in fact a part inseparably connected with my invention; yet I am aware that flanges or rims detached in part have been used heretofore in this and other countries. Neither do I claim a "heel bar" or "round shoe," separately considered, as that too has been used heretofore.

But I *claim* a horse-shoe having a branch bar attached to each heel bar of the shoe extending inwardly and at the same time lapping and fitting one to the other, with corresponding apertures through each, for the insertion of a pin or screw, for the purpose and in the manner set forth.

No. 14,915.—JOHN HENDERSON.—*Improved Horse-Shoe*.—Patented May 20, 1856.

The object of this invention is to provide a bearing surface of sufficient extent and the proper form to give a firm and adequate support to the weight of the animal, and to relieve the sensitive parts of the foot from the irritation caused by the friction and contraction of the shoe upon the heel.

Claim.—Arranging a special bearing surface adapted to the rim of the hoof, and terminating in lines converging from the outer to the inner edge of the shoe upon the bars C C, with a gradual deflection of the heel, beginning at the converging lines A¹ A¹, and extending to the near parts of the shoe at B B.

No. 15,306.—SEWALL SHORT.—*Improved Horse-Shoe*.—Patented July 8, 1856.

The horse-shoe is of the ordinary shape, with the addition of an upward projection *a*, on each end at the heel, as shown at figure 1;

it is supplied all around with grooves *b*, into which the tongues *c* of the cap figure 2 can be inserted, and the cap can be fastened to the shoe by inserting bolts into the holes *a*, and the holes of the cap figure 2. When both are fastened together, they are as represented in figure 3.

Claim.—The combination of the cap and shoe, made in two separate pieces, the cap and shoe being constructed separately, substantially in the manner, and for the purposes herein set forth, of easy application and ready removal.

Also, the rib and groove attaching the cap and shoe, as above.

No. 16,082.—HENRY BESSEMER.—*Improvement in the Manufacture of Iron and Steel*.—Patented November 11, 1856. England, February 12, 1856.

The cylinder *a*, which is lined with fire brick, is first heated by introducing burning charcoal or wood, and the molten crude iron is run into it through the aperture *p*, at the same time that a blast of air is forced into said cylinder by means of the tuyere-pipes *y*. As soon as the molten metal covers the mouth of said pipes, the carbon of the crude iron is burnt by means of the oxygen of the atmospheric air, producing an intense heat, which causes violent ebullition, driving out the carbon and all foreign matter through the aperture *p*. When the crude iron has been deprived of carbon to the desired degree, so as to be converted into cast-steel or malleable iron, the cylinder containing the iron is turned into the position of figure 2, in which the reduced metal can be run off at the same time that the tuyere-pipes are above the molten mass, so that no iron can flow into them, as would be the case were the blast interrupted in the position of figure 1.

The inventor says: I do not confine myself to the precise details specified, provided that the peculiar character of my invention be retained.

I do not claim injecting streams of air or steam into molten iron for the purpose of refining iron, that being a process known and used before.

I *claim* the conversion of molten crude iron or of remelted pig or finery iron into steel or into malleable iron, without the use of fuel for reheating or continuing to heat the crude molten metal, such conversion being effected by forcing into and among the particles of a mass of molten iron currents of air or gaseous matter, containing or capable of evolving sufficient oxygen to keep up the combustion of the carbon contained in the iron till the conversion is accomplished.

No. 15,750.—JOHN B. WICKERSHAM.—*Improved Construction of Iron-Fence Posts and Ties*.—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The double ripped post or tie, cornered and mortised upon opposite and corresponding sides, as specified, in combination with the inclined corner key E for holding and crimping the rail, as described.

2d. I claim so constructing the fence tie and key above named, that it may be attached to a wood in order to take up the lax tension of wire and flat-hoop iron, and thus act as a compensator for the expansion of the metal when used for fences, as set forth.

No. 16,186.—SILAS S. PUTNAM.—*Improvement in Machines for forging Iron*.—Patented December 9, 1856.

The bar of iron to be forged is supported by rest M; motion being imparted to the machine, the cam D is rotated and brought to bear upon the opposite pair of the hammers E F, G H, which are alternately released and brought together with a powerful blow by the springs K, the cam being so adapted that one pair of the hammers is out of the way before the others fall.

Claim.—The arrangement of the four hammers operating in pairs, in the manner set forth, and actuated by a single central cam, as described.

No. 16,083.—HENRY BESSEMER.—*Improvement in Smelting Iron Ore*.—Patented November 18, 1856.—England, August 25, 1856.

The furnace as represented in the engraving being properly heated, a charge of molten iron is introduced, and blasts of air under a heavy pressure are caused to enter the molten mass through the tuyere pipes *b*: the oxygen of the air produces the effect on the crude iron as described in Henry Bessemer's patent, No. 16,082, and the intense heat produced by the combustion of the carbon of said crude iron causes the carbonaceous iron ores which are charged into the furnace above the crude iron to be reduced to crude iron and to sink to the bottom of the furnace, where they in their turn cause the ores above them to be reduced in the manner described; the tuyere pipes *a* serve to introduce a blast of air into the heated mass of carbonaceous iron ores.

Claim.—I am aware that it has been heretofore proposed to force into blast furnaces carbonaceous gasses or solid carbonaceous substances with the blast, for the purpose of adding to the effect of the fuel otherwise supplied to such furnaces, or for the purpose of assisting in the reduction of ores containing oxyd of iron, and I mention this fact in order that it may be fully understood that I lay no claim thereto. Nor do I confine myself to any particular form of furnace or apparatus for carrying into practical operation my said invention, provided that the peculiar features thereof be retained.

I claim the described new process of obtaining iron from a charge of ore in a furnace, viz: by means of molten iron underlying such charge, and by air, oxygen, steam, or a gas containing oxygen forced into the molten iron to such an extent as to effect the reduction of the charge or the abstraction of the metal therefrom without the employment of ordinary carbonaceous fuel.

No. 15,159.—WILLIAM BERTRAM, assignor to JOHN W. COCHRAN.—*Improvement in Welding Iron Plates*.—Patented June 17, 1856. England, December 21, 1854.

Figure 1 represents a lap of two sheets of iron welded together according to this invention. Fig. 2 represents two portable furnaces with two parts of iron, which are about to be welded together in a position opposite to and between the mouth of the forges to receive a welding heat; *b b* are openings to receive the end of a pipe through which a blast is forced into the vessel *a a* and through the ignited fuel, by which a flame will be forced through each outlet *c c*, against the parts to be welded. The hammers are kept in contact with the plate by springs *S S'* and struck by hand hammers.

Claim.—Welding the separate faces of such bars or plates together by pressure or concussion, while at the same time they are subjected to opposite blasts of heat, in the manner herein set forth.

No. 14,412.—RICHARD SAVARY.—*Improvements in Puddling Iron*.—Patented March 11, 1856.

The metal, when melted, is conveyed from the cupola by the conduit C into one or more of the furnaces. When a sufficient charge has run in, a stopper in the conduit serves to shut off the stream; the conduit is removed, and the puddler proceeds to work the iron in the usual way until it comes to nature, when, instead of dividing it into masses to be balled separately, he rolls it up into a convenient shape and removes it from the furnace to be worked as other puddler's balls.

Claim.—The arrangement of the cupola A and puddling furnaces B B, &c., constructed and operating as herein set forth.

No. 14,114.—ABEL PEVEY.—*Improvement in Remelting Iron Scraps*.—Patented January 15, 1856.

The iron dust is confined in a vessel enclosed on all sides to prevent its being wafted away by the blast, which vessel will melt with or little after the cast-iron dust contained in it, and consequently effectually melt all the dust.

Claim.—The within described cast-iron retaining vessel, with one or more perforations through it, or otherwise formed, the vessel being for receiving and retaining the iron dust, and then be enclosed on all sides, so that both the vessel and the cast-iron dust that it contains will be melted together, essentially in the manner and for the purposes fully set forth.

No. 14,827.—THOMAS H. POWERS.—*Improvement in Furnaces for Smelting Iron*.—Patented May 6, 1856.

The air, being heated in the vault 3, passes through pipe 2 2 2 into the furnace at 4 over the molten metals, mingles with and increases the intensity of its heat. 6 represents a lever for regulating the draft.

Claim.—So arranging the pipe 2 2 2 in connexion with the combustion chamber and stock as described, that the air passing through the pipe shall be heated and disengaged in the manner and for the purpose set forth.

No. 15,247.—O. W. MINARD.—*Improved Brass-Kettle Machine.*—Patented July 1, 1856.

As the bed-carriage moves longitudinally from the mandrel, the pin *v* of the upper carriage sliding in the groove of the diagonal bar *x*, the clamps *o o'* move back from the axis of the forming-roller *e e*, and thus keep the inner surface of the disc of metal firmly in contact with the surface of the forming-roller. The diameter of the forming and working rollers *e* and *k* is not in the proportions of the spur-wheels *i* and *j*, but the forming-roller is relatively greater, in consequence of which the surface of the forming-roller will travel faster than the surface of the working-roller; and as motion is imparted to the metal disc by the bight of the two rollers, it follows that the metal disc must slide on one or the other, and it will slip on the one which is the most polished; hence by making the forming-roller with the smoothest surface, the inside of the kettle will be burnished, &c.

Claim.—The method, substantially as specified, of polishing or burnishing either of the surfaces of the metal during and by the rolling action, by causing one of the rolling surfaces to move faster or slower than the other to produce a slip, as set forth.

Also, in combination with the forming *e e* and working-rollers *k*, giving to the carriage which carries the clamps *o o'* with the disc of metal a diagonal movement to keep the inner surface of the metal in contact with the forming-roller during the rolling action as described.

No. 15,961.—EDWARD C. BLAKESLEE, ENOCH PLATT, Jr., and EDMUND JORDAN.—*Improved Machine for making Brass Kettles.*—Patented October 28, 1856.

The blank being placed against the rim B, a revolving motion is imparted to the pulley D, which causes to revolve the die A and rim B. The reducing-rollers *a* roll over the blank and reduce it gradually to the decreasing thickness desired. Then by revolving the wheel H the male die E will force the metal into the female die A, and by turning the screw-nut *e* the reducing-rollers are forced towards the rim B; this operation is continued until the die E is forced to the bottom of the die A, when the kettle is perfectly formed.

Claim.—The combination of the revolving female die A and its disc or rim B B with the male die E, when these are combined with the adjustable reducing rollers *a a*, and the whole is constructed, arranged, and made to produce the result, substantially in the manner and by the means set forth.

No. 14,696.—O. W. MINARD.—*Improvement in making Brass Kettles.*—Patented April 15, 1856.

The working roller *h*, when the work commences, stands opposite the end of the working mandrel *a²*, and the holding mandrels *d* and *d¹* are brought into such a position as to bring the plate to be wrought between said roller *h* and the end of the working mandrel *a²*. The holding rest *k* is made to slide towards and from the roll *a²* upon the base *k¹*, which is moved along the ways *b* by the screw *m*. This movement prevents pressure and chafing at one point where the end of the roll *a²* bears, and aids also in drawing the bottom into shape. The loose sleeve S holds out that part of the plate to be wrought in front of the roll and prevents its crimping.

The bearings of the holding mandrels *d d¹* rest on a frame *e*, which turns on a point at *e¹*, by which it is connected with a sliding frame *e²*, which moves along upon the ways by means of the screw *f*. The loose disk *j* is forced up against the plate on mandrel *d* for the purpose of bringing the bottom of the kettle to be wrought gradually into shape.

Claim.—The employment of the clamps or holder in combination with the working rollers for drawing or working, or their equivalents, all arranged, adjusted, and operating substantially in the manner described, for the purpose of forming a disk of metal into a kettle as specified without employing a mould or former therefor.

I also claim the combination of the centre-piece *d¹* for holding the disk of metal and disk *j*, by which the bottom of the article being manufactured is formed by the combined action of the disk *j* and drawing or working apparatus.

No. 14,887.—FREDERICK J. SEYMOUR.—*Improvement in making Brass Kettles.*—Patented May 13, 1856.

The dies *d* and *e* are first attached to the ring *h* and lifted with the male die *g*; a disk of metal is now placed on the die *c* and the drop *a* forced down which forms the metal into the shape corresponding with *c*. The form *c* is then changed by adding in succession the dies *d* and *e* to it. The size of the kettle will determine how many rings will be needed to form the female die and the consequent number of operations required to bring the blank kettle into the required shape.

Claim.—Forming brass kettles or similar articles from disks of metal by the successive operations herein set forth, commencing at the bottom and smaller part of said kettle and shaping the same at once, and then gradually forming a drawing in the sides by means of dies.

No. 15,772.—O. W. MINARD.—*Improvement in making Brass Kettles.*—Patented September 23, 1856.

To trim a sheet of metal and cut it into rings, the metal should be placed between the clamps, and the axis of the clamp mandrels should be placed at an angle of 90 degrees with the axes of the cutter shafts,

which will bring the plane of the metal to a right-angle with the face of the shears; the hinged piece K should be lifted to the position K¹, and the part of the metal to be trimmed should be inserted beyond the edges of the cutters *b* and *b*¹, then the piece K should be brought back to bring the cutter *b*¹ to a cutting position, and the shears started. The article held between the clamps will revolve and be trimmed by being in contact with the cutters while they are in motion.

Claim—The use of rotary shears or cutters, having a hinged or sliding piece, constructed and operating as described, to carry one of the shafts and one of the cutters from a cutting position, and to quickly and accurately replace it when desired.

No. 15,031.—LINUS YALE, jr.—*Improved Lock*.—Patented June 3, 1856.

The curb C and wing C¹ attached is revolved every time the lock is turned by the key B; and as the wing C¹ strikes the tumbler A at the notch and raises it sufficiently to pass under it, like an even-bitted or straight key, it follows the key, and always removes its impression. The tumblers A are notched near their corners *a*¹ *a*¹, in order that the longest bits *b* *b*, with the exception of the shortest of the key B, shall produce the same impression.—(See dotted lines 1, 2, 3, 4.)

Claim.—1st. The peculiar form of the tumblers A, or an equivalent form, in combination with a changeable key.

2d. The rib or wing C¹.

No. 15,708.—HENRY D. RUSSELL.—*Improved Lock*.—Patented September 9, 1856.

By turning the door-knob upon stem D, either point of the crescent E catches the pin upon the back of bolt C, and forms, with the edge of said crescent, an inclined plane, upon which the pin S slides, to draw the bolt C and its attachment; the main bolt B, made fast to it, being locked by cross-bar F. When the key which passes through the opening G is turned, the cross-bolt F locks between the stationary pins I and J, and prevents the main bolt from being operated by the smaller bolt C.

Claim.—Liberating the knob and its stem from all connexion with the main bolt, in freeing the crescent plate E, by the movement of the smaller bolt C, as specified, produced by the cross-bar F, or its equivalent, operated by the key of the door; the whole constructed and arranged substantially, as set forth.

No. 14,209.—S. J. TRASK.—*Improved Alarm Lock*.—Patented February 5, 1856.

In order to withdraw bolt H, the key F is passed through keyhole *e* and through wheel D, and, as the key is turned, the wheel D will also be turned, and the wheel will operate the levers E E¹, and cause

the bell C to be struck by the lever E¹. When the key is in line with the keyhole *f*, in the partition plate B, the key is shoved through the latter, and the point of the key passes into a hole in spring G, and this spring is shoved outward from the plate, (see position of G, represented by dotted lines in fig. 2,) till the projection *h*, on said spring clears the notch *i* in the bolt, when the bit will enter the bit-notch *i*¹ in the bolt. The key being again turned, the bit will move back the bolt. The lock may be unlocked from the inner-side without a key, by operating the spring G, by means of the knob I, so as to clear the notch *i*, and moving the bolt by the knob J. The plate L can be so turned, (see positions of L, represented by full and by dotted lines in fig. 1,) by means of a button, as to overlap the spring G, and prevent its being shoved out; thus serving as a check, and giving additional security.

Claim.—The use of the spring G and rod *j*, when used in connexion with the plate L, arranged and operated in the manner set forth.

No. 15,168.—JULIUS CONE.—*Improved Alarm Lock*.—Patented June 24, 1856.

The disc *p* is secured to the knob shaft A and carries a pin *d*, which when the knob shaft is pushed towards the bolt L enters a slot *e* whereby the bolt is actuated. When the bolt is drawn into the lock, the edge of the slot *k* enters a notch *j*, so that the drawer may be opened by pulling upon the knob of the lock; but when the bolt is not forced in, the pin *d* will not be retained in the slot if the knob is pulled.

The notch *l* cut in the disc *p* is so situated that when it is brought to the fork *b* *n* of the ward spring M, and the disc *p* pushed inward, the pin *d* will enter the slot *e* in the bolt. When the disc is in the fork *b* and the knob shaft is drawn out or pushed but slightly, the alarm will be sounded.

The projection *m* on the scape wheel N strikes the fork *n*, and thus acts as a stop to prevent the alarm from unwinding.

The object of the notches on the periphery of disc *p*, and the hooked projection O on the bolt L, together with the spring P, is to enable a person who sets the lock to move the notch *l* a certain distance from the fork *b*, so that he may, when he wishes to open the drawer, move it back again the same number of notches, and thus unlock without striking the alarm.

Claim.—Disconnecting the knob shaft A from the latch bolt L, thereby dispensing with a key, key hole, separate key bolt, and all devices for operating a key bolt.

I also claim placing the alarm spring E and scape wheel N upon the knob shaft itself when combined with the arrangement for connecting said knob shaft with and disconnecting it from the alarm, so that said alarm may not interfere with the ordinary use of the lock simply for a latch.

I also claim the disc *p*, constructed and operating in connexion with the bolt, alarm, and "ward spring" M, substantially as described and for accomplishing the various purposes specified

I also *claim* the ward spring M, constructed and arranged substantially in the manner and for the purposes herein set forth.

I also *claim* the notch *j* in the knob shaft, in combination with the slot *k* in the bolt, when arranged and operating substantially in the manner and for the purpose herein described.

No. 14,958.—EZEKIEL M. HENDRICKSON.—*Improved Lock and Key*.—Patented May 27, 1856.

The handle D, to which the arms F are hinged, and the stem E slide within the hollow case C. The projection G is intended to turn a collar H, and thus operate upon the bolt P, by means of arm I and link J, when all the other parts are in their right position.

The levers N, suspended in the interior of cylinder L, are so situated in relation to projections O in the fixed back of the lock that, unless moved by the pressure of the stem E, the revolution of L will be prevented. The bolts *k k* have recesses in their sides into, which when locked smaller bolts are pressed by springs.

The operation of locking consists simply in pressing upon the knob R, which detaches lever P, and allows the bolts *k* to be pressed out by the springs S S.

The inventor says: I do not claim the employment of one or more jointed arms on a key, such being the construction of what is known as the night latch; but I *claim*, 1st. The construction and use of the key above described, which spontaneously projects slender arms F through a revolving cylinder L, for the purpose of simultaneously detaching catches from the bolts. And 2d. The combination of the key, or the mechanical equivalent thereof, with the revolving cylinder L, the check levers N, the locking levers P, and the springs S S, substantially as described and for the purposes set forth.

No. 14,178.—EDWARD KERSHAW, assignor to Himself and HENRY M. HOOPER & Co.—*Improved Cell Lock*.—Patented January 29, 1856.

This arrangement of bolts, notches, and studs allows of all the doors being locked or unlocked at once, and also of any one of them being unlocked while the remainder are locked.

The inventor says: I do not claim the invention of a single locking bar or bolt, so made and applied to the wall above the door-openings of a series of prison cells, as to be capable by its longitudinal movement of either locking or unlocking simultaneously all the doors of said cells; but I *claim* the combination of the bars E and H having notches at certain proportioned distances, as described, operating in connexion with the studs D on the cell door, in the manner set forth.

No. 15,136.—CHRISTIAN KNAUBER, assignor to WARWICK, ATTERBURY, & Co.—*Improved Door Lock*.—Patented June 17, 1856.

The lock bolt and its tumbler F are operated from the key hole K, which is made so that the key may be inserted either way. The key,

when turned within either of the curves $r^1 r^2 r^3$ or $s^1 s^2$ of the tumbler, lifts the tumbler and then moves it sideways in such a manner that the throw of the tumbler is equal in whichever way the key may be inserted. The lock bolt, being connected by means of the pin 9 with the tumbler, is moved the same distance. The lock bolt, when in locked or unlocked position, is securely kept in its place by the tongue *u* of the tumbler, butting against the projection *v*, on the guiding-block *m*. When, however, the lever tumbler is lifted up, the tongue *u* comes above the projection *v*, and the groove *t* opposite it; the tumbler is then allowed to move sideways. When the lever tumbler is moved downwards, the groove *t* gets opposite the projection *v*, whereby the tumbler is set free to move sideways. As soon as the tumbler arrives at the end of its stroke, the tumbler is forced by the action of the spring G into the position again, that the tongue *t* is opposite the projection *v*, whereby the bolt is kept securely in its place.

Claim.—Actuating the bolt E of a right and left hand lock by means of a tumbler F, which has a vertical motion, for the purpose of freeing and securing the bolt, and also a vibrating motion for throwing the bolt in or out the tumbler being arranged in relation to the key in such a manner that the bolt will be thrown out the same distance in whichever way the key may be inserted.

No. 15,783.—THOMAS SLAIGHT.—*Improvement in Lock and Freight Cars*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The bolt H can be released from the jaws B by inserting the key in the lock, and turning the tumblers E and plate D, thereby distending the jaws and allowing the bolt to be withdrawn.

Claim.—The hasp G, fitted over the socket F of the lock, and secured thereon by the plug or bolt H, which passes through the hasp and socket into the lock, substantially as described.

No. 14,675.—M. NEWMAN, 2d.—*Improved Lock Hasp*.—Patented April 15, 1856.

When the bolt *e* is projected by turning the key, it enters between the projections *f f*, and thus the ear of the bar C is securely kept in the eye of the staple B, and the removal of the hasp A cannot be effected without the previous removal of the ear holding it in place.

Claim.—The use of the swing-bar C, constructed as described, in connexion with the locking bolt *e* and the hasp A, with projections *f f* thereon, for the purpose of retaining the hasp when on the staple, substantially in the manner set forth.

No. 14,030.—I. J. OLDIS.—*Improved Padlock*.—Patented January 1, 1856.

The front plate of the casing A has two key holes made through it—one of which is opposite the lever D, and the other opposite the lever E

When the lock is in a locked state, the lips $d d^1$ on the spring $C^1 C^1$ are in the notches $e e^1$ in the end of the bow or shackle B. In order to unlock the lock, the plate F^1 is turned or moved, and the true key hole is exposed, which is in line with the lever D; the plate F^1 being moved till its aperture j is in line with the lever and key hole. The key is then inserted into the recess e in the lever D, and the key is turned to the right, and the lip d^1 of the spring C^1 will be thrown from the notch e^1 in the end of the bow B, and by pressing the pivot i inwards, the lip o on the spring H will catch over the upper end of the spring C^1 and hold the lip d^1 free from the notch e^1 .

Claim.—The use of spring catch H and lever D, arranged and operating in connexion with the lips $d d$ and springs C C, as set forth.

No. 15,270.—SOLOMON ANDREWS.—*Improved Padlocks.*—Patented July 8, 1856.

The bolt or hooks A are drawn back from the shackle by means of the inclined or bent end of the opening spring e , represented in a detached view in fig. 2, operating obliquely upon a small wire passing through the hooks A, which is brought into action by any one of the bits of the key through the intervention of the tumbler springs d ; either one of which being lifted will lift the opening spring e , because it rests its broad surface upon them, and is kept in contact at its heel by the pressure of one end of the shackle spring e upon it. The using of all the bits of a key for tumbler action, whilst either one acts as a bolt bit, adds much to the security of a lock where only a small key-bit surface can be had.

Claim.—Making a spring to answer the double purpose of a spring and ratchet tumbler, which I denominate a spring tumbler.

The opening spring, being a spring brought into action by the key, for the purpose of drawing back the hooks or unlocking the locks.

The combination of the spring tumblers with the hooks, in the manner herein set forth, holding back the hooks when unlocked, so as to constitute a perfectly racked tumbler lock, a self-locking one.

No. 16,224.—SOLOMON ANDREWS.—*Improved Case for Padlock.*—Patented December 16, 1856.

A plate is punched out, as represented in fig. 1; then raised at its edges, and the keyhole b punched in it and bent at right angles, so as to form the case of a padlock, as shown in fig. 2.

Claim.—The making of the body or case of a padlock of one piece of wrought metal.

No. 14,616.—WILLIAM MAURER.—*Improvement in Locks.*—Patented April 8, 1856.

Fig. 1 represents the lock in a locked state. To unlock the lock, the catch E must pass out of the upright portion of the slot f in the bolt D, and into or through the upright portions of the slots $e e$ in the

tumblers B B, and, of course, the upright portions of the tumbler slots must be brought in line with each other. To effect this, the tumblers B are moved by turning the bit C (by means of a crank A^1) till the slots c are in line, so that a key B^1 may be inserted in them, said key having recesses or slots a^1 in its sides, as shown in Fig. 3. When the key is inserted, the springs d are allowed to throw the tumblers in such positions that the upright portions of the slots e will be in line, as the slots a^1 in the key are so made as to cause the slots e in the several tumblers to assume the proper position. The upright portions of the slots e being in line, the catch E is thrown free from the upright portion of the slot f in the bolt and into the slots e in the tumblers, by the spring g , as shown in fig. 2, and the lock is unlocked.

Claim.—The tumblers B having slots $c e$ made in them, in combination with the slotted bolt D, bolt-catch E, arm or lever F, and bit C; the above parts being arranged as shown and described for the purpose specified.

No. 14,896.—JOSEPH M. LIPPINCOTT.—*Improvement in Locks.*—Patented May 13, 1856.

The lock is opened from the outside by turning the wrench d . The cogged-bit m enters the teeth on the edge of the locking bolt; and the tumblers t being adjusted in the tumbler-chamber f by the key, the locking-bolt i is drawn back, the fence h entering the horizontal groove. The pin r in the locking-bolt i carries with it the latch-bolt p , the tongue of which projects beyond the front of the lock. So soon, however, as the wrench d is released, the spring s^1 acting on the end of the latch-bolt p springs it forward again, and the pin y entering the slot z carries forward also the locking-bolt i , withdrawing the fence h from the groove g in the tumbler-chamber f , when the spring s , acting on bolt l , raises all the tumblers, deranging the grooves and preventing the retrocession of the locking-bolt i , without the use of the key from the outside.

Fig. 1 represents a view of the door-lock, the top and sides being removed to exhibit the interior.

Fig. 2 is a similar view, excepting that the bolts, wrenches, and latch-spring are removed.

Fig. 3 is a view of the fence-bolt or locking-bolt.

Claim.—The combination of the spring-bolt l , tumblers $t t$, and fence h , constructed and arranged in the manner and for the purposes described, together with the combination therewith of the locking-bolt i and latch-bolt p , so that the lock may be readily opened from the inside without a key, and yet requiring a key to open it from the outside.

No. 14,848.—WILLIAM H. AKINS.—*Improvement in Locks.*—Patented May 13, 1856.

The shaft F is caused to revolve until the clutch u strikes against the clutch-pin o of the first revolving disk C, then continuing on until the

other end of the clutch of the latter comes in contact with the head of the clutch-pin of the second disk; and so on, until the party is in a condition to arrange the slot of the last disk in a line with the slots of the flanges *e* and that of the inner end *n* of the tongue *E*, for which purpose the shaft is turned until the proper number on the plate *G* is brought opposite the point of the arrow *g*. The shaft is then revolved backwards to bring the clutches of the disk *f* and first disk together on the other side of the clutch of the second disk, and until the proper number is brought opposite the point of the arrow *g*, when the slot of the second disk will also be set; and so on, until all the slots will be in a line with the tang of the lock-bolt *E*.

Claim.—Arranging a series of revolving slotted disks *C* upon a fixed neck or stud *D*, so that each in turn shall be made the means of adjusting the slot of the other when operated upon by another disk *f*, or its equivalent, secured to a revolving shaft *F* and index *G*.

2d. Altering the respective numbers of two or all the disks *C*, by the simple change of an adjustable clutch from one hole to another, substantially as and for the purposes described.

3d. The method of discovering the proper numbers to open the lock, substantially as specified.

No. 15,124.—MICHAEL ERB and F. C. GOFFIN.—*Improvement in Locks.*—Patented June 17, 1856.

The key *F* is inserted in the opening *d*, and the knob *H* is turned so that the shoulders *c* of the tumblers will pass into the slots *e*, in the key. The slots *a*, in the tumblers, being thus brought into line, the bar *G* may be shoved back. When the cross piece *f* is within the tumblers, the knob *H* is turned backwards, in order to allow the key *F* to be withdrawn; and by again turning the knob, the slots *a* will again be brought into line, and the bar *G* may be shoved back and forth.

The inventors say: We do not claim the sector tumblers with slots cut in them at varying points, for they have been previously used; but we *claim* placing said tumblers upon the shaft *C*, as shown, viz: the end tumblers *D*¹ being attached permanently to the shaft, and the tumblers *D* placed loosely upon it, with washers *b* between them, whereby a positive action or movement is given to the tumblers, the use of springs dispensed with, and the lock rendered durable, simple, and economical to manufacture.

No. 15,239.—HENRY ISHAM.—*Improvement in Locks*—Patented July 1, 1856.

In the engravings fig. 1 represents a face view of the lock, with the cap plate removed, and with the bolt thrown out.

Fig. 2 and 3, cross sections taken at the lines *B b* and *A a* of fig. 1, and looking in the direction of the arrows.

Fig. 4, a section parallel with the face, and taken at the line *C c* of fig. 2, with the bolt thrown in.

Fig. 5, a view of the key.

The inventor says: I do not wish to be understood as making claim broadly to the engagement of rotating tumblers with the key slides by the throw of the bolt. But I *claim* moving a series of rotating cogged tumblers *g g g g*, at right angles to the line of motion of the bolt *b*, by means of a slot *k* in the bolt, or any equivalent thereof, operating on the shaft or spindle *i* of the tumblers, whereby the cogs *h h h* on said tumblers can be made to engage the cogged racks *t* on the key slides *n*, previously set by the key before the stop-pin *j* on the bolt leaves the slot *J* in the tumbler, and will so remain engaged, while the bolt continues its movement to carry said stop-pin to some distance beyond the periphery of the tumblers, so that in any attempt to pick the lock the said stop-pin shall not rest against the periphery of the tumblers to admit of feeling, as it is termed, to bring the tumblers in succession to the required position to allow the lock to be picked, as described.

I also *claim*, in combination with the method of operating the tumblers by the throw of the bolt, and giving to the bolt the capacity to move after the tumblers have been engaged with the key slides to carry the stop-pin some distance beyond the periphery of the tumblers, substantially as described, the employment of a stop or hold-fast *a*¹, operated by the bolt to lock or hold fast the key slides or tumblers before the stop-pin on the bolt reaches the periphery of the tumblers, substantially as described, whereby the slides and tumblers, if not previously arranged by the proper key, will become locked in their disarranged condition before the stop-pin on the bolt can reach the periphery of the tumblers to feel when the tumblers are brought to the required position by a pick.

I also *claim* forming the bit of the key of a series of sector pinions *w w*, &c., which may be shifted to change the combination or permutation, substantially as described, in combination with a series of cogged rack slides *n* for operating the tumblers, substantially as and for the purpose specified.

And, finally, I *claim* the notched collar *d*¹ on the key stem, in combination with the lipped spring *c*¹ at the entrance of the key hole, whereby the key cannot be taken out of the key hole without turning it entirely around to give to the key slides their entire range of motion every time the lock is opened and shut, and thus avoid the possibility of determining the required position of the key slides by the wear of the moving parts, which would be the case if only moved each time to the distance required for unlocking, particularly if the same combination should continue to be used for a considerable length of time.

No. 15,489.—JOSEPH M. LIPPINCOTT.—*Improvement in Locks.*—Patented August 5, 1856.

When the key *b* is inserted in the key hole, which is immediately over the perpendicular grooves *o*, in the wards *n*, the projections on the bit of the key rest on the edge of the tumblers *t*. The key is then forced down, the blade passing into the perpendicular groove *o* in the

wards, and depressing each tumbler to the depth of the projection on the bit of the key. As these projections are of different length, each tumbler is depressed to a different depth in the tumbler chamber; and when the key is pressed down as far as it will go, each horizontal groove g^2 comes exactly to the level of the grooves g and g^1 . The fence h is now entered through the passage formed by the conjunction of the grooves $g g^1 g^2$, and the bolt i may be drawn back by turning the pinion m by means of wrench d . So soon, however, as the bolt i is shot back, and the fence h has reached the end of the groove g , it has fairly entered the aperture n in the tumblers, which, being deeper than the groove g^1 , permits the tumblers to rise if the pressure of the key is removed, and they are forcibly thrown up by the reaction of the spring bolt l , which was forced back by the pressure of the tumblers when the key was inserted. The tumblers thus all rise to the level of the wards, and the grooves g^1 in the tumblers being no longer in range with the groove g in the wards, the fence h is fastened in its place, and the bolt i cannot be thrown forward without again using the key to adjust the tumblers, as before.

Claim.—I claim the use of a stationary tumbler chamber with movable wards and tumblers, in combination with the fence H , constructed and arranged substantially as set forth.

I also claim the use of an aperture n in the tumblers t , into which the grooves g^2 , for the passage of the fence, open, but distinct therefrom, for the purpose of allowing the tumblers to resume a position in which the grooves are out of range, while the fence is yet engaged in the tumblers, substantially in the manner and for the purpose set forth.

No. 15,589.—HJALMAR WYNBLAD.—*Improvement in Locks.*—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I am aware that eccentric discs and ward plates have been before known and used, and I do not claim them; but I claim the arrangement of a series of eccentric discs F , separated by stationary ward-plates E , with each of said discs having an orifice J at the centre of its motion fitted to the shape of the bits of the key K , and moving upon and guided by a segmental standard G , and moved at the same time and to the same distance within a frame D , attached to and working a bolt C of a lock, as herein set forth.

No. 15,800.—G. W. COPPERNOLL.—*Improvement in Locks.*—Patented September 30, 1856.

When the bolt is shot the secondary key is drawn entirely within the main key K , which is inserted to the distance represented in fig. 4, this causing it to rest upon plate q^1 which forms a part of tumbler d . The key is then turned to the right, causing the movement of the tumblers and the consequent rotation of the shafts $e e^1$ and $f f^1$. These shafts

remove the guards $g g^1$ and $h h^1$ from both sides of the circular opening r . As tumbler d moves, the plate q^1 slides from under the main key and unmasks the sliding guards $o o^1$; the secondary key is then allowed to descend and enter the opening between the slides $o o^1$; this key is then turned, causing the slides to part and admit the circular portion of the key to pass; the secondary key then moves onward through the circular openings q and r , and reaches the eccentric I , which it engages and operates. To shoot the bolt the guards are withdrawn and the eccentric J moved in the opposite direction.

Claim.—1st. The swinging guards in front of the bolt chamber, actuated by the fixed portion of the key, in combination with the sliding guards, actuated by the secondary key, arranged and operating as and for the purposes specified.

2d. The eccentrics, I and J , arranged relative to each other and the bolt as set forth, and actuated by the secondary key after the removal of the guards, substantially as and for the purposes specified.

3d. The combination of the swinging guards, tumblers, and spring catches, operating substantially as specified.

No. 15,962.—WILLIAM H. BUTLER.—*Improvement in Locks.*—Patented October 28, 1856.

The case A is fitted on the pin H , and when the circular portion of the case is upward the bolt B will catch into the recess l and the door is locked, one side of the case projecting over the edge of the door which opens outward. The bolt B is withdrawn from the recess l by forcing the key E downwards upon the tumbler c and plate i , and the case A is drawn outward till the bolt B catches into the recess k . The case A may then be rotated on the pin H and the door opened.

Claim.—I do not confine myself to any precise arrangement of the bolt b , or tumblers, or mechanism connected therewith, for the parts shown may be modified in various ways.

I claim placing the case A on an arbor or pin H , which is secured in the jamb or casing of the door, the parts being arranged as shown, or in an equivalent way, so that said case may be secured or locked on the arbor or pin, or allowed to be detached therefrom without the aid of a key, whereby the device may be used as a lock or as a button, as described.

No. 14,618.—ANDREW PATTERSON.—*Improvement in Door Locks.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use and employment of a vibrating bolt b , which shall act as a brace between the seat in or the shaft on which it vibrates, and the jamb-piece or keeper $y y$ into which it falls, without any other leverage on any other point; and this I claim without reference to the manner in which, or the machinery by which, the said brace bolt is operated.

No. 14,714.—JOHN B. ERB.—*Improvement in Door Locks*.—Patented April 22, 1856.

When the knob H is pressed downwards in the oval slot K, it operates on the slide G, whereby the bolt J is drawn backward without danger of putting the lock out of order.

The night key is made tubular, so that when it is put through the aperture L, the handle of the key is pressed inwards and forces out the wing N, (which flies back to its place in the tube when the key is being withdrawn,) which fits in the ward M of the aperture L, and draws back the bolt J.

Claim.—The devices of the knob H, oval slot K, and semi-circular slide G, as they operate upon the bolt J, all in combination, substantially as herein described.

No. 15,456.—THOMAS B. ATTERBURY and WILLIAM WARWICK, assignors to WARWICK, ATTERBURY, & Co.—*Improved Face-Plate for Locks*.—Patented July 29, 1856.

The nature of this invention consists in using for a lock A a separate face-plate B, which is shaped in such a manner in relation to the case of the lock that it can be placed on either of the two sides of said case, whereby the lock may be used on doors which open to the right or left hand side, the face-plate being always fastened outside.

Claim.—The separate or distinct guard or face-plate, of such a form in relation to case or skeleton frame of a lock or other fastening, that it may be put on either of the two sides of the said case or frame, whereby either of the sides can be made the face of the said lock or fastening, substantially as described.

No. 14,059.—JAMES HARRISON, JR.—*Improvement in Padlocks*.—Patented January 8, 1856.

This lock is unlocked in the following manner: The tube *s* of the key is inserted in the hole *w* and pressed upward, so that the end of the tube will press upwards the rods *o o* till the recesses *r r* are opposite the apertures *u u* in the bolt C. The rod *t* is then pressed upward, and the end of the bit *u* will enter the aperture *m* and throw the bolt C back free from the leg *b*, which may then be withdrawn from the case A, and the shackle turned. The stop *h* is forced upward by the spring *i* opposite the end of the hole *d* to keep the bolt C within its hole. The shackle is locked by simply forcing the shackle down within the case A.

Claim.—The combination of the shackle B, sliding bolts C, and rods *o o*, when arranged as herein shown, and fitted with a solid body on case A, constructed of suitable metal substantially as described, whereby a strong, durable, and burglar proof lock is obtained.

No. 16,089.—WILLIAM A. IVES.—*Improved Spring Latch and Lock*.—Patented November 18, 1856.

The cylindrical case A of this lock is provided with key holes in such a manner that by entering the key through the key hole C the bolt may be locked or withdrawn from the inside only, while by passing a key through the key hole E the bolt may be locked or withdrawn from the outside. The knobs H serve to withdraw the bolt when not locked, as in the usual manner.

Claim.—The securing the bolt on the inside, when the same key serves to turn back the bolt, and also to hold it back when desired, and when the said key or any additional key used is so constructed and arranged that it will swing or turn entirely within the tube or cylinder, and be made to operate substantially as described.

No. 15,113.—JOSHUA K. INGALLS, assignor to MATTHIAS H. HOWELL.—*Improvement in Metal Beams*.—Patented June 10, 1856.

The inventor says: I am aware that a wrought-iron beam has been made with wrought-iron corrugated web, said "corrugations resisting compression in the direction of their length." I do not, therefore, claim that; but I *claim*, 1st. The corrugated web B when cast with or upon the top flanch A, and arranged with the bottom flanch C or tie in such a manner as to afford flexibility to the cast portion of the beam, to accommodate its action to the tension of the wrought portion.

2d. The tapering form of the corrugations in their height, which gives a right line when the web attaches to the top flanch, with which it acts in resisting compression, and which increases the breadth of said corrugations, and consequently the flexibility of the web where it touches the bottom flanch or tie, with which it acts in resisting extension.

No. 15,286.—CHARLES DICKINSON and WILLIAM BELLAMY.—*Improvement in securing Pearl Ornaments in Handles of Cast Metal*.—Patented July 8, 1856.

The pearls C are circular plates or disks, having holes through their centres, in which the thimbles *b* are fitted; these thimbles are constructed of tin, or sheet-iron coated with tin; the thimbles are sufficiently long to project a short distance each side of the pearl disks. The pearl disks with the thimbles are inserted in the mould; the melted metal is then poured into the mould, which, when full, is immediately inverted; and as the metal quickly cools on the outer side, the inner part will run out, leaving a sheet or hollow handle D, and the metal will close around the thimbles, as shown, (figure 2,) firmly securing the pearls in the handle, while the edges of the pearls project out all around beyond the sides of the handle.

Claim.—Inserting or securing the pearl disks or plates C in the handle

D, by placing the pearl disks in grooves *a*, formed in the mould; the pearl disks having thimbles *b* fitted within them so that the metal will close around the thimbles.

No. 16,118.—WILLIAM W. HUBBARD.—*Improvement in Lathes for Planing Metal*.—Patented November 25, 1856.

In this machine the tool slide B moves on rails C, which project from the sides of the frame A; and said frame is provided with covers E, which serve to protect the slides from the chips and dust which are produced during the operation of the lathe.

Claim.—Arranging the tool-carriage slides or supports on the vertical sides of the frame or bed, in combination with arranging above such slides, and so as to project from the sides of the frame and over the slides, substantially as explained, coverers or guards, whereby the slides are protected from dust, chips, or other matters, as specified.

No. 16,250.—JOHN S. SANSON and WILLIAM P. FARRAND.—*Improved Machine for making Metallic Slats for Blinds*.—Patented December 16, 1856.

The sheet iron is run upon the bed B until arrested by stops *f*, when the descent of beam B¹ gives the form to the slat at the same time that the shears *m n* separate it from the sheet. The stops *f* are each lifted by a spring *e* when the beam B¹ is raised; as the beam falls these stops are driven into the bed, and are held in that position by the points *i* on plate *l* pressing against them by the force of springs *g*; as the beam reaches its greatest elevation, the plate *l* is drawn longitudinally by the lever *d* releasing the stops, and permitting their springs to lift them.

Claim.—The combination of bed beam and shear with the spring stops, constructed, arranged, and operating substantially as and for the purposes set forth.

No. 16,166.—JAMES SMITH, Jr.—*Improvement in Casting Metallic Tubes*.—Patented December 2, 1856.

The metallic core, composed of the segments *c e d*, can be withdrawn from the tubular ingot by removing the plugs *h* and rings *g* from the ends of the core, and by pressing the part *e* towards the axis of the core, so as to detach it from the others, which, by this process, will be loosened from the ingot.

Claim.—The method of making the metallic mould core, viz: of removable separate sections or staves *c d*, and a narrow trapezoidal or wedge-shaped spring or stave *e*, the whole being arranged and held together by rings *g g* and plugs, or their mechanical equivalents, and made to operate in the manner substantially as specified.

No. 15,899.—JAMES PERKINS and WILLIAM H. BURNET.—*Improved Machine for bending Metal-Pipe*.—Patented October 14, 1856.

The pipe to be bent when taken from the furnace is inserted between the stationary roller *b* and the movable former *d*; the end of the pipe being fastened to the former *d*, the same is rotated and the pipe coiled around it in the spiral form of the groove in which it is laid. This spiral causes the carriage *e* to advance as the pipe is wound on.

Claim.—The mandrel substantially as described with the traversing roller *h*, or its equivalent, for bending coils of metal pipe, and in combination therewith the furnace, in the manner and for the purposes set forth.

No. 15,413.—E. C. CLEVELAND.—*Improvement in Metal-Planes*.—Patented July 29, 1856.

B represents the cross-bar, which contains the screw C that passes through the nut of the stock D, to which the tool is attached. On one end of the screw C there is placed loosely a pinion E having a pawl *a* on its inner side, which pawl catches into a pinion *b* on screw C. Pinion E, gears into pinion F on shaft *c*, the latter having its bearings attached to the bar B. A bevel pinion *d* attached to the opposite end of shaft *c* meshes into pinion *e* placed loosely on the vertical shaft H. Pinion *f* meshes into wheel *j* of the box J, which is placed over disc *i*; the plate *k*, is attached to box J by screws *l*, and the washers *m* of raw hide are placed between the disc *i* and plate *k*. The dogs *o* are fastened in a groove on the periphery of the box J, and are adjusted in such a manner that when they strike against the arm *h*, the box J is prevented from turning when the article to be planed passes underneath the cutter and the shaft I continues to rotate. When the dogs *o* are not in contact with arm *h*, the box J revolves with shaft I, by means of the friction caused by plate *k* and washer *m*, upon disc *i*, which arrangement affords the means of stopping the lateral motion of the tool when the article to be planed passes under it.

Claim.—The friction box J attached to the shaft I, as shown, and provided with adjustable dogs *o o*, the box J being connected with the shaft H by the gearing *j f*, and operating conjointly with the gearing E F *b* and pawl *a* on the shafts *c c* H and the arm *h* which projects over the box J as shown, for the purpose specified.

No. 15,379.—JOSHUA MASON.—*Improved Cutter-Stock Metal Planers*.—Patented July 22, 1856.

As the bed E moves back and forth, the cutter-stock C will be adjusted or swung into an inclined position in consequence of the pins *f* striking against the spring *e*, and the stock swinging in the slot *g* of the plate L, will be adjusted at the end of each stroke so that the proper inclination will be given the tool D.

The inventor says: I do not claim a swinging or adjustable cutter-stock irrespective of the arrangement of the same; but I claim the

cutter-stock C, placed within a rim or band B, which is suspended by journals *a* within the frame or box A, the stock being provided with a sliding or adjustable plate L provided with a slot *g*, and the stock adjusted or operated at the end of each stroke of the bed by the pins *ff*, on the side of the bed, and the levers G H I K, the above parts being arranged as shown and described for the purposes specified.

No. 15,538.—CHESTER VAN HORN.—*Improvement in Planing Metal*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustration. The object in having the beam D and consequently the tool attached to the uprights B is, that by this arrangement pieces wider than the bed plate A may be planed, as one side of the machine is wholly unobstructed.

Claim.—Supporting the cross slide F, by means of the uprights B B, with the beam D fitted between them at one side of the bed plate A and framing C, and having either one upright E or two at the opposite side of the bed plate and framing, substantially as described for the purposes set forth.

No. 14,279.—GEORGE H. CORLISS and ELISHA HARRIS.—*Improvement in Rolling Metal*.—Patented February 19, 1856.

A¹ is the article rolled on this machine; the operation of the machine will be understood from the claims and engravings. The position of the roller, represented by full lines, is the one where the latches L are thrown outwards, and the roller G is at the upper end of the oblique slots *e*. The broken lines represent the roller when confined to the lower end of the oblique slots by means of the latches, so as to be in contact with and operating upon the article to be rolled.

Claim.—The combination of the reciprocating roller carriage F with the guides D D and a table C, substantially as herein described;

2d. Raising the roller G for the purpose of placing the work between it and the table C, by fitting the roller carriage F to the oblique slots *e e* in the sliding-boxes E E, and providing latches L L, operating as described to secure the carriage in the sliding-boxes during the rolling operation, but to loosen them and allow them to run up the slots as herein set forth, at the termination of the return movement of the roller.

3d. The arrangement of the crank-shaft J relatively to the rolling table C and roller carriage F, substantially as herein described for the purpose set forth.

No. 14,332.—JOHN WRIGHT.—*Improvement in Bending Sheet Metal*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The combination and arrangement, substantially as herein shown and described, of the setting down, bending, and finishing rollers or wheels H J, with the table or disc F for operation together, and in relation thereto and each other, in the manner and as specified; the one wheel I having a projecting ledge or head, for the purpose of gauging the "double seam," and clipping or holding it from "opening" whilst being bent, essentially as set forth.

No. 14,049.—REUBEN BRADY.—*Improved Machine for Sheet Metal Bending*.—Patented January 8, 1856.

The plates G are adjusted the required distance on the plate F, and motion is imparted to the roller A in any proper manner, and the metal sheets are passed between the rollers, and as they come in contact with the bed D they are bent in a cylindrical form; the apron or shield I prevents the curved sheets from coming in contact with the operator, and causes them to fall off the opposite side of the machine.

Claim.—I do not claim the concave bed and rollers, irrespective of the arrangement herein described; but I *claim* placing the upper roller F in an adjustable or swinging frame E, and attaching the guide and feeding-plates G G to said frame, when the above parts are used in connexion and operate conjointly with the permanent roller A and concave bed D for the purpose specified.

No. 15,964.—GEORGE W. BURLING.—*Improvement in Machines for Bending Sheet Metal*.—Patented October 28, 1856.

The blocks A and E are placed, respectively, on each side of the turns of the sheets of metal, so as to press the turns between them by operating the levers C and D; then, by turning the lever F, the folding block B is brought down into the position of fig. 3. The apparatus is now moved forward until the portion of the seam thus folded coincides with the panning part of the apparatus that is between 5 and 6, fig. 1. The block B is now moved into the position of fig. 4, and the portion previously folded becomes panned. Then, by detaching the loose plates *e* and *m*, and thus dropping the apparatus, and by then repeating the entire operation as described, the double fold of the metal, as represented in fig. 5, is obtained.

Claim.—1st. The combination of the bars A and E with the folding bar B, the same being arranged and operating substantially in the manner and for the purpose set forth.

2d. The loose plates *e* and *m*, in combination with the bars E A and B.

No. 15,069.—HENRY C. DOLE.—*Improved Shears for Sheet Metal*.—Patented June 10, 1856.

By raising the lever *e* to a perpendicular position, the blade *d* will be raised clear of the lower blade C, by reason of the upper part of *b*

being made to slide in the groove *f* as the wheel works on its axis at *a*. When the handle is brought down to a horizontal position, the shears will be quite closed by pressing the lower edge of the eccentric wheel upon the top of the blade at *b*. The other eccentric wheel *N* works on its axis *y* in the same manner, with this difference: the pitman *J K* being attached further from the axis in *N* than it is in its moving power *H*, it will, therefore, not move *N* as far as *H* is moved, and, consequently, the shears will not rise and fall at the back end as much as at the front end.

Claim.—The employment of pitman *J K*, levers and eccentric wheels *N H*, constructed as described, for operating the blades *C D*, in connexion with the adjustable gauge *O*, in the manner and for the purpose set forth.

No. 14,878.—SYLVESTER B. MILLER and EZRA W. WHITEHEAD.—*Improvement in Working Sheet Metal*.—Patented May 13, 1856.

The nature of this improvement consists in substituting pressure and rotation to one of the dies instead of a drop and percussion force for forming and stretching the material.

The inventors say: We do not claim a rotating die or counter-sink for making depressions by cutting and removing the material, as the means for doing so are well known and are for another purpose; but we *claim* the employment of the die *E*, when constructed and used in connexion with the lower die *N* for extending or stretching thin metal plate by pressure and rotary motion combined.

No. 14,738.—SAMUEL R. SHEPARD and ORSON W. STOW.—*Improvement in Working in Sheet Metal*.—Patented April 22, 1856.

By turning the nut *I* the outer edge of the guide *H* may be moved nearer to or further from the lip *g* of the roller *G*, by means of the screw *j* and spring *J*.

Claim.—The adjustable rotating guide *H*, attached to either of the rollers *G*.

No. 14,916.—J. B. HOLMES.—*Improvement in Working in Sheet Metal*.—Patented May 20, 1856.

The corrugated sheet of zinc, to be gauged and bent, is laid on the metal plate *3*, attached to the frame of the machine; the top plate *2* is then brought down upon it and holds the sheet of zinc to its original corrugated shape, while the grooved eccentric bending-shafts *4 4* revolve and bend the ends of the sheet of zinc down at right angles.

Claim.—The use of corrugated plates *2* and *3*, operating in connexion with the eccentric bending and gauging shafts *4 4*.

No. 14,115.—EZRA RIPLEY.—*Improvement in Casting Metals*.—Patented January 15, 1856.

M represents the fluid metal, which enters the mould *A* through the aperture *B*. The partition *C* is formed of plates of metal, with vents or air-passages *a a* formed between them, for the purpose of communicating with the expanding air-chamber *G*.

The inventor says: I do not broadly claim exhausting the mould of air previous to, or while running in the melted metal; nor the use of moulds having vents arranged for the escape of confined or compressed air; nor do I claim the substitution of a simple expansive air-chamber for an air-pump, in casting metals by atmospheric pressure.

I *claim* instantaneously removing the air which ordinarily fills the mould into an air-tight expansive chamber, through crevices, like air-passages, arranged for the purpose, immediately after the open mouth of the mould is immersed in the fluid metal; all as herein described and specified, whereby the advantages herein set forth are attained.

No. 16,001.—ROBERT ANDERSON and AARON H. VANCE.—*Improvement in Cutting Metals*.—Patented November 4, 1856.

The nature of this invention consists in combining a frame *H*, on which is erected a moveable carriage *B*, with a shearing or punching machine, of any known construction, by which the plates can be moved on a parallel line with that of the edges of the shears and punch, and the plates can thereby be cut and punched perfectly straight. Also, in combining with a shearing and punching machine, of any known construction, a traverse carriage *R*, to which pattern guides *S* are attached, for the purpose of cutting or punching metallic plates in reverse or irregular curves. Also, in combining a revolving table *M* with the traverse carriage *R*, and a shearing or punching machine, by means of which plates can be cut in circles.

Claim.—The use of the parallel table *B*, revolving table *M*, and traversing table *R*, in connexion with machinery for punching and shearing metals, when the said tables are constructed and operated in the manner described for cutting and punching straight, curved, or irregular forms of metals, as set forth.

No. 15,733.—JOHN FEIX.—*Improvement in Granulating Metals*.—Patented September 16, 1856.

The melted metal is poured into the inner vessel *2*, and at the same time jets of water pass through the elbow-shaped tubes of pipe *3* into the cylinder *1*, and coming in contact with the melted metal granulate the same, the water passing from the cylinder *1* into the space between cylinders *1* and *2*, and escaping through a hole in the bottom of the latter.

Claim.—The use of the outer and inner vessels *1* and *2*, when constructed and operated in the manner described, in connexion with the pipe *3* and its elbows, as set forth, for keeping the water in circulation and for granulating the metal.

No. 15,190.—JOHN MOONEY.—*Improved Tool for Cutting Metals.*—Patented June 24, 1856.

The nature of this invention consists in constructing the cutting-off tool in the form of a blade of uniform width, and enclosing the same in clamps in such a manner that when placed in the tool-post of the lathe, &c., and the set-screw brought to bear upon it, it may be held firmly, as if constructed in one piece as formerly.

Claim.—The use of the blade or cutter O, of a separate piece of metal, inserted in an adjustable clamp G.

No. 14,551.—WILLIAM F. BROOKS.—*Improvement in making Seamless Metal Tubes.*—Patented April 1, 1856.

This invention is an improvement of the roller dies for which letters patent were granted to Timothy D. Jackson, under date of February 28, 1854.

At *b* fig. 1, is shown a section of the mandrel and of the metal *m* in the process of being formed into a tube. A is the forming die. For effecting the loosening the tube is forced through a second roller die B, in which the face of each roller is concave, as shown at *c* fig. 2, whereby the tube is slightly distended by the pressing apart of the spaces between the ribs *a*.

Claim.—Grooving or removing the corners of the radial rollers R, so that a series of parallel projections *a*, or ribs, will be formed upon the tube, the rollers relieved from undue strain, protected from choking, and the reduction of the tube and the withdrawal of the mandrel *b* therefrom facilitated, substantially as set forth.

No. 15,348.—JOHN J. SPEED, jr., and JOHN A. BAILEY.—*Improvement in making Seamless Metal Tubes.*—Patented July 15, 1856.

The short thick tubular casting or ingot R, out of which the tube is made, is placed on the mandrel L¹, one end of it being connected to the circular plate O; and motion being given to the shaft C, a vibrating movement radially to the mandrel is communicated to the dies H J K, the two plates *d e* forming a toggle, and the upper die H when radiating inwards forcing down the two lower and lateral dies J K, till the latter arrive at a solid bearing or seat, when the circle formed by the combined curvatures of the inner faces of the three dies complete and close the two lower dies J and K by their relative position to the upper die H, effectually restraining the compressed ingot from giving out laterally, and thus effecting an equal reduction of the tube.

Claim.—We claim the three encircling and radially hammering or pressure dies, when arranged relatively to each other, and operating together on the tubular ingot while stationary, and in combination with the intermittent feed to the ingot or partially formed tube on or over the mandrel, alternate with the compressive action of the dies.

No. 15,513.—THEODORE GOMME and CHARLES EUGENE AUGUSTE BEAUGRAND.—*Improvement in Manufacture of Sheet-Metal Ware.*—Patented August 12, 1856.

This invention relates to the stamping of sheet metal by means of a puncheon *f*, while the surrounding parts or edges are held with more or less tightness between two rings *d*. The puncheon *f* is operated upon by means of a piston *b*¹, moving in a cylinder *b* and driven by steam. The rod *f*² can be made to slide within the piston rod *b*², and is attached at its upper end to a plate *f*¹, which serves to hold the work in place and subsequently to disengage it.

Claim.—The use of the rod *f*², sliding within the stamping puncheon *f*, for giving motion to the plate *f*¹, on the upper part of said puncheon, so as to hold the work in place, and subsequently to disengage it; the whole operating for preserving the thickness of the metal uniform when acted upon by the puncheon between the grooved and bevelled rings, as described.

No. 14,724.—JAMES JONES JOHNSTON.—*Improvement in Flasks for Moulding.*—Patented April 22, 1856.

The table C is raised or lowered inside the box by means of guides D D, a rack, and pinion, as seen in fig. 3. The patterns P are fixed on the follow board N, which is placed on the table C, and kept in position by pins O. The cover plate R has openings which correspond with the patterns P.

Claim.—The employment of the table C, follow board N, and plate R; the whole, when adjusted by the vertical movement in guides, being for the purpose set forth.

No. 14,637.—JOHN DEMAREST, assignor to "THE J. L. MOTT IRON WORKS."—*Improved Core-Bar for Pipe Moulding.*—Patented April 8, 1856.

The nature of this invention consists in making the core-bar *b* with end plates or wings *d* and *e* fitted on by a slip, which plates rest on the surface of the core-box *a* in making the core, and on the face of the flask in the act of moulding, to sustain and hold the core-bar in a true position without the use of bearers, so that the surface of the pipe inside and out may be cast smooth.

The inventor says: I am aware that core-bars have been made with wings between which to pack the sand, and which bind and hold the sand forming the core, and this I do not claim as my invention. And I am also aware that core-bars have been made with branches connected therewith by dove-tail joints, so that the branches of the core-bar can be separated in the pipe after the pipe has been cast; but those heretofore made are required to be sustained centrally in the mould by inside bearers, which injure the castings. I do not, therefore, wish to be understood as making claim to the connecting of the branches with the main core-bar by dove-tail joints irrespective of the side wings

or plates which rest on the surface of the flask to sustain the branches in a true central position without bearers; but I *claim* making core-bars for moulding curved elbow or branch pipes, and other such like hollow castings, with sustaining plates or wings at the ends, substantially as and for the purpose specified.

No. 15,054.—DANIEL DODGE.—*Improvement in Nail-Machines*.—Patented June 3, 1856.

The two hammers G G receive their motion from the cams H H; they are forced apart by the spring K.

The shaft B is put in motion, and the end of a bar is introduced between the hammers, resting it upon spring L on top of anvil D, until, by the repeated action of the roller and hammer, it is brought to the requisite point and length.

Claim.—The use of the roller F, the anvil D, and the hammer G G, constructed and operating either in combination with the spring L or without it.

No. 15,910.—PERRY A. WILBUR.—*Improvement in Nail-Machines*.—Patented October 14, 1856.

The nail plate is fed to the cutting tool by means of the feeding tube *s*, and the blank is cut from the plate by means of the cutting blades *u* and *s*; it is then caught by the movable gripping jaw Z, and jammed up against the stationary jaw S, whilst it is being headed, by means of the heading tool 12. The nail being completed and the gripping jaw Z drawn back, a delivering arm 16 hung to a vertical rock shaft 17 is forced forward by lever 18, which extends back to a spring 19, operated by cam 2; so that at proper intervals, and as regularly as the nail is finished, it is thrown out of the grippers by said arm 16.

Claim.—The arrangement of the cutting, gripping, heading, and delivery apparatus, with regard to the nail-plate feeder, so that the whole may be operated from one cam shaft substantially in the manner set forth.

No. 15,938.—PERRY A. WILBUR.—*Improvement in Nail-Plate Feeding*.—Patented October 21, 1856.—Antedated October 14, 1856.

The nail plate is placed in the feeding tube S, represented in detail in figures 3, 4, and is fed to the cutters by the follower *u*, operated upon by pinion M³ and rack N. The object of the long pinion M³ is to admit the lateral adjustment of the frame L and carriage M, for the purpose of increasing or diminishing the head and point of the blank. The semi-rotating motion of the feeding tube S, for the purpose of exposing the reversed sides of the nail plate to the tool *u*, is accomplished by cam H causing to vibrate lever *g* on its fulcrum *h*, imparting a reciprocating movement to pitman *z* and oscillating toothed sectors

Y and X. The forward and backward motion of the feeding tube is accomplished by the arrangement of a lever *l*, the end *o* of which slides between the projections *p*. As the cam 7 presses down the end of said lever the latter is pressed forwards, having free play as the bolt *m* passes through a slot in said lever, and thus the bearings T¹ of the feeding tube resting on the cross-piece *k* are moved forward and backward. The process of cutting, gripping, heading, and delivering the nail by this machine is described in patent No. 15,910 issued to P. A. Wilbur, 14th October, 1856.

Claim.—Giving to the tubular nail-plate feeder its rising and falling, semi-rotating, and forward and backward movements, substantially in the manner and for the purpose set forth.

I also claim the lateral adjustability of the nail-plate feeder, to change the angle at which the nail-plate approaches or passes under the cutting-die, for the purpose of giving more or less head or point to the nail; whilst said feeder continues to receive its multiple motion as set forth.

No. 15,515.—ADOLPHUS HEDDAEUS.—*Improved Nail-Plate Feeding Apparatus*.—Patented August 12, 1856.

The principal features of this invention will be understood by reference to the claims and illustrations; a detailed description thereof would take up too much space to be given here.

Claim.—1st. Connecting the feeding apparatus with the nail machine by ball wrists or universal joints in some point or points situated in a vertical line through the centre of the nail when cut, and of locating all the points of such connexion in this vertical line for the purpose of giving the feed apparatus a lateral motion in the arc of a circle, whose cutter is in that vertical line, whereby the feed apparatus may be accurately adjusted without stopping the operation either of the feeder or the nail machine.

2d. The use of an elliptical spring or steel hoop, as the bearing for the other front end of the screw, in combination with the sleeve *s*, ball *a*¹, cam *f*¹, and spring *g*¹, for the purpose of allowing the turning of the nail plate and drawing it back while turning.

3d. The use of the large wheel G, constructed as described, in combination with the pawl *t* and pinion *p*, for the purpose of communicating the requisite motion to the feed screw and nail plate, together with the cam wrench *l*¹ to lower the spring *b*¹ of the pawl *t*, whereby the feed apparatus may be instantaneously stopped, without interfering with the action of the nail machine or detaching the one from the other.

No. 14,474.—JOHN P. SHERWOOD.—*Improvement in Nail-Plate Feeding Machines*.—Patented March 18, 1856.

The main shaft K revolves and with it the eccentric cam J. The friction wheel Z travels around in the concentric groove, and communicates a reciprocating motion to the sliding carriage A by means of

bar I. Around the shaft C are placed the slotted cams D D, forming a groove in which the stationary pin U works, thus compelling the shaft C to make a quarter revolution at each stroke. W is the handle of the nippers which hold the nail-plate N. It passes through the centre of the hollow shaft C, and has a screw cut on the back end which works in a female screw, formed by the jaws G G.

Claim.—The use of the grooved eccentric cam J with its friction roller Z and bar I, in combination with the slotted cylindrical cam D, nipper-handle W, and female screw, constructed and arranged as described, and operating to produce the peculiar movements necessary for feeding the nail-plate in nail machines, in the manner and for the purposes hereinbefore set forth.

No. 14,011.—RICHARD H. COLE.—*Improved Nut-Box*.—Patented January 1, 1856.

The movable segments *c c* which form the sides of the nut-box are placed in a cup-shaped case which has a perforated bottom A, and is provided with a rim *l*. The segments *c c* are adjusted and secured in any desired position within their enclosing case by means of the eccentrics *d d*, and the respective set-screws *e e*, *f f* and *g g*. The segments have projecting flanges *h h*, on their inner edges faced with steel so as to form cutting edges. The engraving represents a four-sided nut-box, which, by augmenting the number of segments, can be converted into a six or eight sided one.

Claim.—Having thus fully described my improved adjustable nut-box, what I claim therein as new and desire to secure by letters-patent is: The arrangement of the segments *c c*, the eccentrics *d d*, and the set-screws *e*, *f*, and *g*, with each other, and with the case A *l*, substantially in the manner and for the purpose herein set forth.

No. 14,452.—ROBERT GRIFFITH.—*Improved Nut Machine*.—Patented March 18, 1856.

The heated bar of iron is placed on the table C, the pressing block M forces it against the ledge of the table, while the punches *p* descend to make the holes. Before the punches are withdrawn, the saws *h* are brought forward to sever the nuts. As soon as the saws and punches are withdrawn, the pressing block is withdrawn by the motion of the cams *n n*, and is raised by the levers *o o*, acted upon by the cams *r r*. The arm *d* depresses the lever *c*, thereby tilting the table and discharging the nuts.

Claim.—The use of the compressors M, punches *p*, saws *h*, cams *w* and *r*, levers *o* and *c*, crank *d*, and travelling-head *b*, constructed, arranged, and operating as described, for the purpose of making nuts from heated bars, as herein set forth.

No. 15,001.—RICHARD H. COLE.—*Improvement in Nut Machines*.—Patented June 3, 1856.

The machine being in motion, the cam P strikes against the side *p¹* of the sliding plate G, and carries the punch *d* towards the mouth of the nut-box; and at the same moment the cam *c* produces a rearward motion of the bottom *j* of the nut-box. As soon as the sliding plate H is brought in contact with the projection Z, the punch *d* brings the blank nut in contact with the bottom of the nut-box, shaping the nut. The punches *e* and *f¹* are now forced into the hot nut blank, until they nearly meet in the centre of the same, by means of cams *b* and *o*; the hole is thus formed in the nut blank by forcing the metal from the centre thereof into the body of the same, thereby causing the nut formed to be thicker than the bar from which it was cut. The punch *f¹* is carried outward by cam *o*, whilst the punch *e* is carried forward by cam *b* through the nut, depositing the wad. The cam *a* strikes now the surface *m¹* in the plate F and withdraws the punch *e*, while the bottom of the nut-box is carried forward to discharge the finished nut by means of cam *c* and plate H.

Claim.—The arrangement of the round punch *f¹* within an aperture in the angular punch *d*, at the same time that a round punch *e* is arranged within an aperture in the bottom *j* of the nut-box, when the said round punches are combined with movements which cause them to act jointly in perforating holes in the nuts formed in said nut-box, substantially as herein set forth.

I also claim the joint arrangement of the angular punch *d* and its exterior round punch *f¹* with the bottom *j* of the nut-box and the interior round punch *e*, when the said bottom of the nut-box is combined with a spring, or its equivalent, in such a manner, in relation to the said angular punch *d* and the round punches *e* and *f¹*, that the action of the said parts in forming a nut will cause the completed nut to be thicker than the bar from which the blank was cut, substantially as herein set forth.

No. 15,861.—WILLIAM E. WARD.—*Improvement in Nut Machines*.—Patented October 7, 1856.

A detailed description of this machine would take up too much space to be given here. The main features of the invention will be understood by reference to the claims and engravings.

Claim.—The two punches *g* and *h*, arranged side by side and operated substantially as described, for punching the central hole, cutting off the blanks from the bar, and discharging the same, substantially as described, in combination with the two holes or two dies, so that a hole is punched in the bar for another nut during the continued motion of the punch to discharge the nut which was cut off during the previous part of the same motion.

Also, in combination with the punching and cutting operation, or either, and with the mandrel *a¹*, or its equivalent, for entering the central hole of the nut blank, the employment of the spring jaws *q q*, or

the equivalents thereof, for transferring the nut blank from the die to the mandrel, and there holding it until the mandrel enters the holes, substantially as described.

Also, the holding of the nut blank on the mandrel, in combination with the swages b^1 and b^2 , for swaging the faces of the nuts, substantially as described.

Also, in combination with the mandrel a^1 for holding and turning the nut blanks, substantially as described; the employment of the hammers q^1 q^1 for hammering or swaging the edges of the nuts, substantially as described.

Finally, the combination of the swages b^1 b^2 for swaging the faces of the nuts with the hammers q^1 q^1 for forging the edges of the nuts, substantially as specified, by means of which the metal is thoroughly compacted in all directions, and a good finish given to the entire blank.

No. 16,142.—ROBERT GRIFFITHS.—*Improvement in Nut Machines.*
Patented December 2, 1856.

Motion being imparted to the machine, the heated iron is introduced, as represented at z , and the tables J and K holding the dies n and m are caused to approach each other by the action of cams c and d , and the iron is confined between them, at the same time that the cutter bars separate it into the blanks required. The blanks are now acted upon by the opposite punching bars N, operated by the cams e . The punching bars continue to advance until the shoulders of the punching bars have forced the strippers R against the nuts, so that the latter become pressed between the ends of the cutter bars and the stripper plates R. As the punching bars recede, their ends are released from the nuts by means of stripper R.

Claim.—1st. The manner, substantially as set forth, of securing the punching and cutting bars between the sliding plates, for the purpose specified.

2d. The combining of the punching and cutting bars with the strippers, the said strippers being whole or divided, and operating in either of the methods specified.

No. 16,188.—CHARLES RATCLIFF.—*Improvement in Nut Machines.*
Patented December 9, 1856.

The operation of this machine is as follows: The rolls a and a^1 being rotated in the direction of the arrows, and the end of an iron bar B being inserted, a portion suitable for a nut will be cut off; then, as the rolls revolve, the punch d , being forced outwards by a cam on the shaft of the respective roll, forms the eye, the punching being received and held by cavity g . The nut, being formed, is expelled at a suitable part of the revolution by the moving outward of the sliding-die c .

The inventor says: I do not claim any peculiarity in the manner of punching, nor in the operation of the dies, separately considered.

I claim the two sets of dies, counter-dies, and punches, arranged alternately upon the peripheries of a pair of rolls, substantially as set forth.

No. 15,003.—RICHARD H. COLE.—*Improvement in Making Nuts.*—Patented June 3, 1856.

The nature of this invention will be understood by reference to (No. 15,001) Richard H. Cole's improvement in nut machines, patented June 3, 1856.

Claim.—Forcing a portion or the whole of the metal displaced in forming the holes in the nuts into the bodies of the nuts, by which I am enabled to make the nuts thicker and more compact than the bar from which they are cut, all substantially as herein set forth.

No. 15,004.—RICHARD H. COLE and JOHN C. COLE.—*Improved Machine for Polishing Metallic Nuts.*—Patented June 3, 1856.

The surfaces of the nuts are smoothed off by the action of the cutters i i of the planing-wheel D as they are carried in a guiding channel f under the centre of said wheel upon pins c c which project from alternate links of an endless chain, composed of the links a and b , as shown. The nuts are supported by the side plates d d , which rest on plates e e , the plates d d being secured by means of set-screws g g .

Claim.—The arrangement of the planing-wheel D and the nut-carrying endless chain with the partially inclined and partially horizontal groove f , the sustaining plates e e , and the edge guiding plates d d , or their equivalents.

No. 16,039.—WILLIAM H. PLUMB.—*Improvement in Crushing Rollers for Ores, &c.*—Patented November 4, 1856.

The roller C is mounted on permanent bearings, and the position of the roller g can be adjusted by moving the boxes d in the bearings b^1 to one or the other side, and securing the same in any desired place. The bearings of roller g^1 are supported by two arms f extending from the adjustable shaft e to the shaft of the roller g . By this arrangement the pressure of the roller g upon roller C can be regulated to any desired degree.

Claim.—The construction, combination, and arrangement of the stationary and movable roller adjusted to the work to be done, in the manner and for the purposes set forth.

No. 14,182.—WILLIAM BALL.—*Improved Ore Washer.*—Patented February 5, 1856.

The trough I receives a vibrating motion while the tubes E revolve, through which the water enters the trough. The water is admitted in

quantity much greater than can pass through the holes *s*, and continually flows over the inner edge *q* of the trough. The pulverized ore rises sufficiently high to pass over the ledge *k*, when it is immediately washed through the holes *s* by the stream of water constantly passing through them.

Claim.—The trough *I*, when constructed with the ledge *k*, as described, and operated in connexion with a head of water kept above the level of the said ledge, in the manner herein set forth.

No. 14,388.—WILLIAM L. CARTER.—*Improved Ore Washer*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I am aware that a cylindrical vessel, with a current of water forced against the material passing through it, has been used for washing ores. This I do not claim. But what I do claim is, a conical vessel provided with shovels and pins, or projections, whose shaft is horizontal, and lower side inclined, so that water introduced at one end shall have a natural flow to the other end, and meet the ores as they pass in an opposite direction, to wash them, substantially in the manner and for the purpose set forth.

No. 15,544.—HEZEKIAH BRADFORD, assignor to HORATIO BOGERT.—*Improved Ore Washer*.—Patented August 12, 1856.

The lumps of ore are fed from hopper *g* into the inside of a rotary perforated cylinder *a*, armed on the inside with numerous teeth, which, as the lumps of ore are rolled over by the rotation of the cylinder, scrape and loosen the clay and other foreign substances, which are then washed off by the agitation of the water induced by the rotation of the cylinder. The lumps, when reaching the other end of the cylinder, are taken up by curved and perforated scoops *i*, which lift them up and discharge them through a central hole *h*, while the water drops back into the cylinder through the perforations in the scoops, and carries the foreign substances from the cylinder into the trough *k*, and through a discharge hole *p* in the bottom, which is governed by a valve *m*.

Claim.—I claim the employment of a hollow perforated cylinder rotating on a horizontal or nearly horizontal axis, provided with numerous pins or teeth on the inner periphery pointing towards the axis, combined with a feeding aperture and hopper at one end, and lifting scoops and delivery aperture at the other end, and with a water trough or vessel, within which the lower part of the said cylinder revolves, the said trough or vessel being provided with a delivery aperture controlled by a valve, all substantially as and for the purpose specified.

No. 15,827.—SAMUEL THOMAS.—*Improved Ore Washer*.—Patented September 30, 1856.

The material to be washed is thrown into the trough *A* at its lowest end, said trough being filled with water; and as the shafts *B* are rotated, the material is lifted up and carried forward at the same time by the spiral flanges *b*, entirely separating the ore from the other material with which it is mixed, and carrying it up to the delivery end of the trough.

The inventor says I am aware that an inclined revolving vessel has been used in washing ores, and that a single shaft provided with shovels and spiral flanges has been used. I do not claim either of these things, separate or combined.

But I claim, in combination with a stationary inclined box, the double shafts, with spiral flanges thereon, and turning in opposite directions, for lifting up and carrying forward the ores to the delivery, in the manner set forth.

No. 14,234.—THADDEUS FOWLER.—*Improvement in Sticking Pins in Paper*.—Patented February 12, 1856.

The depressions *a* in the plate *C* are suited to receive the pins, and are so shaped that the heads will not be above the surface of the plate. The ends of these depressions have a recess *x* for the reception of the pin-heads, and are scarfed out, as seen at *b*; so that any pins that pass down point foremost, even though they fall into the recesses, will readily pass out again, causing all the pins contained in the depressions to have their heads downwards. For the purpose of filling the depressions with pins, a number of pins are thrown upon plate *C*, which then receives a shaking motion, it being held at the same time slightly inclined. When the recesses are filled, the plate *C* is placed as shown at fig. 1. The holder *D*, with the crimped paper *P* upon it, is then turned round so as to rest flat on form *C*; it is then turned back to its first position, (the paper-holder and plate *C* being firmly held together,) when all the pins will rest in the depressions in the crimped paper, as seen at *i*. The form *C* is then removed, and the frame *A* turned around hinge *f f*, when the bars *g* will rest on the barrels of the pins, to hold them steady, while the bars *h* will rest against the heads of the pins; the paper-holder is then drawn forward (see arrow *y*) until the pins are inserted in the paper to the proper extent.

Claim.—The use of the form fig. 2 for separating, arranging, and spacing the pins, when combined with the paper-holder *D* for the purpose of transferring the pins to the prepared paper ready for sticking, when both are constructed, used, and made to produce the result, substantially as herein described.

Also, the combination of the paper-holders *D* with the frame *A*, when constructed, arranged, and used for inserting the pins into the prepared paper, substantially in the manner herein described.

No. 15,871.—LYDIA ATWOOD & CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD, deceased.—*Improvement in Sticking Pins in Paper*.—Patented October 14, 1856.

A detailed description of this machine would take up too much space to be given here; the main features of it will be understood by reference to the claims and engravings.

Claim.—1st. The vibrating nippers V, armed with a knife or double inclined plane for separating the pins, turning them from a vertical to a horizontal position, as specified.

2d. The straight inclined conductor K, when combined with the nippers V, with their separating points as carrier, as described.

3d. The lipped driver K, for driving the pin along the railway or bed laterally into the groove to be stuck into the paper, when it acts upon the pin before the vibrating nipper lets go its hold.

4th. The lateral driver, or its equivalent, for the purpose of delivering the pin under the spring-holder y, as a means of controlling the pin until it is inserted into the paper.

5th. The combination of the sticking driver P and its guiding groove with the vertical crimping bars, when the bars permit the paper to pass over their ends vertically in the process of sticking pins.

6th. The feeding rollers Y^2 z^2 , or their equivalents, for the purpose of holding the paper and controlling it at such a distance from the guiding rollers x^1 x^1 z^2 , as will allow the paper to pass up and down without moving the spools while the rollers are in motion.

7th. The rollers and carriages which control the pins and paper, for the purpose of moving the paper forward intermittently, and up and down intermittently, to space off the rows of pins, and to space the distance between each succeeding pin in the same row, the ends of the paper resting on spools Y^2 z^2 dissected from the machine.

No. 15,877.—WALKER B. BARTRAM.—*Improvement in Sticking Pins in Paper*.—Patented October 14, 1856.

The operation of this machine is as follows: The paper is conducted over the top of the jaw P^* of the holder down below the jaws $P^* P$, and between the ends of the forceps O and bar Q, from whence it descends to the roller F, passing between said roller and the band d. Motion being then imparted to the shaft C, the paper is crimped by the crimpers I to form the creases which receive the pins, while the holder $P^* P$ is open. During the operation of the creasers, the box U receives its movement towards the pins in the lower part of the feeder, and its bars y y^1 , after taking a sufficient number of pins, slide one by one under the plate U, and place the pins at proper distances apart in the slot v^1 of said plate. The crimpers now move out of the way, and the holder $P^* P$ comes in operation and seizes both the pins and the paper alongside of them, about the same time as the forceps O come in operation to seize the creasers; and then box U swings back to carry the separating bars from between the pins, and the plate T slides outward from the machine to make room for the descent of the driver L, which comes down and drives the pins through the crease, the holders open-

ing as soon as the heads of the pins have been received within the recesses in the face of the driver, and their points entered in the first crease in order to let the driver L pass down between them. The driver, after this operation, is quickly raised by spring 24, and the plate T is pushed up again to the feeder; after which the lever H, with its dog e, comes into operation on the ratchet G, and moves the wheel F, which takes away the row of stuck pins, and draws from the roll B a supply of paper sufficient to receive the next row. When the bars y move forward to take the pins, the outward bar y^* knocks away the stop-lever Y from in front of the pins. As the bar y^* moves from under the feeder towards the plate T, the pins in the feeder S are caused to follow it by the action of gravitation on those pins in the inclined part of the feeder. As the bar y^* reaches the point where the first bar y stood when the separator and spacer moved forward, the stop Y is thrown across the slot v between the front pin and the said bar y^* , and thus prevents the pins from moving any further, and retains the lowest pins in a position ready for the next operation of the spacer and separator.

Claim.—1st. I claim the separator and spacer, composed of a series of bars y y^1 y^2 , etc., having a simultaneous movement at right angles, or nearly so, to the line of pins in the pin feeder, and to the line in which the pins are inserted, and a movement one after the other in a direction parallel, or nearly so, to the said line, and operating substantially as and for the purpose set forth.

2d. The construction of the driver L, with recesses in its face to receive the heads of the pins, and act in conjunction with the paper after the points of the pins have penetrated it, to serve the purpose of guiding the pins straight and parallel through the paper, thus enabling the holder to be opened to make room for the driver, substantially as described.

3d. The stop Y acting in combination with the separator and spacer, substantially as described, to retain the pins behind the separator and spacer after a number sufficient for one row has been taken from the feeder by the separator and spacer, but to be moved away by the separator and spacer.

4th. The bar Q operating in combination with the forceps o o, substantially as described, to form a second holder below the principal holder $P^* P$, and more perfectly secure the upright and parallel position of the pins during the commencement of the driving operation.

No. 15,111.—JOHN I. HOWE and TRUMAN PIPER, assignors to the HOWE MANUFACTURING COMPANY.—*Improvement in Japanning Pins*.—Patented June 10, 1856.

The metal plate h, with the sheet of paper charged with pins, is placed on top of the frame b, with the sheet of paper above the plate, and with the heads hanging downwards. By turning the screw e, the frame is let down until that part of the pins depending below the plate is immersed in the compound. When coated, the plate with the pins

is put into an oven; when the pins are taken from the oven, the metal plate is turned up side down, and the sheet of paper drawn off, so that the pins will hang in the plate by their heads, which will allow of their being coated entirely.

Claim.—The inventors say: What we claim, as our invention in the process of japanning pins, is dipping a portion of the length of the pins *g* in the compound, whilst inserted in a sheet of paper *i*, and with one end downward, and then subjecting them to the baking operation, substantially as described, in combination with the second dipping and baking in the reversed direction, to japan the remaining portion.

And we also claim controlling the pin during the process, substantially as described, by sticking the pins into the sheet of paper, through holes in a plate of metal *h*, or equivalent substance, the said holes being of sufficient size for the free passage of the shanks or barrels of the pins, but not for the heads, so that after the first dipping and baking, by reversing the plate, and pulling off the sheet of paper, the pins will hang by their heads for the second dipping and baking.

No. 15,091.—J. B. PERRY.—*Improved Machine for Sticking Pins.*—Patented June 10, 1856.

While the paper is being crimped and transferred from the crimper to the jaws, (patented 1855,) the cut-off has dropped one row of pins down against the plate B; the notched cross-bar D, by means of the lifting-rod C, commences its upward movement, striking the row of pins just back of the points, and slightly slipping lengthwise towards the head, tending to keep the pins firm in the notches, and against the conductor A, and carrying them with the plate upward until said plate rests upon the surface of the conductor. The conductor commences its forward movement by means of the same lever and cam, which gives motion to the fingers, (patented 1855,) and continues until the pin is thrust forward into the crimped portion of the paper. After the conductor commences its movement, and the pins enter the crimp, the cross-bar is released, and brought back quickly by the spring to its resting point, and ready for a new operation.

Claim.—1st. The movable conductor or conductors A, with notches for the head to hold the pins and push them into the crimped portion of the paper.

2d. The movable notched cross-bar to correspond with the notches in the conductors, and the movable plate, or its equivalent, to hold the pins in their proper place, while the pins are thrust to their place by the conductor.

3d. The combination of the movable conductor or conductors, the apparatus for changing the position of the points of the pins, and holding the same with the clamp or jaws which hold the paper while the pins are thrust through.

No. 15,112.—JOHN J. HOWE and TRUMAN PIPER, assignors to the HOWE MANUFACTURING COMPANY.—*Improved Machine for Sticking Pins.*—Patented June 10, 1856.

The attendant slides the grooved plate *d* forward and back under the channel-way *a* to charge the grooves with a row of pins. The whole row of pins is then forced forward through the holes in the plate *g*, and into the sheet of paper behind it, by a follower *t*. As the pins are pushed forward by the follower they are guided by the grooves *c* in the plate *d*; and as the points pass through the sheet of paper, it is sustained by a grooved bar *x* back of the frame which holds the sheet of paper. As the lever *p* is moved back to withdraw the follower *t*, the frame *h* is lifted, together with the pierced plate and sheet of paper, elevating the row of pins and presenting the next row of holes on a level with the grooved plate *d* to stick another row of pins.

The inventors say: We do not wish to be understood as limiting ourselves to the special construction and arrangement of the parts, as equivalent constructions and arrangements may be substituted within the range of our invention; but we *claim*, in combination with a guide-groove or grooves and a follower, substantially as specified, the employment of the sliding frame for holding and shifting the sheet of paper, substantially as described, that the pins may be properly spaced and inserted in the sheet of paper, at right angles, or nearly so, with its surface, as set forth. And we also claim, in combination with the guide-groove or grooves, follower, and holding and shifting frame, substantially as and for the purpose specified, the employment of a perforated plate, substantially such as described, and interposed between the guide-groove or grooves and the sheet of paper held in the frame, that the pins may be inserted simultaneously in the plate and in the sheet of paper.

No. 16,199.—LYDIA ATWOOD and CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD, deceased.—*Improvement in Machines for Sticking Pins.*—Patented December 9, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features will be understood by reference to the claims and engravings.

Claim.—1st. The twisted inclined conductors, as described, as a means of changing the position of the pin, as specified.

2d. The falling railway G, as described, for the purpose set forth.

3d. The separating, measuring, and spacing bolts or instruments, terminating in a double inclined plane in the manner substantially as described.

4th. The retarding spring *e*, as described, for holding the pins in check upon the rails while being acted upon by the dividing instruments.

5th. The chuck for holding, guiding, and moving the paper, when made to operate as described, or in any manner substantially the same.

6th. The elevator or plate Q for raising, holding, and delivering the paper, in the manner and for the purpose specified.

7th. The connexion of the guiding grooves with the follower or driver, in combination with the falling railway G and the retarding spring *e*; and also of the guiding grooves and railway in combination with the dividing, separating, or spacing instruments used as specified, or in combination with the inclined conducting channel, as described.

No. 15,874.—LYDIA ATWOOD and CHAUNCEY O. CROSBY, administrators upon the estate of CHARLES ATWOOD.—*Improvement in Papering Pins*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Fabricating a new article of manufacture called diamond pin-cushions, by sticking pins in ranks or rows through a staple or U-shaped piece of paper, the heads of the pins projecting sufficiently far to allow the pins to be easily and conveniently withdrawn by the fingers for use. The pins being inserted upon two planes of the paper, with the heads projecting beyond the points a suitable distance to protect the points of the pins from being doubled or blunted, all the other portions of the pins being protected by the paper and sustained by it at a short distance from the heads and points by the paper making a solid mass of pins set in diamonds with regard to each other, but not in contact, and which usually contains the requisite quantity of pins for an ordinary paper for toilet use in a small compass, as specified and represented.

No. 15,404.—E. S. WOODFORD, assignor to JAMES R. KEELER.—*Machine for Sewing Pins upon Paper or any other Material*.—Patented July 22, 1856.

The pins are placed in a hopper attached to the upper end of the conductors A, and by a jarring motion a constant supply is shaken out upon the conductors; the body of the pin drops through the slot in the conductor, and is suspended by the head; a column of pins in the conductor is thus pressing against the separator B, which is turned by lever N sufficiently to let one pin at a time pass under it as often as required, dropping down the conductor into the turn-table C. The point of the pin, as it falls from the separator B, strikes a bar, throwing the head overlaying it horizontally in turn-table C.

The ratchet-bar S is now removed by lever T, carrying turn-table C around sufficiently to allow the pin to drop into the perpendicular conductor F, on the top of which said turn-table revolves. The pin now passes down the conductor F on to the periphery of wheels E; as wheels E are turned by eccentric L and lever N, the pins drop into the notches in the periphery of the wheels, and are brought down in front of the needles to be sewed upon the paper. The paper is upon roller O, and passes down in front of wheels E, bar S pressing against said wheels, holding the pins in the notches after they pass below shoe

v. The sliding plate G and 2, to which are attached the horizontal and perpendicular needles, is now driven forward and upward, sewing the pin fast to the paper, being still in the notches of the wheels. The feed motion is given to the paper by the partial revolution of wheels E, the pin last sewed being held in the periphery of said wheels by bar S, the wheels E receiving a constant supply of pins from conductors F, bringing them down against the paper to be sewed. The whole machine is operated by turning the crank I.

Claim.—The roller or separator marked B, made of India-rubber or other elastic substance. Also the turn-table, marked C, for receiving and changing the pin from one place or position to another, or their mechanical equivalents.

Also, the combination of one or a series of conductors for supplying pins in any desirable position, and a sewing machine of any suitable adaptability for sewing pins upon paper or any other material; but I do not make claim to either of these elements of the combination by itself.

No. 15,860.—CALEB C. WALWORTH.—*Improved Machine for Finishing Gas-Pipe Fittings*.—Patented October 7, 1856.

The operation of this machine is as follows: By moving the wrist plate *u* from the left to the right, all the tools C are made to approach the work *v*; and by depressing the lever F, a screw-nut in the collar *f* will be raised to engage the screw *z*. By now reversing the motion of the pulleys and by depressing the levers 2, which will cause the pulleys to rotate in the direction of the arrows, the nut and screw engaging, the mandrel *c* advances with a rotary motion, until the part *e* of the coupling advances beyond the action of the faces in the axial plane. When the coupling becomes unlocked, then the inclined faces of both parts of the coupling act against each other by the continued rotary motion of the mandrel; and consequently the part *e* being secured from further advance by the engagement of the tool in or against the work, the action of the inclined faces causes the part *d* and pulleys thereon to move backward, and by that movement, communicated to the shipper *b*, reverses the direction of the motion of the pulleys, which continue so to revolve, and withdraw the mandrels until the nuts run off the screws, which will now revolve without any further effect.

Claim.—The arrangement and combination of the machines operating substantially as described in a plane around a common centre, for the purpose of screwing or tapping different ends of gas-pipe fittings at the same time when connected by means of a wrist plate and slotted connexions, or their equivalents, for the purpose of bringing the taps to their work, and yet permit either of them to advance or recede without interfering with the others.

No. 15,620.—JOHN ROBERTSON.—*Improvement in Making Lead Pipe*.—Patented August 26, 1856.

The hydraulic ram B is pumped up, carrying the lead piston C with it high enough to allow the molten lead to be poured into the cylinder

D; the lead in the cylinder D having set, the core I is firmly held in the partially contracted lead. The piston C being set in motion moves freely over the core I, compressing the lead until the pipe begins to issue between the core and the parts *k*, the core I moving with the piston C until it comes to the bottom of the cylinder. When returning, the core I being held firmly in the die by means of the compressed lead until the piston C moves up a small distance, the guide *h* then presses against the head of the core and lifts it up with the piston to the proper position to receive the succeeding charge.

The inventor says: I do not claim as my invention any part of the cylinder, nor of the dies, nor of the arrangement thereof in the cylinder, nor of the manner of adapting these to the hydraulic press, nor the mode of operation generally; all of which have been substantially described in the specifications of the patents of Thomas Burr, heretofore referred to.

But I *claim* the construction and arrangement of the core I with the guide *h h*, in combination with the piston C, for the purpose set forth.

No. 14,071.—SHUBAEL WILDER.—*Improved Puddle-Ball Squeezer*.—Patented April 15, 1856.

This is an improvement on "Henry Burden's patent revolving forge hammer," patented December 10, 1840. The nature of the invention will be understood from the claim and the engravings.

Claim.—The employment of the circular flange A, constructed in sections, the same being connected by bevelled dove-tail joints, in the manner and for the purpose herein set forth.

No. 14,242.—SOLON S. JACKMAN.—*Improved Elevator for Puddlers' Balls*.—Patented February 12, 1856.

The chain 5 is connected to the rear end of lever *p*, and the chain 4 is connected with one end to the plate *s*, and with the other end to lever *p*. The object to be elevated is placed on plate *s* when depressed as in fig. 1, one end of lever *p* being then depressed by drawing the chain 5, and the other end raising the stem *r* perpendicularly, and with it the plate *s* and its load. When sufficiently elevated, the chain 4, on receiving its strain, tilts the plate *s*.

Claim.—The use of the pulley-lever *p* and brace *q*, in connexion with the stem or supporter *r* and tilt-plate *s*, constructed and operated substantially as described and for the purpose set forth.

No. 14,166.—RUFUS PORTER.—*Improved Punching Machine*.—Patented January 29, 1856.

The object of this arrangement is readily to accumulate a sufficient quantity of momentum power to punch holes with facility through cold metals. When the wheels have been in motion so as to acquire the

necessary momentum, the quadrants J are pressed rearward by the hand, when the tappet *s* will strike the cross-bar N and thereby depress the punch-rod I.

Claim.—The use of the double quadrant J J, in combination with the tappet S and the sliding-shaft I, when their several parts are arranged and operated, in connexion with the fly-wheel G, substantially in the manner herein set forth.

No. 14,866.—EDWARD HEATH.—*Improved Punching Machine*.—Patented May 13, 1856.

The cylinder J is turned till the proper punch is brought under the plunger-rod I, the lip *g* fitting in the recess *f* in the punch, and the pin *h* being forced by the spring N into one of the holes *i* to retain the cylinder in proper position.

Claim.—Placing a series of punches L of varying sizes and forms in a flanged rotating cylinder J, arranged relatively with the plunger-rod I, as shown, so that by rotating the cylinder either of the punches may be brought in line and connected with the plunger-rod I.

No. 14,357.—F. R. FORD.—*Improvement in Riffle Boxes*.—Patented March 4, 1856.

The water charged with gold-containing earth is forced underneath the dash-boards E, where it is brought in contact with the stratum of quicksilver at the bottom of the box, and is forced over the riffles C. The quicksilver being in one body is not liable to be broken into little globulæ and carried away with the water.

Claim.—The arrangement of the riffles E and C, in respect to the surface of quicksilver, as herein described.

No. 14,137.—EMMONS MANLEY.—*Improved Riveting Machine*.—Patented January 22, 1856.

The punch *e* is connected at its lower end with a spring *f*. By thrusting back hand-rod B the said spring is compressed by means of slide *j*, the slide being operated by rod F attached to lever A. The compression of the spring thrusts the punch *e* upward, and the latter, in consequence of its tapering shape, moves the anvil *d* back. The punch then protrudes through the hole *m* in the anvil far enough above its face for the purpose of piercing the laps of the sheets to be riveted. The sheets are then laid upon the punch, and receive a blow from the hammer D, piercing a hole for the rivet. The hand-rod being pulled forward, the punch is drawn below the face of the anvil; and the anvil, by means of spring *n*, is moved forward so as to furnish a foundation for the rivet direct over where the hole for punching was and directly under the rivet sink in the hammer. The shaft of the hammer D is provided with spiral grooves *p*; as often as the hammer flies back, the dent *r* enters

one of the spiral grooves in order to turn the hammer sufficiently and to bring alternately a punching hole *o* or a riveting hole *z* of the hammer-face over the work. The mandibles *q q*, which are worked by rods *y* connected to lever A, carry forward and place the rivets on the anvil under the hole punched in the sheets.

Claim.—What I claim as my invention, and desire to secure by letters patent, is the arrangement of the punch *e*, lever A, and mandible *q*, in relation to the anvil *d* and self-adjusting hammer-head D, in the manner and for the purposes set forth.

No. 14,897.—JAMES N. ASPINWALL, assignor to HENRY E. STAFF and JAMES N. ASPINWALL.—*Improvement in rolling File Blanks.*—Patented May 13, 1856.

The bar is placed between the proper groove *l*, the end of the bar being in contact with the stop M, which determines the proper length of the bar which is to be acted upon at once; a continuous motion being thus given to the rollers, the bar will be acted upon and forced outward between the rollers, the concentric grooves compressing a portion of the bar into proper shape on two sides; the two opposite sides are then inserted between grooves corresponding to it in thickness, and the bar will be then compressed in proper form in two directions; see fig. 2, in which a flat file blank is shown in dotted lines, *l* representing the grooves for a flat file blank, said grooves forming the face sides, and *l* the grooves for forming the two opposite sides.

Claim.—The use of the rollers A B, as described, for forming file blanks, when said rollers are operated and adjusted by the slide *k*, cam I, and springs *d*.

No. 14,552.—JOHN W. BROWN.—*Improvement in Rolling Railway Bars.*—Patented April 1, 1856.

The improvement has for its object the rolling of the bars into such forms successively as to cause all parts of the rail to be submitted in the rolling process to as nearly as possible an uniform degree of drawing and compression, thereby preventing the separation of the head and flange, and making all parts of the rail of equal density.

The numbers denote the order of succession in which the grooves of the rollers A and B receive the bar.

Claim.—So forming one or more of the grooves of the rollers, as shown at 3, fig. 1, as to produce a depression or cavity all along that side of the bar which is to form the base of the rail previously to the reduction of the bar to form the neck, said cavity to be filled up by the displacement of the iron from the middle of the rail, by the subsequent rolling operation, substantially as described.

No. 16,087.—RICHARD G. HOLMES and W. H. BUTLER.—*Improved Burglar-Proof Safe.*—Patented November 18, 1856.

The sides and door of this safe are composed of sheet iron *a*, to which the chilled cast iron is bolted; the latter material can only be reduced by grinding, and it would, therefore, require a great deal of labor to fit the door to the sides. This is avoided by fitting a loose piece K of wrought-iron into respective rebates of the door and sides, which in this manner can be joined perfectly tight.

Claim.—The loose fitting pieces K, applied substantially as described, to be received partly into a rebate into the door, and partly in a groove in the door frame, substantially as and for the purpose set forth.

No. 14,600.—JOHN J. CROOKE.—*Improved Sash Fastener.*—Patented April 8, 1856.

Fig. 1 represents the two parts A and B of the sash when the window is closed, and the lines *b*¹ represent the bolt *b* when locked; in bringing the knob *c*¹ to the position *c*, the bar *i*, actuated by the spring *l*, will catch under the projection *e* and secure the bolt in its position. When the window is raised, the plate C pushes the roller *o* back; and as soon as the sash rail gets past, the roller slides back again. Therefore, in shutting the window, the plate C¹ pushes back the roller, and drives the cross-bar *i* against its spring *l*, which relieves the projection *e*, causing the bolt to spring out and lock the window.

Claim.—Combining with the bolt of a self-acting window latch an engaging and disengaging catch, constructed and operated as described.

No. 15,523.—WILLIAM PATTON.—*Improved Sash Fastener.*—Patented August 12, 1856.

The bolt A is pivoted at *e* to the plate B in such a manner that the main body is hung outside the pivot *e*, and is arrested from swinging too far outside by the stud *c*. In the position as represented in the illustration, the sash cannot be raised, as the upper part of the bolt bears against the catch *r*. The bolt can be operated upon by means of the arm *i*; and when freed from the catch *r*, the sash can be raised and the hook *m* will fall into the next recess, and will be held there by means of catch *n*, which will hold the sash suspended.

Claim.—The described supporting and self-locking sash fastener, composed essentially of the plate B, bolt A, and catch *n*, when said bolt is arranged in an upright position, and hung forward of its fulcrum, so that its whole weight shall tend to throw it into the catches; the whole being constructed and operating together, and in the manner and for the purpose set forth.

No. 14,028.—JOSEPH MARSH.—*Improved Sash Lock*.—Patented January 1, 1856.

A weight lever A and sliding bolt B are enclosed between two plates D and C. The bolt and lever are connected as represented in fig. 2. When the bolt is ejected by turning the handle A¹, the weight of the sash bears on the edge *e* of said bolt, and the bent edge of the plate C will prevent the withdrawal of the weight until the weight is removed. But on gently raising the sash, the bolt drops down towards *e* and frees the notch *d*, allowing the bolt to be operated by the lever and handle A.

Claim.—Having thus fully described my invention, what I claim as my invention, and desire to secure by letters patent, is, the construction and arrangement of the plates C and D, the lever A, and bolt B; said bolt having the secondary locking notch at D, operating in the manner and for the purpose substantially as described.

No. 15,343.—LUCIUS PAGE.—*Improved Sash Lock*.—Patented July 15, 1856.

By taking hold of the stud I, and raising the weighted arm D turning on the fulcrum G, the pinion E on the same shaft will be caused to work the rack C of the bolt B, and will draw said bolt backward; by suffering the arm D to fall by means of the weight *e*, the bolt B will be impelled forward by the same arrangement.

Claim.—The combination and arrangement of the weighted arm D, the rack *c*, the sectoral gear or pinion E, the stopping arm F, and the stop shoulder H, as applied to the bolt and within the case thereof, and so as to operate together and actuate the bolt.

No. 15,857.—OWEN REDMOND.—*Improved Sash Lock*.—Patented October 7, 1856.

The weight of the slide S causes the inclined plane *d* to act on arm *e* of bolt B, and to project the tongue *f*, while the incline *i* securely fastens the said bolt, as shown in fig. 1. The raising of slide S causes arm *m* of said slide to lift arm *e* of the bolt and to draw the tongue *f* within the case.

Claim.—The swinging bolt B, in combination with the slide S and case O, constructed, arranged, and operating as described, so that the gravity of the slide shall shoot the bolt and maintain it in position.

No. 15,939.—WALTER WORTHEN.—*Improved Balance and Fastener for Window Sash*.—Patented October 21, 1856.

The outward pressure on the projection on the spring C against the side of the window frame keeps the sash B balanced in any desired elevation. When the lower sash is pressed entirely down, the spring

C will catch on to and hold the sash by the pin K in the window frame; and when it is desired to raise the window sash the finger should be placed against the under side of lever D, pressing it upward, so that it will both disconnect the spring or fastener from the pin K, and raise the window, as may be desired.

Claim.—Balancing and fastening window sash, both by one spring, constructed, arranged, and operated essentially in the manner and for the purposes set forth.

No. 15,700.—JAMES W. LYON.—*Improved Screw Cutter*.—Patented September 9, 1856.

The wire W being inserted in the orifice of the box H, so that the end of it rests against the face of the stock K, the cutter B is projected by means of the handle of lever C, and the blank is reduced to the size of the screw to be cut, when the chisel is arrested by gauge screw G coming in contact with stop *g*². The shank of the screw is now forced into the die K, which cuts the thread upon it; and the finished screw comes in contact with screw P in clamp M, which then causes the die stock K to open and to drop the finished screw.

Claim.—The use of the slide rest, slide cutter tool, wire holder box, and spring clamp dies, or their equivalents, constructed and combined, for the purpose of cutting and finishing screws, as set forth.

No. 15,932.—JOHN MOORE.—*Improved Screw Machine*.—Patented October 21, 1856.

The dies K can be forced to the blank or released from it by operating the lever T, which on being lifted will strike the catch V on the top of bar P; by this movement the links N are turned on their fulcrum and throw the dies K open, and set the bolt to be cut free.

The inventor says: I do not claim the peculiar shape of that part of the body which is semi-circular; that is not new. I do not claim the vibrating motion of the die-chuck; that is old. I do not claim the peculiar shape of the dies.

But I claim operating the cutters in the die-box by means of the links N, the internal and external plates, as described in connexion with the bar P, the arc 2, the lever T, and set bolts W, in the manner and for the purpose set forth.

No. 14,041.—CULLEN WHIPPLE, assignor to the NEW ENGLAND SCREW COMPANY OF PROVIDENCE.—*Improvement in Screw Machines*.—Patented January 1, 1856.

On one side of disc B a series of equidistant radial grooves *a* are formed to receive the screw blanks; a ratchet-wheel E is fixed on the same shaft, which carries the disc B, whose teeth are equidistant and correspond in number with the grooves *a*. The ratchet-wheel is actu-

ated at intervals by means of pawl F. The plate J is supported by a bracket K bolted to the frame; the side of the plate J next to the disc is smooth and at unequal distances from the face of the disc, so that it inclines towards the same. The approximation of the gripping plate J, gradually forces the screw blanks into their respective grooves, until the pressure is sufficient to hold them firmly during the operation of nicking, which is done by means of the circular saw M. The saw M is made to approach to and recede from the screw blanks during the process of nicking by being mounted upon a shaft N, which rotates in journal-boxes, in cylindrical blocks P which are eccentric to its axis. The blocks P rest in cavities in the standards Q, both united by a yoke R, which latter is vibrated by means of cams H, and thus impart to the saw a reciprocating motion during the process of cutting.

Claim.—The combination of a series of grooves in a moving surface with a smooth guard and gripping plate, operating substantially as described.

Also the nicking-saw, mounted on the oscillating eccentric bearings resting in cylindrical boxes, in combination with mechanism for presenting and holding the blank as herein described.

No. 15,052.—CULLEN WHIPPLE, assignor to the NEW ENGLAND SCREW COMPANY.—*Improvement in Making Screws.*—Patented June 3, 1856.

The arm H attached to the ratchet G is vibrated within the link i by means of rod J, treadle K, and cam L. At each advance movement of the ratchet hand G, one of the grooves c in the periphery of the frustrum is brought opposite the mouth of the inclined slot a¹, receiving a screw blank, which will be prevented from falling out of the groove by means of a guard plate M, extending round the frustrum far enough to bring the blanks to the desired point of delivery.

Claim.—The combination of the feeding slot a a¹, moving series of discharging grooves c, and guard-plate M; but I make no claim to either of those elements of the combination by itself.

No. 14,367.—EUGENE J. POST.—*Improvement in Scythe Rifles.*—Patented March 4, 1856.

The object of this improvement is to cause the rifle to retain the emery or sand with greater tenacity than those made in the ordinary way, and thus to make them more durable.

Claim.—Corrugating the surfaces a of scythe rifles substantially in the manner and for the purposes herein set forth.

No. 16,290.—LEVI SKEELS.—*Improvement in Tinners' Shears.*—Patented December 23, 1856.

In getting out straight work, the hinged bench efg is let down to a horizontal position, and the tin is clamped between bar f and set screw

g, and trimmed by means of shears c d. For getting out round work, the treadle h is connected with carriage j k by means of arms and levers s t u v in such a way that the advance of the clamping disks n o keeps exact pace with the point of intersection of the shears c d; so that the outer edge of the tin being held fast by the shears, the clamp n o, in the act of travelling forward, causes the piece of tin to rotate like a wheel, resulting in the separation of a perfect circle.

The inventor says: I do not confine myself to the precise arrangement described, but propose to make such modifications as experience may suggest.

I claim, 1st. The rotary and sliding clamp n o p q r, in the described combination, with the straight shears c d, for the cutting of circular forms as explained.

2d. The arrangement and combination of the hinged bench efg 2 4 with the fixed bench or frame b b¹ and with the shears c d, for the purposes set forth.

No. 16,038.—DAVID M. LAWRENCE.—*Improved Shutter-Fastener.*—Patented November 4, 1856.

The lock plate D is pivoted between the inner half of the lower hinge of a shutter B and the side of the window frame A by means of the hinge screw f. The semi-circular flange of the lock plate D is provided with notches, which embrace the upper edge of the hinge, and thus hold the shutter in any desired position, the spring stop E pressing from below against the thumb piece. By pressing down the thumb piece the lock plate can be disengaged from the hinge.

Claim.—A lock plate D, when constructed with a semi-circular flange, having a series of notches cut therein, in combination with the spring stop E and hinge C, the whole being arranged substantially as and for the purposes described.

No. 15,064.—HIRAM COLLINS.—*Improved Shutter Operator.*—Patented June 10, 1856.

By turning the rod C at the inner side of the stile, the lower bent portion e of the rod will actuate the shutter and cause it to open or close according to the direction in which the rod is turned.

Claim.—Opening and closing the blind or shutter B by means of the inclined or oblique rod C, which passes through the stile of the casing, and has its lower or outer end bent and fitted within a socket b attached to the lower part of the shutter or blind, the rod and blind being secured at desired points by means of pin g in the knob D.

No. 15,287.—CHARLES R. EDWARDS.—*Improved Shutter Operator.*—Patented July 8, 1856.

Fig. 1 represents the shape of the hinge fastened as a corner butt to the window-casing by means of screws A A. The cog-wheel and butt

i (fig. 3) are cast in one piece to be fastened to the blind. The socket *k* (fig. 3) is to be slipped on the gudgeon *l* (fig. 1). The shaft in fig. 3 from *m* to *H* is passed through a hole in the casing, and the gudgeon *g* of said shaft entered in the socket *d*. By inserting the forked end *p* of the key *S* (fig. 4) into the forked end *m*, the latter shaft, together with screw *F*, can be turned, and the screw *F* meshing into the cog-wheel will turn the latter and the blind. The end *E* of the piece represented in fig. 5 is entered through the square hole in fig. 1, so that its cavity *B* will form one side of the cavity *B B*, (fig. 1,) and that the edges *n* meet, and *c c* will form a half socket to support the shaft *H*. The piece *E* will be held to its place by a catch *o*. The projection on the outer cylindrical edge of the cog-wheel shown at *E*, (fig. 3,) is for the purpose of conducting the water, and in combination with the piece (fig. 5) to protect both screw and cogs from ice. The manner of operating the lattice, by this same arrangement, can be understood by reference to the claim.

Claim.—1st. The portable male crank fig. 4, as constructed and operated with the screw shaft, with the combination and for the purposes described.

2d. The piece fig. 5, and the thin projection as shown at *E E* fig. 3 on the outer cylindrical edge of the cog-wheel, as and for the purpose described.

3d. Operating the screw in the combination described by use of the knob crank fig. 4 for the purpose of operating the lever *b e* fig. 2, while the lever is in contact at *e* with the head of a screw (or its substitute) in the casing at *a* fig. 2, for the purpose of operating the lattice as described.

No. 15,416.—JAMES R. CREIGHTON.—*Improved Shutter Operator.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The attachment of the serrated tumbler catch *T* to the slide *Q*, said catch meshing or interlocking with a similarly serrated or toothed surface opposed *R*, on the side of the slide-box or frame *E*, in combination with the square extension rod *U* and guides *S S'*; by which the operator is enabled to operate the outside blinds or shutters of a house from the inside of the same, and to secure said blinds or shutters in any required position without the liability of their dislodgment from the outside, unless by the exercise of unusual violence.

No. 15,094.—PHILIP WARNER.—*Improved Bolt for Shutters.*—Patented June 10, 1856.

The nature of this invention consists in the construction of a window-shutter bolt mortised into the shutter, and presenting a finished plate in front.

The inventor says. I do not claim a bolt as attached to a plate by

clips, with a flanged plate catch; but I *claim* two corresponding silver-plated metal flanged plates *B*, in combination with a silver-plated knob *D* attached to an inside bolt *E*, having on the reverse, or inside of the plates, corresponding clips *G*, in which the bolt operates; said bolt and clips to be fitted to a mortise in a window-shutter, for the purpose of presenting a neat silver plate on each shutter to hide the bolt, and completely protect it from the weather.

No. 14,912.—JOHN GUNNER, jr.—*Improved Swing Bolt for Fastening Shutters.*—Patented May 20, 1856.

The hub *C* is fastened to the inside of the window frame. The hub has a slot at top (fig. 2). When the shutter is thrown open the lever drops into this slot *D*, and holds it back against the wall outside. In that case the pin *H* sits in the first hole, and the end of the lever is in the slot *E*. If the shutter is to be but partially open, the pin *H* is dropped into one of the other holes *F*.

Claim.—The use of the bolt lever *A* and hub *c*, in connexion with the catch-plate *B*, when the same is cast with a channel *E*.

No. 14,563.—ALBERT V. HILL.—*Improvement in Slide Rests.*—Patented April 1, 1856.

The nature of this invention consists of a rest *E*, with a mortise at each end, through which a slide-bar *K* passes, which bar is driven by means of a screw *C*. The chisel-rest *X* and chisel pass through the slide-bar *K*. The chisel is fed by means of the screw *H*.

Claim.—The use of the slide-mortise *K* and driving-screw *C*, arranged and operating in connexion, as described.

No. 14,176.—DANIEL DOD, assignor to Himself and HENRY F. READ.—*Improved Soldering Iron.*—Patented January 29, 1856.

The soldering bit *a* is constructed hollow, so that a movable core *b* can be heated and inserted into it, thereby avoiding the necessity of heating the bit by direct contact with the fire.

The inventor says: I do not claim the iron handle or copper bit, nor any particular external form of soldering irons, nor the general application of heated centres, as used in embossing irons or rollers, crimping irons, curling tongs, and hatters' irons, as they have been known and used previous to my invention.

But I *claim* the combination of a hollow bit of copper with movable centres of iron, in the construction of soldering irons, as described in the foregoing specification.

No. 14,573.—ASAHEL PIERPONT.—*Improvement in Soldering Wire Ferrules.*—Patented April 1, 1856.

Fig. 1 represents one of the jaws *a*; they are attached to the frame of the machine by screws passing through slots. The parts *c c* of the

No. 14,088.—ELISHA H. COLLIER.—*Improvement in Heading Spikes.*—Patented January 15, 1856.

jaws are pressed against the conical end of rod A, by means of the springs *bb*. (One of the jaws is removed in the figure, to show the cone.) The rod A receives a longitudinal motion from the knuckle joint B, by means of lever C, in order to expand the jaws *cccc*, and to bring the ferrule into exact form. The wire is held steady by the four-pronged fork D together with the rod E and spring *e*.

Claim.—The employment of the jaws *cccc* with the cone *d* and fork D, or their equivalents, when the whole is constructed, combined, and made to produce the result as herein described.

No. 15,928.—C. A. McPHETRIDGE.—*Improved Spike Machine.*—Patented October 21, 1856.

The iron rod is fed to the machine by means of the feed-rollers P, whence it passes in between the dies M and *m*¹, which point and cut the blank, whence it is fed to the conducting arms C, which revolve around the shaft 3; as the blank comes in contact with the projection H, its upper end is bent and arriving under the heading-tool N the head is formed as the lever B is caused to oscillate on its fulcrum 6, by a crank operating pitman X. When this operation is performed the conducting arms are turned one eighth of a revolution as the action of the pin 4 on pinion D¹ raises the spring lever in slot 5, and thus the same operation as described is repeated.

Claim.—The conducting arms C C as constructed, when operating in connexion with the means employed for cutting, pointing, heading, and clearing, and the closing guide E F, as described.

Also the use of the feed-rollers P P, the ratchet-wheel V, bar C, pinion K, pawl O, in connexion with the wheels D D, and the pin 4, when constructed and operated in the manner and for the purpose set forth.

No. 15,468.—MOODY BELKNAP.—*Improvement in Spike Machines.*—Patented August 5, 1856.

The cutting apparatus of this machine is composed of a stationary head block C, provided with a vertical cutting edge *e*, in conjunction with which a movable cutter D is operated. The knife D, as it advances towards the stationary knife *e*, makes a cut in a slanting direction through the spike-rod. The movable knife D, represented at fig. 2, is provided with a recess *f* arranged in advance of the cutting edge, the vertical height of which recess should be made equal to the vertical depth of the spike rod, so that when the knife is severing a blank from the rod the spike rod shall be embraced both on its upper and lower sides at its end where the cut is made, so as to prevent the said end from which the blank is taken from being upset or formed with projecting fins.

Claim.—The improvement of making the movable knife D with a rectangular recess *f*, for the purpose and to operate substantially in manner explained.

No. 14,088.—ELISHA H. COLLIER.—*Improvement in Heading Spikes.*—Patented January 15, 1856.

After the pointed blanks are fed into one set of die-holes and headed, the die-plate *a* is reversed and the other set of die-holes filled with blanks which are headed in a similar manner; the blanks first headed in the mean time dropping out of the die-holes by their own weight as fast as they shrink sufficiently by cooling.

Claim.—Hanging the die-plate or anvil *a* upon centres or bearings in such a manner that it can be reversed or its under face brought uppermost; the said die-plate or anvil being provided with a double set of die-holes, as described and for the purpose specified.

No. 14,566.—VINCENT D. LENT.—*Improved Former for Spiral Springs.*—Patented April 1, 1856.

The improvement in the former C consists in the two inclined planes P and P¹, which contain a continuance of the groove of the former.

The contact of the spring while compressed is, by this improvement of the former, avoided.

The inventor says: I am aware that springs might be made on conic frustra of such an angle that the parts of the spring wound at right angles to the axis of such a former would not coincide so nearly with other parts of the spring that contact between them would follow compression. Springs made upon such a former, however, would have an unnecessary amount of material, and I do not claim a former so constructed; but I *claim* a former constructed with suddenly expanded ends, for the sole purpose as herein set forth.

No. 16,214.—JOHN NEVILL, mediate assignor to the DAMASCUS STEEL MANUFACTURING COMPANY.—*Improvement in Making Cast-Steel.*—Patented December 9, 1856.

Fifty pounds of malleable iron cut into small pieces, together with ten ounces of powdered charcoal half an ounce of ferro-cyanide of potassium, one ounce of sal ammoniac, and six ounces of common table salt, with one ounce of brick dust, are melted in a suitable pot, and the heat maintained for three hours, when the contents are poured off into iron moulds in the ordinary manner of pouring cast steel.

Claim.—The described process for converting wrought iron into cast steel, consisting essentially in the use of the various compounds of cyanogen and sal ammoniac, either separately or in combination with each other, or with other ingredients, when mixed and fused with the wrought iron which is to be thus converted.

No. 14,976.—FRANZ UCHATIUS.—*Improvement in Making Steel.*—Patented May 27, 1856. Austria, March 14, 1855.

Claim.—The conversion of pig iron into steel by subjecting the same, when reduced to a granulated state, to the combined action of oxidizing

agents and the requisite fluxes, whereby I am enabled to manufacture cast-steel of a determinate quality, and obtain it at one melting.

No. 14,435.—HOMER ANDERSON.—*Improvement in Welding Steel*.—Patented March 18, 1856.

The compound consists of equal parts of sulphate of soda and carbonate of soda.

Claim.—The compound of sulphate of soda and carbonate of soda, made up and used for welding metal surfaces, as herein set forth.

No. 16,151.—HARLEY STONE and MASON D. COLE.—*Improvement in Expanding Tap*.—Patented December 2, 1856.

On turning the rod G one way, it moves the nut I, the ends of which following the spiral grooves turn it, and thus turn the cam piece J, and the cam surfaces force out the cutters S. When the rod G is turned the other way, the nut takes the reverse direction, carrying the cam piece, whose collars draw in the cutters by their lips; whilst to use the whole, the force is applied to A by its square part, which operates the cutters without expanding them.

The inventors say: We do not claim making expanding tools, by means of cam surfaces, irrespective of form and arrangement.

But we *claim* the arrangement of the cam piece J, the nut I, and screw G, and their connexion with the cutters and case A, when constructed and operating as set forth.

No. 15,195.—CHARLES R. SOULE.—*Improved Machine for Making Rake Teeth*.—Patented June 24, 1856.

The wires of which the teeth are formed are cut of the proper length and are placed one at a time upon the grooved plate *g* and step *i*. The lever I is then depressed by the attendant, the pulley D is rotated, and the pin *p* will strike against the catch *n*, and the arm G and shaft C will be rotated with the pulley D. The projection *a*, at the end of shaft C, will bend the wire and cause it to coil around the end of said shaft, and the upper part of the frame E will be gradually moved out from the frame A in consequence of the wire being wound around the shaft. As the upper part of frame E moves outward, the rod *l* will be shoved outward beyond the platform B; and when these coils of the wire have been formed on the shaft C, the rod *l* will be sufficiently beyond the edge of the bed for the longer arm *u* of lever H to catch against it; the pin *p* will, consequently, slip past the catch *n*, and the pulley will rotate while the shaft C remains stationary. When this takes place, the elasticity of the rake-tooth, caused by the coil of the wire upon the shaft C, will throw up the arm G, and the arm *u* will catch upon the upper end of the spring *t*; the wire or rake-tooth is then removed from C.

Claim.—The shaft C, with loose pulley D and G and projection *a* attached, and used in connexion with the frame E and lever F, with rod *b* attached, and the lever I connected with arm *s*, having the spring *t* attached; the arm G having the lever H secured to its end.

No. 16,213.—JOSEPH NASON.—*Improvement in Connecting Tubes*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: Several modes of joining the ends of straight parallel tubes to their cross connexions have been hitherto employed, and are well known. In some cases the ends have all been threaded and screwed into the cross. They have also been joined with ordinary socket joints, and made tight with cement or with flanges and bolts, and sometimes the cross tubes have been cast upon them.

I do not claim these modes, none of them being applicable to the objects contemplated in my invention. I *claim* the mode, specifically described, of joining the straight parallel tubes *a a* and *b b* to the cross tubes A and B by means of screws and plain cylindrical joints upon the tubes *a a* and screws upon both ends of the tubes *b b*, whereby the tubes *b b* are made to hold the cross tubes A and B firmly in position, and the cylindrical ends of the tubes *a a* are left free to adjust themselves in their openings during the process of entering and screwing up the tubes *b b*, and afterwards when expanding unequally.

No. 14,603.—ORLANDO V. FLOREY.—*Improved Vise*.—Patented April 8, 1856.

The nature of this invention consists in the employment of a brace G extending from the lower end of the movable jaw C to a ratch H, arranged in such a manner that the weight of the brace will disengage it from the ratch when the jaws are not tightened against any article.

Claim.—The use of the ratchet brace G operating in connecting with the ratch H sliding beam D, and movable jaw C, substantially in the manner herein set forth.

No. 14,795.—CHARLES BUSS.—*Improved Vise*.—Patented May 6, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—Making the movable jaws A A, with the parts B B, extending beyond the joints, so as to be operated by the wedge G, or its equivalent.

2d. I claim making both jaws movable, so as to open equally and hold the various sizes on a line with the centre of the whole tool.

No. 15,051.—SAMUEL FAHRNEY, assignor to ABRAHAM HUFFER and BENJAMIN FAHRNEY.—*Improved Vise*.—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use of the sectors D D, in combination with the studs G, for the purpose of rendering the jaws of the vise parallel to each other.

No. 15,170.—HORACE B. CHAFFEE.—*Improved Vise*.—Patented June 24, 1856.

This improvement obviates the necessity of adjusting the stop by hand, as the stop is self-acting, the supplementary jaw E throwing the pawl F into the rack D at the proper time, and the weight G throwing the pawl from the rack when the jaw E is relieved from pressure.

Claim.—The supplementary jaw E pivoted to the stationary jaw A of the vise, and connected with the weighted pawl F, substantially as shown, for the purpose set forth.

No. 15,277.—HIRAM C. BROWN.—*Improved Vise*.—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claims and illustration.

Claim.—1. The rod M, arranged and operated so that by pushing it endwise both ends will be simultaneously raised, and thereby lift the pawl *a* from any part of the ratch.

2. Adjusting and retaining the jaws parallel with each other, or to any desired angle, either by varying the length of the brace-rod at *e* between its points of contact at the top and on the movable jaw, or by varying the position of the lower point of contact at *m*, substantially in the manner described.

3. The use of the adjustable sliding-rod H, arranged and operating in connexion with the brace-rod I, substantially in the manner and for the purposes herein set forth.

No. 15,583.—R. W. THICKINS.—*Improved Vise*.—Patented August 19, 1856.

By turning the collar H so that its major diameter will be in line with the major diameter of the cap F and recess *e'*, as represented in fig. 2, the springs *f* will force apart the two parts of the nut G, and the screw C will be freed from the nut, and the screw C and jaw B may be moved back and forth bodily; but when the collar H is turned so that its major diameter crosses the major diameters of the cap F and recess *e*, the two parts of the nut G will be forced together, and will grasp the screw C, as represented in fig. 3.

The inventor says: I do not claim the cross levers or bars E E separately, for they have been previously used; but I *claim* the combination of the levers or bars E E and slotted arm D arranged and applied to the jaws A B, as shown, for the purpose specified.

No. 15,862.—CALEB C. WALWORTH.—*Improved Vise*.—Patented October 7, 1856.

The jaws D of the two vises can be operated independently by means of the right-and-left screw E, operated by a lever F, and the vise can be turned around its centre shaft by means of lever G, and can be secured in a fixed position by inserting said lever into one of the notches H.

Claim.—The arrangement of two vises so as to revolve about a common centre, and locking the same in any desired position by means of the lever G and notches, or any other suitable device, substantially in the manner and for the purpose set forth.

No. 14,192.—SAMUEL GISSINGER.—*Improved Bench Vise*.—Patented February 5, 1856.

The links M N and arm L hold the wedge H up between the limbs A B and slide F, and the projection G and the butt of the wedge are kept face to face by the superior weight of the descending projection K; and the projection G being in the same vertical plane as to its face with the face of the fixed jaw C, the parallelism and practical operation of the wedge is thereby secured, and thereby the parallelism of the vise preserved during all motions of screw E.

Claim.—The projection G and the projections I and K, arranged as described and for the purposes set forth.

No. 14,550.—BENJAMIN G. BALL.—*Improved Bench Vise*.—Patented April 1, 1856.

A is the stationary jaw and B the movable jaw. The rotary shaft C is kept from moving otherwise in relation to jaw B, then turning by the pin *d* and groove *b*. The tubular connexion block F has a helical screw *f* on its periphery, which receives a projection *g* from the side of the chamber E. In order to fasten an article between the jaws, the shaft C is turned a little so as not only to clutch to the screw connexion block by means of the rack K and stud L, but to rotate said shank a little. By the rotary movement of the block and by the action of its stationary screw-thread projection, the movable jaw will be drawn closer up to the article placed between its two jaws.

Claim.—Combining with the rotary shaft C, and the shanks of the jaws A and B, the tubular screw connexion, and the clutch as described, when a rotary shaft is made to actuate the jaws, the whole being constructed and made to operate substantially in manner and for the purpose as above set forth.

No. 14,366.—JOHN T. OGDEN.—*Improvement in Handle for Vise*.—Patented March 4, 1856.

The nature of this improvement will be understood by reference to the engravings.

ment of the bar G by the dog *d*, the wire being clamped between dog

Claim.—Uniting the vise handle H with the head I of the screw D, by means of the service joint *f g*, operating in the manner substantially as herein set forth.

No. 15,705.—F. NOETTE.—*Improvement in Cutting and Drawing Wire.*—Patented September 9, 1856.

Motion being given to the shaft C, the two cutters H and L will be rotated by gearing, and said cutters will cut a strip off from the plate M, the roller *h* being so adjusted that the strip may be of the required width, and the edge of the plate being kept against the roller *h* by weighted lever V, pawl and ratchet G U, racks O O, and shaft Q with pinions *e* upon it, which pinions gear into said racks, the strip being cut spirally from the periphery to the centre of said plate M. The wire is wound upon drum I¹, to which a vertical vibratory movement is imparted by means of the right and left screw rods *l l*, with pinions *m* attached and made to gear alternately into pinion *k* on the shaft A¹ by means of the block B¹, lever D¹, bar G¹, and weighted lever H¹. The wire is removed from the drum I¹ by raising the upper disc *r*, allowing the staves *t* to incline inward.

Claim.—1st. Feeding the circular plate M to the circular cutters H L, and gauging the same by means of racks *o o*, shaft Q, with pinions attached, the pawl and ratchet G U, weighted lever V, or equivalents, and gauge roller arranged as shown and described.

2d. Operating the reel or drum I¹ or giving it a vertical vibratory movement by means of the right and left screw rods *l l*, with pinions *m m* attached, and made to gear alternately into the pinion K on the shaft A¹, by means of the block B¹, lever D¹, bar G¹, and weighted lever H¹, arranged as shown and described.

3d. The reel or drum I, when constructed as shown, so that it may be compressed or contracted to allow of the ready removal of the wire from its periphery.

No. 14,751.—THOMAS D. BURK, assignor to JAMES GARRETT.—*Improved Device to allow for Contraction and Expansion in Wire Fences.*—Patented April 22, 1856.

This arrangement allows the wire to yield to pressure from cattle or any other object.

Claim.—The application of the key C, the lever D, the weight E, and the stay G to a wire fence.

No. 16,252.—THADDEUS F. ST. JOHN.—*Improved Machine for Wiring Blind-Rods.*—Patented December 16, 1856.

The operation of this machine is as follows: Motion being given to the shaft G¹, a reciprocating motion is imparted to bar G, and cross-head *o*. The wire E is drawn along a certain distance at each forward move-

ment of the bar G by the dog *d*, the wire being clamped between dog *d* and arm *e*. As soon as the wire is fed through the guide plate O the length of the stroke of dog *d*, the lever A¹ is actuated by the friction roller *b¹* and frees the spring-catch L from the pin *n* and allows the spring K to throw the cutter *k* against the wire and knife 2, and a piece of wire is cut of the requisite length to form a staple. This piece of wire when cut off is directly over the hook *s* at the lower end of lever *q*; and as soon as it is cut off, the hook and bars *p* rise and the hook draws the piece of wire upwards between the curved ends of bars 1 and the wire is bent in the form of a staple, one leg being longer than the other. When the hook *s* reaches the ends of the bars 1, the projection *g¹* throws the hook and staple within a recess in the lower ends of the bars, and the hook is retained therein by the spring catch *v*. The bars *p* then descend and force the staple into the rod W, the long leg of the staple passing entirely through the rod. As the bars *p* ascend to form the staple, the dog *d* moves backwards, and the arm or lever J is thrown outward in consequence of the friction roller *m* on the projection *l*, and is caught by the spring catch L.

Claim.—1st. The device formed of the reciprocating bars *p p* provided with the lever *q* having hook *s* at its lower end, the bars 1 1 attached to the uprights M M, the lever *q* being operated substantially as shown; by which device the staples are properly formed, and, when formed, driven or forced into the rods or slots.

2d. The combination of the reciprocating bars *p p*, lever *q*, and arm or lever J, with cutter K attached, the reciprocating bar G, with dog *d* and arm *e* attached, and the cam S, the whole being arranged and operating conjointly, as described, for the purpose specified.

No. 14,249.—ELISHA P. NEWTON.—*Improved Wrench.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engraving.

The inventor says: I wish to be understood as not claiming the toothed shank; but I *claim* the arrangement of a semi-screw thread C cut or counter sunk in the shank and the semi-screw threaded-stop or catch E for working them, by which means finer threads may be used, and the movable jaw be brought close up to the nut, and the stop or catch removed out of the way of the action of the wrench, they being arranged and operating in the manner as herein described and shown.

No. 14,221.—WILLIAM BAXTER.—*Improved Wrench.*—Patented February 12, 1856.

The two plates A A of the wrench slide upon each other whenever the screw *d* is operated so as to open or close the large and the small jaws simultaneously.

Claim.—Adjusting and securing the jaws *c c* of a diagonal wrench by means of the screw *d* and joints *f g*, as described.

No. 14,243.—FERDINAND KEEHNOLD.—*Improved Wrench*.—Patented February 12, 1856.

The cross-bar C forms the gauge for the jaw D, which latter is fitted on to C, and is to be moved through eccentric E.

Claim.—The jaw D and lever H, as constructed, operating in connexion with the ratchet-bar C, in the manner set forth.

No. 14,424.—ERASTUS TRACY.—*Improved Wrench*.—Patented March 11, 1856.

n is a spiral spring. The nature and operation of this improvement will be understood without further description.

The inventor says: I am aware an auxiliary jaw or griper, applied to or inserted within either the movable or stationary jaw of a screw-wrench, has been used. This I do not claim, being too expensive in construction and inefficient in its operation to come into general use.

I *claim* making the movable jaw in two sections, pivoted together; one of which sections embraces the shank and the other forms the clutch, by which the whole jaw is held to the shank, and both sections made, united, and operating in the manner and for the purpose set forth.

No. 14,779.—BRADFORD ROWE.—*Improved Wrench*.—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The solid movable jaw D¹ sliding between the parallel side pieces B and C to which the fixed end jaw A is attached.

I claim the bevel-wheel *p* and screw-gearing E to move the jaw D, in combination with the solid movable jaw D¹.

No. 15,482.—LORENZO D. GILMAN.—*Improved Wrench*.—Patented August 5, 1856.

The two jaws E pass through a slot C in the circular toothed plate A, revolving in a ring 4 which is attached to the handle G; the jaws are adjustable by means of the nut 9 on screw S, which latter is provided with a right-and-left-hand screw-thread, and thus the jaws are made to slide in the slot in opposite directions. The pawl H on handle G is held in any desired position by means of finger I and spring *f*; and by inserting one of the forks between the teeth of the plate A, said plate is fixed to the handle and prevented from turning.

The inventor says: I do not claim inserting a forked piece of metal, with a square shank upon one end, in the square slot of the axis of the wrench and supported by a nut; neither do I claim the teeth on the axis; neither do I claim the pad: those having been used prior to my having any knowledge of wrenches.

I *claim* the use of adjustable jaws E E, as described, moving in the slot C C, and operated in connexion with the groove in the jaws, forming an adjustable socket, in the manner set forth.

No. 15,184.—GUSTAVUS A. JENKS.—*Improved Wrench for Gas-pipe, &c.*—Patented June 24, 1856.

The inventor says: I do not claim the pipe tongs with a curved movable jaw affixed by a pin to a handle having a stationary jaw and not provided with a screw adjustment; and furthermore, I do not claim the combination as patented by Bartholomew and Merrick, and of which my invention is an improvement.

But I *claim* arranging the hook or claw G and the spring E, with respect to the slide C and the main bar A, and hinging or jointing the claw directly to the slide C.

No. 14,546.—HALSEY D. WALCOTT, assignor to himself and MILTON E. WALCOTT.—*Improvement in Wrenches*.—Patented March 25, 1856.

E is a cylindrical chamber, to which is fitted the core F; C is a slot through the wrench, the back side *i* of which is inclined. *d* is a pin which is pressed against *i* and F by the spring *f*; *g* is a hole to receive the nut. When the handle is moved in the direction of the arrow, the core remains stationary; and when the handle is moved in a contrary direction, the pin *d* is pressed between the core and the side *c*, and the core is forced to move with the handle.

Claim.—The core F, pin *d*, spring *f*, and inclined-bearing *i*, operating in connexion with the handle C, as herein set forth.

No. 14,528.—WILLIAM WARWICK.—*Improvement in Wrenches*.—Patented March 25, 1856.

The spring *b* of the pawl D is inserted into a cut at the upper end of the pawl and there secured by a pin C. The teeth *f f* of the pawl take into the teeth *d d*, while the spring *b* bears against the smooth side *e e*.

I do not claim the rack, nor do I claim the applying of the spring pawl, as those devices have been used before, and are well known.

But I *claim* providing the shank A with a recess, whose one side *d d* is toothed, and the other *e e* is smooth, in combination with a pawl D placed in said recess on the inside of the sliding jaw C, in the manner substantially as described.

No. 14,571.—PHILIP McMANUS.—*Improvement in Wrenches*.—Patented April 1, 1856.

The spring G keeps the rack F free from the rack *a*; but, by turning the cam or eccentric H, the spring G and rack F will be forced inward the rack F catching into the rack *a*, and thereby securing the jaw D

The inventor says: I do not claim separately a cam or eccentric for holding or securing the sliding jaw at desired points.

But I *claim*, 1st, the cam or eccentric H attached to the sleeve E, and the rack F attached to the sleeve by a spring G, in combination with the rack *a* on the shank B; the above parts being arranged as shown and described, for the purpose specified.

2d. In combination with the cam or eccentric H and racks F *a*, the finger piece A¹, as described.

No. 16,158.—ORIN O. WITHERELL.—*Improvement in Wrenches*.—Patented December 2, 1856.

By forcing the handle A to the left, the eccentric end of the handle will be caused to bite upon the movable jaw at *b*, and thereby firmly to confine said jaw in the slot. By turning the handle to the right the jaw E is released, and can be adjusted at pleasure.

Claim.—Attaching the fixed jaw B of the wrench to a handle, which has its extremity made eccentric by a fulcrum pin D, and arranging the movable jaw relatively to said end of the handle and to the fixed jaw, substantially as and for the purpose set forth.

III.—FIBROUS AND TEXTILE.

No. 14,322.—JAMES S. McCURDY.—*Improvement in Binding Guides*.—Patented February 26, 1856.

The apparatus is secured to a sewing machine by screw *h*; one end of the binding E is then placed between the jaws of the receiving guide D, and is then drawn forward through the lips *b b*, one edge of the binding being held by the upper and the other edge by the lower lip, while its back edge rests against the spring *d*. The eccentric C is then turned so as to bring its edge in contact with the back edge of the binding without crowding it forward too far. The edge of the material to be bound is now placed between the lips *b b*, and crowded back against spring *d* and eccentric C; the needle then passes down immediately in front of and close to the ends of the lips *b b*, from which the binding is discharged, &c.

Claim.—The centre piece in combination with the plates A and B, arranged and operating substantially as set forth; for the purpose of adjusting the binder for the use of binding of different widths, and applying the same with unequal lap to the material bound.

No. 15,836.—JAMES WALLACE.—*Improved use of the Dash-Wheel for Washing and Bleaching*.—Patented September 30, 1856—England June 26, 1855.

The articles to be washed are passed through the openings K which can be closed by lids L, and are placed into the compartments B of the

dash-wheel, and as the wheel is rotated on the hollow shaft D, steam enters through said shaft and passes through the perforations of said shaft into the square box I, and thence through a series of other perforations into the compartments B. The hollow shaft D also communicates with a retort for the admission of chemical ingredients into the dash-wheel, and thus the articles to be washed are operated upon by the combined action of steam and chemical ingredients.

The inventor says: I disclaim having invented the principle of bleaching or washing by the combination of mechanical agitation simultaneously with chemical action.

But I *claim* the use of the dash-wheel, substantially as described, in connexion with the use of the chemical ingredients and steam, for the purpose of bleaching, washing, or cleansing textile fabrics and other materials, as described.

No. 15,872.—OTIS AVERY.—*Improvement in Guides for Working Button-Holes*.—Patented October 14, 1856.

The nature of this invention consists in attaching to a clasp *a*, which embraces the cloth in which the button-hole is to be made, an instrument for catching the thread and twisting the loop of the same, so as to make the button-hole stitch, said instrument consisting of a tube *b*, in which the tweezers *c* are caused to revolve by having a pin on the outside, sliding in a spiral groove of the tube *b*; the tweezers move transversely to the movement of the sliding plate, and are capable of being slid or extended out over the edge of the clasp to catch the thread, and on drawing them back their rotary motion gives the thread the proper loop to make the button-hole stitch.

The inventor says: I do not confine myself to the use of the spiral groove in the tube to give a rotary motion to the tweezers, as that motion may be given by making a twist or screw to the tweezers, or they may be revolved by the thumb while in the act of moving the tweezers back and forth to catch the thread.

I *claim* the combination of the sliding plate with the revolving tweezers, operating and arranged substantially in the manner and for the purpose set forth.

No. 16,319.—JOHN WORSLEY.—*Improvement in Manufacturing Callender Rolls*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I disclaim the manner or form of making the rollers, for that has long been in practice by manufacturers of other rolls.

I *claim* the use and employment of the husks of maize (Indian corn) for making rolls, instead of cotton, wood, paper, or any other substance now in use.

No. 15,721.—A. D. SHATTUCK.—*Improvement in Carding Engines*.—

adjoining flats or laps to be turned by a common shaft or shafts.

No. 15,781.—A. D. SHATTUCK.—*Improvement in Carding Engines.*—Patented September 23, 1856.

The cylinders B and C cannot revolve with a velocity less than that due to the motion of the band D; either of them may, however, revolve with a greater velocity. If the band H passes around the large end of the cone G and the smaller end of the cone F, the cylinder C will then turn with its minimum velocity, being driven by band D, and the cylinder B will be driven at a more rapid rate by the band H. The cylinder B now takes the cotton off from the main cylinder A, and at the same time strips the working cylinder O. The cotton taken off by cylinder B is carded on to the cylinder C, which now acts as a doffer to B; and as C runs slower than A, it is stripped by the latter, and thus A O and C are stripped. As the band H is traversed towards the machine, the cylinder B by a similar combination of motion is stripped by A, though it continues to strip the worker O. The main cylinder is now stripped by the cylinder C, which is doffed by the cylinder P, which, in its turn, is stripped by the main cylinder.

Claim.—The application to the main cylinder of carding-engines of two or more variable cylinders, in combination with a doffer, operating in the manner and for the purpose substantially as set forth.

No. 15,784.—A. D. SHATTUCK.—*Improvement in Carding Engines.*—Patented September 23, 1856.

This invention consists in the use of a stripper or clearer B to the main cylinder A, in connexion with the doffer C, which is itself, in turn, stripped by the main cylinder; by which means the cotton is all taken off the latter and is immediately returned thereto—the operation being continuous, and neither requiring the card to be stopped, nor causing any break or interruption in the lap.

Claim.—The stripper B, in combination with the doffer C, and with the main cylinder of a carding-engine, operating in the manner substantially as set forth.

No. 16,196.—WILLIAM H. WALTON.—*Improvement in Cleaning the Top Flats of Carding Machines.*—Patented December 9, 1856.

When the arms K sweep forward, the brush l, which is in rapid revolution, brushes over and cleans the side of the workers h that is uppermost, the brush being in turn cleaned by the revolving card cylinder m, whence the fibres are conveyed to the cylinder e and are reconveyed to the cylinder f. As the arms k move forward, a projecting piece k¹ strikes the workers h and raises them from their bed; and the piece k¹ on one side being cogged, takes into the pinions on their journals, and causes each to make a semi-revolution, thus bringing the working surface up to be cleaned by the action of the brush l which succeeds.

Claim.—Suspending the top flats or lags upon pivots in the centre of their ends, by which they can be raised out of the way of the

adjoining flats or lags, to be turned by means of a crank working in pinions upon their pivots, or the equivalent thereof; the whole being constructed and arranged substantially as described, for the purposes set forth.

Also, stripping the flats or workers by a rotating brush, so arranged that a card may, in turn, strip the brush and return the strippings to the main cylinder, substantially in the manner and for the purposes described.

No. 15,313.—HORACE WOODMAN.—*Improvement in Machinery for Cleaning the Top Flats of Carding Engines.*—Patented July 8, 1856.

The combination of the different parts mentioned in claim 1st is for the purpose of moving the cleansing frame through the space of two top cards at one complete revolution of the gears Y Y¹, and of holding it there at rest, while the lifting, stripping, and depressing machinery does its office; the movement of the cleansing frame occupying one-half of said revolution of said gears, and the holding of the frame and process of stripping a top card occupying the other half of said revolution. The nature of the other features of this invention can be understood by reference to the claims and illustrations.

Claim.—1st. The arrangement of gears Y Y¹ on the cleansing frame, and in combination therewith, in the manner substantially as described; the studs or pins J and J¹ on the inner sides of said gears, and the levers I and I¹, and the sliding-bars K and K¹, operating together with the slotted or corrugated arches or flanges R R¹.

2d. I claim the said slotted or corrugated arches, whether cast with the main frame of the card or attached thereto, as specified; and this I claim as a means of holding the cleansing frame in place while the top cards are raised, stripped, and depressed, and also as a means of regulating the reciprocating movements of said traverse or cleansing frame from one side of the card to the other, and also from one card to any other.

3d. I also claim the combination of the lever o and stripping rod g, with its dogs M and M¹, and sliding-clutch, arranged as described, to reverse the motion of the cleansing frame.

4th. I also claim the arrangement of waste-pan F, as described, with a narrow bar and strip of filleting attached to the front edge of the pan, so placed as to remove the waste from the cleaning-bar V, to produce a clean brush-bar for the cleaning of each top card.

No. 14,481.—GEORGE WELLMAN.—*Improvement in Stripping Top Flats of Carding Machines.*—Patented March 18, 1856.—Patented November 25, 1853, England.

A detailed description of this machine would occupy too much room to be given here.

Claim.—1st. The combination of the segmental gear L, with its projecting rim Q and the pinions O and P, with their attached notched

plate wheels; all as applied to the shafts K M and N, and for the purpose of giving the alternate intermittent movements to the shafts M and N, as specified.

2d. I claim the arrangement of the mangle pins Z¹ Z¹, &c., in the arc of a circle, upon the centre of which the frame carrying the stripping apparatus vibrates, for the purpose of avoiding intermediate gearing and consequent back lash, as specified.

3d. I claim the combination of the cams X X with the chain belt Q¹, the chain pulleys R¹, and shaft M, arranged and made to operate together, as described.

4th. The combination of the cams X X with the levers Y Y, carrying and operating the stripper card in the manner specified.

5th. The combination of the cams X X with the lifting rods Z Z and the levers Y Y, arranged and made to operate in connexion, as described.

6th. The combination of the springs F¹ F¹ and the pins E¹ E¹, and their application to the frame S, for the purpose specified.

7th. I claim a mechanism for cleaning the stripper card, arranged and applied substantially as described.

8th. I claim the segmental gear L and its rim Q, as applied and operated, for the purpose of giving motion both to the mechanism for raising, stripping, and depressing the top card, and to the mechanism for moving the raising and stripping mechanism from one top card to another—not moving both at the same time, but alternately, first one and then the other.

No. 15,016.—FOSTER NOWELL.—*Improvement in Wool-Carding Machines*.—Patented June 3, 1856.

The belt or apron T T passes around the rolls R R, the lower part of the belt taking the form of the outside circumference of the rubbing cylinder L. In the circumference of these rolls R R is cut a groove, and on the inside of the aprons are fastened strips of leather which run in said grooves and keep the belt from vibrating. The rolls nearest to the doffer cylinders B B are adjusted so that the outside of the apron will just clear the teeth of the doffer cylinders. As the wool on the rings of card clothing of the doffer comes to the apron or the rolls R R, the apron wipes it off from the rings in the form of ribbons, and conducts it between the apron and the rubbing cylinder, when, by the vibration of the rubbing cylinders L, (by mechanism, as shown in figures 1 and 2,) they are each gathered and rolled into a round strand of roving, and afterwards ejected from between the rubbing cylinder and the apron in a condition suitable to be wound upon spools.

Claim.—The use in carding machines of two surfaces for conducting and rubbing the sliver from the ring doffers, one of which is cylindrical and of permanent form, and the other a belt or apron of flexible material, and capable of adjusting itself to the shape of the cylindrical rubber and the sliver or roving between itself and the cylindrical rubber.

spindles *b* and *b*¹ and *e*, the whole being arranged and operating in the

No. 15,905.—JOHN L. TUTTLE.—*Improvement in Card-Teeth for Machine Cases*.—Patented October 14, 1856.

This invention consists in preparing steel wire by passing it through grooved rollers of such a form as will flatten it out on one side of its centre to a knife-edge; so that when set and a surface ground on them, the same grinding shall form the sharp points thereon.

Claim.—I am aware that R. Kitson, in his patent of November 11, 1851, represents a tooth of soft iron and of small wire, with a cross-section resembling the cross-section of my card-teeth; this I do not claim.

But I *claim* the making of card-teeth by giving to steel wire the form described, and substantially in the manner set forth; so that when set and a surface ground on them, the same grinding shall form the sharp points thereon.

No. 15,767.—DAVID B. KERR.—*Improvement in Manufacturing Ingrain Carpeting*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim.

The inventor says: I do not claim the invention of a party-colored carpet, nor the manufacture of a carpet composed in part of solid colored yarn, and in part of party-colored yarn, when the two are combined in a manner different from that described as my invention.

Nor do I claim any particular method of party-coloring yarn for carpets, nor the weaving of carpets in a power-loom. Nor do I limit myself to a carpet in which all the warp threads are party-colored.

But I *claim* a party-colored ingrain carpet, in which the warp threads of one or more plies are party-colored, in whole or in part, and are combined with solid colored weft threads to form the design, substantially as set forth.

No. 14,585.—JOHN R. HARRINGTON.—*Machines for Making Carpet Lining*.—Patented April 1, 1856.

Rolls of paper and wadding being placed on their respective bearings, and the troughs being supplied with gum solution, the ends of the rolls are introduced between the pressure rollers *k* and *h*, and then between the creasing rollers *j* and *j*¹, whence they descend in proper folds.

Claim.—1st. The arrangement of the horizontal spindles or rollers *b* and *b*¹, on which the outer sheets or rolls of paper or cloth *d* and *d*¹ are wound, in combination with the intermediate spindle *e* on which the inner layer of cotton or other filling *g* is wound, the whole being supported and operated in the manner and for the purposes described.

2d. The arrangement of the rolls *h* and *h*¹ in combination with the spindles *b* and *b*¹ and *e*, for the purposes as set forth.

3d. The troughs *p* and *p*¹, that contain the size or mucilage, and the brushes *q* and *q*¹ that administer it, when used in combination with the

cotton downward, until the two rotating brushes S S catch it. These

spindles *b* and *b*¹ and *e*, the whole being arranged and operating in the manner and for the purposes as specified.

4th. The creasing rolls *j j*, when used in this connexion, each having alternate grooves *l* and ridges *k* at the requisite distance for the folds, for the purpose of folding and measuring, as described.

5th. The box or platform *m* placed below the delivery of the rolls, and having a falling front *n*, as described.

No. 16,275.—EDWARD B. HOWE.—*Improvement in Trimming Card-Clothing*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The adjustable guide and clamp *R*, with its adjustable tool-holder *M* operated thereon, and the guide-bar *J* for guiding the card clothing by the card teeth set therein, and the points *i* in this bar *J* to hold the card clothing while it is being trimmed on both edges at the same time and parallel with the card teeth therein; these parts being arranged and operated in the manner and for the purposes set forth.

No. 14,659.—JONATHAN J. HILLARD.—*Improvement in Spreading-Rollers for Stretching Cloth*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I am aware that the revolving spreader, formed of serrated bars arranged parallel to the axis, or encircling the same, and formed, each line of bars, in two lengths or parts, having longitudinal play in opposite directions parallel to the axis, is, in itself, no new device, but is a well known form of spreader used in machines for stretching and widening cloth; such, therefore, I do not claim; nor yet operating the stretching bars, as specified, by wheels set obliquely on the shaft or axis of the spreader, as this has before been done; but I *claim*, as a new and useful improvement on the revolving reciprocating spreader, the jointed and pivoted arrangement of the serrated stretching bars *B B B*¹ *B*¹, with the obliquely set wheels *E* on or round the axis of the spreader by means of the loose radial spokes *D D* and transverse pivots *a a*, for connecting the stretching bars with the obliquely set revolving wheels, and whereby increased freedom in the longitudinal play of the bars is obtained, and the cloth thereby more easily and effectually stretched without injury and without the interposition of lubricating material where such would be apt to soil the cloth, as set forth.

No. 14,725.—JAMES H. KINYON and JAMES HOLLINGSWORTH.—*Improvement in Cotton-Cleaners*.—Patented April 22, 1856.

The bottom of the hopper *R* is furnished with openings *m*, through which the hooked teeth *n* on the feed-rollers *F*¹ *E*¹ pass, to draw the

cotton downward, until the two rotating brushes *S S* catch it. These brushes distribute the material on each side, whence each half is directed to the finishing rolls *J I G H* and brushes *P P* by the inclined guides *h l*.

The inventors say: We are aware that Alexander Jones has represented in his patent of April 25, 1837, two machines united in one frame; but they have no necessary connexion with each other, nor is there any part of the operation of cleaning or feeding that is common to both machines as in ours. We do not, therefore, claim the uniting together of two machines; but we *claim* the so arranging of the hopper *R*, feed-rolls *F*¹ *E*¹, and brushes *S S*, that they shall draw in the material, divide it into nearly equal parts, and throw one half in one direction and the remaining half in a contrary direction, to be acted upon by other rolls and brushes, as shown.

No. 14,965.—WILLIAM B. LINDSAY.—*Improvement in Cotton Gin*.—Patented May 27, 1856.

When the block *D* is at the end of its downward stroke, the cards *a a* will catch the cotton *A*¹, and as the block ascends, the cards will draw the cotton between the ribs *c*; the spaces between the ribs being too narrow to allow the seed to pass up, seed will fall through the slots *h*, and the cotton will be carried upward by the cards and between the cards *E E*. The cards *E E* are forced back by the block *D* and cards *a*, and serve to strip and loosen the cleansed cotton in the cards *a*, at the same time preventing the machine from being choked.

Claim.—The combination of the reciprocating cards *a a*, vibrating stripping cards *E E*, and ribs *c*.

No. 15,381.—JAMES B. MILES.—*Improvement in Cotton Gins*.—Patented July 22, 1856.

The revolving motion of the pulley *C* causes the lever *G* to vibrate by means of the arrangement of the eccentric *D* and connecting-rod *F*; and the pawls *H*, sliding with their bearings *e* in a groove *d*, operate upon the ratchet-wheel *K*, which imparts motion to the feeding-roller *O*. The cotton passes over the swing-board *L*; and, when the machine feeds too rapidly, the roll of cotton will pass under the swing-board, press against the concave side, and press it towards the frame *B*, as represented in fig. 2. The lever *N* is then elevated, *J* depressed, and the bearings *e* of the double ratchets *H* are depressed by sliding in the groove *d*, thereby retarding the motion of the ratchet-wheel *K* and feed-roller *O*.

Claim.—The arrangement of the swing-board *L*, in combination with the mechanism described, so that the varying size of the roll of cotton in the gin shall govern the feed and keep it uniform, or nearly so.

No. 15,906.—JOHN L. TUTTLE.—*Improvement in Cotton Gins.*—Patented October 14, 1856.

The cotton is carried up from the breast of the gin by the teeth of the cylinder B, and the straight-edge *c*, made of steel, passes underneath the cotton seeds and raises them up on to itself, where they are met by the ribs *a* on the roller G and knocked back into the breast of the gin, whilst the fibre is carried through under the straight-edge, and may be taken off by a brush behind the cylinder in the usual well known way.

The inventor says: I am aware that a guard or shield, which might be termed a straight-edge, though not thin enough to pass under the seeds, has been used; but do not know that a roller, such as described, has ever been used in connexion therewith, so as to completely keep back the seeds, which my invention does.

I do not claim the knocking-roller and straight-edge, when used separately, with the toothed-cylinder, as they have been thus used.

But I *claim* the combined use of the straight-edge and roller for stopping and returning the cotton seeds to the breast of the machine, and allowing the fibre only to pass through, substantially as set forth.

No. 15,930.—JAMES B. MELL.—*Improvement in Cotton Gins.*—Patented October 21, 1856.

The cotton is shaken by hand into the hopper N, and is carried round by the teeth G of feed-roller B to the gin rollers C. The cotton is slightly opened by the teeth G; the blast of fan E, which revolves rapidly, blows the dirt out of the cotton, and also blows the dirt and seed, after they are separated from the cotton, out of the perforated concave R. The cotton is then brought by the teeth G to roller C, is drawn through the grooves of these rollers, and is separated from the seed; the brushes H prevent the cotton from winding round the rollers. After the cotton has passed the rollers C, it is met by the blast of fan F, and is driven out of the aperture at the end of O O.

The inventor says: Whether the arrangement of fan E within the roller B, as described, be new and be my invention, I do not claim it in these letters patent, nor do I waive my right to it in another patent.

But I *claim* the arrangement of two or more sets of ginning rollers, in an arch of the radius of the cleaning cylinder, in combination with brushes so arranged as to keep the rollers clear, and the fan F for removing the cotton from them as fast as ginned, substantially as described.

No. 16,022.—WILSON A. PURDOM.—*Improvement in Cotton Gins.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. Giving to the cotton to be ginned within the feed-box and before the saws H a reciprocating motion, by means of the cor-

rugated cylinder A, or a modification of such cylinder, and the corrugated aprons B, or either of them separately, or their equivalents, so that the cotton will pass back and forth slowly in bulk, or nearly so, before the saws; thus presenting a fresh surface to the action of the saws throughout the entire length of the saw cylinder, without leaving any of the saws idle, and without the accumulation of seed at one end of the box, or the banking up of the cotton at either end.

2d. For the purposes aforesaid, I claim the cylinder A, or its equivalent, whether it is placed within or outside of the cotton roll, and whether it is permanently attached to the apron B or not; also whether it revolves or not, or whether that revolution is continuous or intermittent.

3d. And for the purposes described, I claim the corrugated apron B, or its equivalent, whether it is operated conjointly with the said cylinder A or not.

No. 16,096.—C. A. MCPHETRIDGE.—*Improvement in Cotton Gins.*—Patented November 18, 1856.

The object of the friction spools N is to prevent the friction of the saws A on the sides of the breast-plate L, where it runs through, and to increase the power by means of the leverage of the spools. They also lift all extraneous substances over the saw, and allow them to pass with the roll and fall off with the seed. The spools N are so arranged that the peripheries of the spools stand above the periphery of the saw; thus, as the saw passes between the spools they are made to revolve in the same direction, and as soon as the cotton is brought in contact with the spool it is regularly stripped off and drawn downward between the spools on the further side, while on the front side, it, with the seed in it, is lifted up and follows the roll, thus rendering it impossible for the gin to choke or break.

Claim.—1st. The friction spools N, arranged as described, in combination with the saw, for the purposes described.

2d. The breast-plate, as described, in combination with the spools N, as set forth.

No. 15,904.—JOHN L. TUTTLE.—*Improvement in Manufacturing Cylinders for Cotton Gins and Machine Cards.*—Patented October 14, 1856.

A paper cylinder *g* containing the teeth *h* is slipped over the cylinder *d*, leaving a space between the cylinder *d* and the paper cylinder *g*, into which the teeth *h* project; fluid metal is then poured in at the top of the gutters *c*, which runs down said gutters and through the holes *e* into the space *i*, completely filling up said space and uniting the ends of the teeth with itself and the cylinders, so as to form one rigid mass. After the cylinder is cooled the paper is soaked off, leaving the teeth *h* free and exposed to be ground for further use.

Claim.—The manner described of making cylinders for cotton gins, or for carding or cleaning engines, viz: by introducing the fluid meta

which is to unite the teeth to the cylinder between the cylinders *a* *d*,

No. 16,293.—WERNER STAUFEN.—*Improvement in Preparing Vegetable*

which is to unite the teeth to the cylinder between the cylinders *a d*, and through the openings *c* into the space *i*, which unites the whole into one rigid mass, and avoids the danger of irregular flowing of the melted metal, as set forth.

No. 15,138.—L. JOHN MALLARD and WILLIAM S. BAKER.—*Improvement in Feeders for Roller Cotton Gins*.—Patented June 17, 1856.

The cotton is received at the opening *o* and drawn in by the teeth *t*, which, by the rapid rotary motion of the cylinder *c*, open, clean, and free the cotton from loose and broken seeds, which fall through the screen *g*. The gin rollers *G* seize the fibres and strip them from the seeds, which fall back through the screen, any excessive accumulation of cotton between the rollers being prevented by the action of the teeth, which drag the surplus away from the rollers and carry it round between the cylinder and its screen, thus preventing the heating of the rollers and clogging and consequent jerking of the machinery.

The inventors say: We do not claim any of the parts of the above described machine, separately considered; but we *claim* the combination of the screen *g* with the revolving toothed cylinder *c*, constructed in the manner described, and when so placed in relation to the ginning rollers *G* that any excessive accumulation of cotton between them shall be removed or prevented, and the excess be retained between the cylinder and screen until its quantity shall be equalized and relieved by the gin.

No. 15,703.—JOHN MARLAND.—*Improved Process of Manufacturing Delaines*.—Patented September 9, 1856.

This invention consists in subjecting wool to a combined process of combing and carding, whereby the evils attendant upon the sole use of either are entirely avoided, and the soft feel and pliant texture of the one are united with the evenness of thread and uniformity of appearance of the other.

Claim.—The method of operating upon wool by combing, and subsequently carding, in the manner and for the purpose set forth.

No. 15,585.—BENJAMIN WEIGERT.—*Improvement in Water-proofing Textile Fabrics*.—Patented August 19, 1856.

The nature of this invention consists in permanently obstructing the water-passages of textile fabrics with molecules of aluminum enveloped in glue, making the fabric permanently, that is, even after repeated washing, impermeable to water, without changing any of its ordinary properties, or its permeability to air.

Claim.—The treatment of textile fabrics with a solution of acetate of alumina and glue, prepared in the manner and from the ingredients and proportions stated, and for the purpose specified.

No. 16,293.—WERNER STAUFEN.—*Improvement in Preparing Vegetable Fibres for Stuffing Mattresses and Cushions*.—Patented December 23, 1856.

Vegetable fibres are subjected to a process of twisting, and the twists or ropes thus formed are immersed in water and allowed to remain therein until the fibres become perfectly soft and pliable. The twists are then removed from the water and subjected to such a degree of heat as to thoroughly dry them. The twists may then be picked to pieces, and the fibres will be found to be permanently curled and elastic.

Claim.—As a new manufacture, an article for stuffing mattresses, cushions, &c., produced by permanently curling any suitable vegetable fibrous substance, by the method substantially as set forth.

No. 16,149.—HORACE W. PEASLEE.—*Improvement in Drying-Cylinders for Fibrous Manufactures*.—Patented December 2, 1856.

The spiral coil *D* is wound upon a wooden cylinder *B*, which is covered with non-conducting material *C*. The coil is enclosed within a metallic casing *E* fastened to the heads *A*, which forms the heating or drying surface of the cylinder.

Claim.—The employment of a spiral tubular heater upon a non-conducting cylinder, in combination with an exterior metallic casing, as set forth.

No. 14,559.—WILLIAM FUZZARD.—*Improvement in Cloths for Felting Hat Bodies and other Articles*.—Patented April 1, 1856.

H H represent the hat bodies which are laid between folds of the corrugated apron *G*. The apron when folded is rolled around a small corrugated roller *I*, and is then placed between the lower part of the endless apron *F*. The corrugated apron is thus brought in contact with the whole surface of the hat bodies, and the operation of felting is accelerated fully one-third, and the work is done more perfectly than by the usual mode.

Figure 4 shows two different forms of corrugation.

Claim.—The use of corrugated apron *G*, constructed of any proper material, substantially as and for the purpose specified.

No. 15,508.—E. R. BARNES and JAMES B. BLAKSLEE.—*Improvement in Felting Hat Bodies*.—Patented August 12, 1856.

The articles to be felted, as represented in dotted lines, are placed upon the front end of the endless apron *B*, which is formed of the slats *c* secured to India-rubber belt *d*, the latter passing around the rollers *a*. Motion being given to the drawing shaft *M*, the apron *B* is moved in the direction of the arrow, and a reciprocating motion is

given to the board I. The materials to be felted pass beneath the board I and the apron B, and are finally delivered on bed H.

Claim.—The peculiar arrangement of suspending and rendering elastic and adjustable the endless rotating bed of felting machines, substantially in the manner described, so that it may be elevated or depressed, while in operation, and at the same time possess an oscillating motion, in order to adapt itself to the varying stages of the process of felting.

No. 15,627.—JOSEPH THOMAS.—*Improvement in Machinery for Felting Hat Bodies.*—Patented August 26, 1856.

The articles to be felted being put into the machine, the crank-wheel N will, in its revolution, cause the discharging wheel, which rotates upon shaft K, to operate and carry forward the goods, while the crank I, by means of the connecting-rod M and lever L, will give a vibratory motion to the wheel E, which rubs the goods back and forth against the plate F as the discharging wheel carries them forward; which operation is repeated until the goods are sufficiently felted.

Claim.—In hat sizing machines the employment of a discharging slotted wheel, when arranged as described, for feeding the goods into and through the machine, essentially as set forth.

No. 14,845.—JAMES S. TAYLOR.—*Improvement in Machinery for Felting Hat Bodies.*—Patented May 6, 1856.

Motion being given to the cylinder of rollers, the hat bodies Q will be carried around between the series of rollers and the rubber E, and discharged at *a*¹. The bed having a vibratory motion given it by the rods or bars F F, and the rollers M rotating on their axles in the direction indicated by the arrows, in consequence of the wheels N bearing upon the ledges *i i*, the hat bodies will consequently be subjected to the necessary rubbing and rolling, the rollers M turning in the direction as shown, insuring the rotation of the articles in the space P, and thereby causing them to be perfectly felted.

The inventor says: I do not claim of itself as new a vibratory bed or rubber operating in connexion with rollers for felting hat bodies; nor yet merely of itself as new, rollers having a positive motion or reverse action for various rubbing and other purposes, as such are old and common to felting and other machines.

But I *claim* the vibrating rubber or bed E, in combination with the rubber M, having a positive movement or rotation on their own axes given them in a direction causing the outer points of their peripheries to travel in the direction of their general travel, as required by the rotation of the central shaft B, as specified, when the same are arranged for operation together as herein set forth, for the purpose described.

No. 15,261.—JOSEPH THOMAS.—*Improvement in Machinery for Felting Hat Bodies.*—Patented July 1, 1856.

The revolving crank-shaft H will cause the screw to work the hopper by means of the gear which is fast thereon, while the cam N, working in the grooved piece at M, will cause the screw-shaft to vibrate and advance to feed the goods and felt or size them by the conjoint action of the hopper surface and the segments F F.

Claim.—Giving the vibrating motion to the reservoir wheel D, by the combined action of the screw K and cam N, (or an equivalent device,) when arranged and operating essentially as described and for the purpose set forth.

No. 15,290.—WILLIAM FUZZARD.—*Improvement in Machinery for Felting Hat Bodies.*—Patented July 8, 1856.

The box A is supplied with the requisite quantity of water, which may be kept in a heated state by a furnace placed underneath. The hat bodies to be felted are rolled around a cylinder *f*, and are placed within the fold of the apron E. A rotating reciprocating motion is then given to the roller C, and the end of the apron which is attached to the roller C, will be raised up and down; the hat bodies being subjected to a rolling motion, and also to a certain degree of pressure against the platform D, which pressure may be increased or diminished by regulating the position of the platform D, as indicated by the dotted position of said platform.

Claim.—The apron E connected to the vibrating or reciprocating roller or cylinder C, and to the adjustable platform D, and arranged in relation to the reservoir or box A substantially as described and for the purpose specified.

No. 15,375.—LANSING E. HOPKINS.—*Improvement in Machines for Felting Hat Bodies.*—Patented July 22, 1856.

The hats *r* are placed in bags in the interior of a revolving apron *n*. The vibrating beater *b* works the hats between its corrugated sides *b* and the similarly corrugated beater-heads *q*. The distance between the beater *b* and the beater-heads *q* can be adjusted by means of the screw-nuts *o* and bolts *p*.

Claim.—1st. The combination of the beaters, the revolving belt, and the beater-heads, operating substantially as described.

2d. The adjustability of the beater-heads, in combination with beaters having a positive motion, substantially as shown.

No. 15,443.—ALVA B. TAYLOR.—*Improvement in Machinery for Forming Hat Bodies.*—Patented July 29, 1856.

The operation of this machine is as follows: Motion being imparted to the main shaft E, a weighed quantity of fur, sufficient to form one hat body,

is laid upon the feed-apron C and is conveyed to the feed-rollers *e e*, which present it to the main picking cylinder B, which, together with the secondary picking cylinder B¹, discharges the picked fur; the latter is drawn to the one of the three perforated cones G¹ G² and G³ which is nearest to it, and as this cone rotates, it collects the fur upon it. When the charge upon the apron is exhausted, the operator applies a cover to the bat, and turns the pyramidal draught-box H one-third around, which movement brings a second cone in the proper position to receive fur from the picker; while the first one, with the bat and exterior cone upon it, is brought to the hardening apparatus N. The three cones go successively through the same operation as the one here described.

Claim.—The combination of a perforated cone, picking apparatus, and feeding apparatus, located and arranged as described.

The combination with a main picking cylinder of a secondary picking cylinder, operating substantially as set forth.

The pyramidal draught-box, constructed substantially as set forth, in combination with a fan and fan-case for generating the currents of air.

No. 15,715.—D. G. WELLS.—*Improvement in Machinery for Forming Hat Bodies.*—Patented September 9, 1856.

The endless apron C receives the fur, and carries it to the feed-rollers D; and passing between these rollers it comes in contact with the picking cylinder E, and thence is thrown off towards the perforated cone E, which revolves on its vertical axis. The rotary picker E is furnished with serrated fans L, which serve the double purpose of picking and separating the fur, and then blowing it off towards the hat-former F. The air enters the picking cylinder at each end through the apertures N, and, passing out between the fans L, is thrown off at its periphery, carrying with it the fur as it comes from the feed-rollers D. The cone F is exhausted by means of the fan-blower G; by this fan a secondary current of air is caused to pass upwards and to escape through the wedge-shaped opening P R S, created by the valves K, which serve to regulate said opening, and the blast passing through it causes the fur to be distributed equally over the surface of the former F.

The inventor says: I do not claim the use of the secondary currents of air, nor valves to control them.

1st. I *claim* the mode of guiding the currents of air from the picking cylinder in their passage to the cone, substantially as described.

2d. I claim the mode of regulating the secondary currents of air by means of the wedge-shaped apertures formed by the valves K K, substantially as set forth.

No. 15,903.—JAMES S. TAYLOR.—*Improvement in Machinery for Forming Hat Bodies.*—Patented October 14, 1856.

The fur is placed on the conical feed-table B, and motion being communicated to the machine by revolving the shaft H, the feed-table is revolved under the conical rollers P; these draw the feed up between

them to the picker O, which revolves with a rapid motion, picking the fur from the conical rollers, whence it is drawn on to the exhausted perforated cone L. The brush T, revolving in a vat of water, throws the water upon the bat as it is formed on the cone L, thereby saturating it preparatory to removing it from the cone without tearing or rupturing the same.

The inventor says: I do not claim a perforated cone or exhaust, both of which are well known devices used in machinery for forming fur hats; neither do I claim a picker to pick up or blow the fur on to the cone, as that is a well known device used in machinery for picking fur, wool, or cotton. Neither do I claim moistening or wetting the hat preparatory to removing it from the cone.

But I *claim* the revolving feed-table, in combination with the picker, cone, and exhaust, operating in the manner and for the purpose set forth.

I do not claim the principle of wetting or moistening the hat when formed on an exhausting cone, for that is a principle well known; neither do I claim the combination of currents of air and the currents of numerous jets of hot water in the hardening or wetting process, as that is a combination found in D. Barnum's patent, July 1, 1851.

But I *claim* the combination of the revolving brush, arranged as described, with revolving perforated cone, for the purpose of moistening the fur as it is thrown upon the cone, substantially in the manner described.

No. 14,476.—ALVA B. TAYLOR.—*Improvement in Machinery for Making Hat Bodies.*—Patented March 18, 1856.

A quantity of fur is laid upon the feed-apron C, and is conveyed by it to the feed-rollers *e e*, which present it to the picking cylinder B. When the fur leaves the cylinder, it is drawn towards the perforated cone G². As soon as the whole of the fur is collected upon the perforated cone, a cover is applied to the bat, and the draught-box H is turned round one third. This movement brings a second cone in its proper position, while the first one is brought to the hardening apparatus. This hardening is effected by the combined action of pressure and motion by means of the weighted rollers N and the bar O, arm *n*, pins *r*, and scolloped rim of wheel P.

The fan M is situated in the fan case I, at the mouth of a circular opening in a partition L which divides the fan case into two parts, the larger of them communicating with the draught-box, and the smaller with an air trunk.

The radial partitions *s s s*, together with the arrangement as seen in figures 4 and 5, serve to guide the compressed wind through the cone into the interior of the bat.

Claim.—The arrangement for hardening the hat body in a dry state by machinery operating substantially as herein set forth.

I also claim the method of facilitating the removal of the hat from the perforated cone by means of a blast of air forced through the cone.

No. 15,008.—SYLVESTER H. GRAY.—*Improvement in Machines for Felt-ing Hat Bodies*.—Patented June 3, 1856.

The journals of the two rows of rollers *bb* and the polygonal rollers *g g* (around which the endless apron *e* revolves) turn in boxes in the side pieces of a carriage *c*, which slides in the side pieces *d d* of the main frame. The shaft *h* of one of the polygonal rollers passes through a mortise *i*, and carries a cog-wheel *j*, which engages the pinion *l* on shaft *k*. The other end of shaft *k* carries pulley *m*, which receives a band *n* from pulley *o* on crank-pin *p*, whereby the rotary motion is imparted to the endless apron bed. The crank pin *p* is attached to pulley *q* on shaft *r*, which passes through the other side of the frame, where it is provided with a corresponding crank-pin *p*¹. These two crank-pins *p* and *p*¹ are connected by rods *t t* with the two projecting ends of the shaft *k*, by which a longitudinal reciprocating motion is imparted to the carriage and endless bed. The shaft *r* is revolved by means of pulley *w*, band *u*, and the pulley on the driving-shaft *v*.

The inventor says: I am aware that hat bodies have been felted or sized by being rolled between a bed and pressure plate by the action of a compound continuous and reciprocating motion, and therefore I do not wish to be understood as claiming the method of giving the felting action by such compound motion; but I *claim* the manner in which the compound continuous and vibrating motion is imparted to the endless bed.

No. 14,521.—ALBERT SPENCER.—*Improvement in Machines for Sizing Hat Bodies*.—Patented March 25, 1856.

The rubber board *G* is made with a gradually increasing pitch of face (as seen at *g*²) for the introduction of the felt. The rubber board is vibrated on the pin *H* by means of lever *L* and tapis wheel *N*, thereby causing the hat body to felt up. *F* is a weight at the end of lever *E*, which presses the disk against the hat body.

Claim.—The disk wheel having been patented, I disclaim the use of it, irrespective of my combination, and therefore limit myself to the combination, as herein set forth.

I *claim*, therefore, the application and use of the combination of the disk wheel *D* and the rubber bed *G*, when the bed receives a vibratory motion, substantially in the manner and for the purposes herein before described.

No. 14,960.—SAMUEL C. KETCHUM.—*Improvement in Machines for Sizing Hat Bodies*.—Patented May 27, 1856.

The object of this invention is to obtain an elastic or self-adjusting rubber bed, upon which the roll of felt would receive a constant elastic pressure throughout the entire circumference of the shell, though constantly varying in size, in consequence of its rolling action.

Claim.—The use of the combination of the elastic shell *D* (upon the revolving drum or cylinder *C*) with the vibrating case *I* surrounding the same, when made for the purposes substantially as herein set forth.

No. 15,154.—JOSEPH THOMAS.—*Improvement in Machines for Sizing Hat Bodies*.—Patented June 17, 1856.

Motion being given to the wheel *T*, the cams *Y Y* strike the levers *L L*, giving a vibratory motion to the carriage *K*, which latter, in combination with the ratchet-rollers *M M* and *c*, feed the material into the machine.

The crank *Z* imparts a vibratory reciprocating motion through the lever *H* to the levers *J*, and consequently to the wheels *E* and *U*. These wheels are covered with any material to produce the requisite friction upon their peripheries. During a half stroke of the crank *Z* the dog *X* will drag over the teeth of the ratchet-wheel *V*, and thus allow the wheel *U* to remain without motion; but during the other half stroke the stationary pin *c* will cause the dog *X* to catch in the ratchet-wheel *V*, and move it forward; thus giving an advance movement to the wheel *U*, which presses upon the wheel *E*, and causes the same, together with the wheel *D*, to advance.

The bar *P* is attached to a lever *Q* by a bolt *d*. As this lever is weighted down by moving the weight *S*, it will draw the corrugated plate closer to the wheel *D*, and also carry the apron *C 1* closer to the ratchet-rollers, and by this means render those parts adjustable as to pressure of the material to be sized or felted.

Claim.—1st. Combining with the wheel *D* the wheels *E* and *U*, (or their mechanical equivalents,) for giving the main wheel a vibrating motion when used with a stationary plate or bed, in order to rub the goods back and forth; and also in combination therewith the mechanism for giving the main wheel the constantly advancing motion, when arranged and operating as described.

2d. Combining and arranging the circular plate or bed *B 1* and table *C 1* in such a manner that, by the levers *A 1* (or their equivalents) and cords *b b*, the same mechanism may adjust the plate *B 1* to the wheel *D*, and also the table *C 1* to the ratchet-rollers, and thus give any pressure desired to the goods, substantially as described, and for the purposes set forth.

No. 15,534.—ALVA B. TAYLOR.—*Improvement in the Manufacture of Hat Bodies*.—Patented August 12, 1856.

In this machine for manufacturing hat bodies the picking cylinder *B* is opposite the perforated cone *G*; hence the fur which proceeds from any portion of the picking cylinder lodges upon a corresponding opposite portion of the perforated cone; and if it is necessary to increase the thickness of the bat at any particular part of the perforated cone, the operation is effected by distributing the charge of fur upon the feed-apron *C* in such a manner that there shall be more fur conveyed to that part of the picking cylinder which delivers fur to the part of the perforated cone where the bat is to be made thickest.

Claim.—Regulating the distribution of the fur or other stock upon the perforated cone, by varying the feed of the picking cylinder at different parts of its length.

No. 15,929.—JOSEPH McCracken.—*Improvement in Sizing Hat Bodies*.—Patented October 21, 1856.

The object of the hollow India-rubber cylinder A is to sustain a perfect roll in the felt, and yet be elastic enough to give the roll of felt in passing through the machine an easy working motion, so as to size up the most delicate felt textures, while the water of the interior folds of the felt is allowed to escape through the perforations B.

Claim.—The use of the India-rubber or other elastic perforated cylindrical roller for working or sizing hat bodies upon, when constructed in the manner and operated in the mode substantially as set forth.

No. 16,305.—SYLVESTER H. GRAY, assignor to Himself and FRANCIS IVES.—*Improvement in Machinery for Sizing Hat Bodies*.—Patented December 23, 1856.

The hat bodies are placed upon the inclined feed-board *f*, and pass down upon the endless carrying bed *c*, where they are worked by the combined motion of the endless carrier and the vibrating carriage *b*; they then pass down the guide *h*, and between the revolving endless bed *c* and steam chest *d*, and return to the front end of the machine, there to be received by the operator.

Claim.—Attaching the guide *h* to the rear end of the vibrating carriage *b*, in the manner described, for the purposes specified.

2d. The use of the adjustable steam chest *d*, in combination with the vibrating carriage *b* and the revolving endless bed *c* on carriage *b*, made and operating substantially in the manner and for the purpose specified.

No. 14,862.—A. C. FULLER.—*Improvement in Hat-Felting Machines*.—Patented May 13, 1856.

The hat bodies Q are rolled and fed in between the lower part of the drum B and shell C, and are carried around and discharged at the upper end of the shell C. The polygonal form of the drum causes the hat bodies to be compressed at intervals. The rollers D D check the speed of the hat bodies, and prevent them from passing too rapidly out from between the drum and rollers.

The inventor says: I do not claim a vibrating rubber-bed in combinations with rollers having positive and reverse action; but I claim the polygonal drum B, constructed and operated substantially in the manner and for the purposes described.

No. 14,121.—JAMES S. TAYLOR.—*Improvement in Machinery for Felting Hats*.—Patented January 15, 1856.

The hat to be felted is placed in the cavity at the end of the rollers; the two lower rollers B B merely rotate on their axes, but the two upper rollers have a lateral vibrating motion, which is given them by the cam D.

The inventor says: I do not claim a series of rollers placed within a rack or frame independent of giving two or more of said rollers a lateral or vibrating motion, for they have been previously used.

Neither do I claim giving the hats a rubbing or vibrating motion, as that is a motion indispensable in all machinery for felting hats.

Nor do I claim the contrivance above set forth as an independent invention, but merely as an improvement on my hat-felting machine, patented May 3, 1853; and the patent, if obtained, will be subordinate to the previous patent, and cannot be used without a license from the legal owner of the patent of 1853.

But I claim the combination of machinery operating in the manner substantially as set forth, for the purpose of giving the hat a rotary, longitudinal, and vibratory motion at one and the same time, thereby subjecting the hats as they pass along the chamber *a* between the rollers B B to a kind of rubbing or friction similar to the rubbing performed by hand, and therefore causing the hats to be felted in a more perfect and expeditious manner than by the combination of any machinery ever before used.

No. 14,330.—RUSSELL WILDMAN.—*Improvement in Machinery for Hardening Hats*.—Patented February 26, 1856.

When the cone C has received a slight covering of fur, the elastic rubber felter F is swung (from the position represented by dotted lines) in contact with the cone, as represented by full lines. While the cone is revolved and the felter carried round with it, the latter at the same time receives a rapid vibratory motion. A tremulous motion is thus imparted to the elastic surface of the felter, by which means the felting process is to be facilitated.

Claim.—The inflated elastic rubber herein described, constructed and operated in the manner substantially as herein set forth.

No. 14,401.—SAMUEL A. KINSMAN and SAMUEL FIELD.—*Improvement in Machinery for Ironing Hats*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engraving. E F and 7 are the flats.

The inventor says: We do not claim any peculiar form of hat-holder, nor any spring movement to a side flat, nor a fan to regulate the downward movement of the hat-block, nor any arrangement of toggles to operate the crown-flat; for all of these we are aware are embraced in a patent granted Dexter Dennis on the 4th July, 1854. But what we claim is, arranging the cam 14 so that, when operated by the gear 15 and 17, substantially in the manner described, it will control the vertical movement of the hat-block S R through levers 21 and N, in combination with the lever L, arranged substantially as described, to control the lateral movement of the hat-block, and thus secure the adequate pressure on all parts of the hat at one time.

No. 14,062.—JOSEPH JOHNSON.—*Improvement in the Manufacture of*

Claim.—The manufacturing process of

No. 14,062.—JOSEPH JOHNSON.—*Improvement in the Manufacture of Hats.*—Patented January 8, 1856.

The nature of this invention consists in using a fabric made after the manner of hair-cloth and consisting of slender splints of whalebone, willow cane, or wood fibre, interwoven with common thread and cemented together with water-proof gum; and also in using in the construction of these hats a thin metallic ring E, for the purpose of keeping the upper part of the hat in its proper cylindrical form when the tip is made lighter and thinner than the side crown thereof.

The inventor says: Having thus described my invention and shown its utility, I proceed to state that I do not claim, in manufacturing hats, the use of soft water-proof gums, nor the combination of the same with whalebone, wood fibre, cork, tarleton, or with either of them, as these have been used before; nor do I claim the peculiar fabric herein described as "woven after the manner of hair-cloth, and consisting of thread interwoven with slender strips of either whalebone, willow, or other wood fibre," although the said fabric is believed to be new; but I *claim* the application and use of the said fabric in the construction of hat bodies, when the same is cut from the web, united together and formed into hat bodies, substantially in the manner herein set forth and described.

I also claim the metallic ring or annular plate, made substantially as described, in combination with the "turn-over" around the "square," for the purpose of preserving the proper circular form at the "square" when the fabric of which the "tip" is made is too light or thin to serve the purpose of such support.

No. 14,343.—JAMES W. BEEBE.—*Improvement in Manufacturing Hats.*—Patented March 4, 1856.

By giving the stiffness required to the body alone, instead of the entire hat, the covering as well as the body can be made very thin and light, and hence the whole hat will be much lighter than when the entire hat is stiffened as usual.

Claim.—Making hats with a stiffened body *a*, combined with a felt covering *b*, reduced to the required form by felting, and put over and attached thereto with hatter varnish, or other equivalent adhesive substance, substantially as set forth and for the purpose specified.

No. 14,394.—NANCY DAVY, executrix of EDWARD DAVY.—*Improvement in Machinery for Preparing Hemp and Flax.*—Patented March 11, 1856. Patented November 13, 1852, England.

The hemp stalks are fed in between the fluted rollers C by means of the endless apron *b*, and are operated upon during their passage between the rollers *c* by means of the slides *ff*, which move up and down and cause the woody part of the plant to be disengaged from the useful fibre. As the material passes from the rollers *c* to the rollers *m*, it is operated upon by a bar *r* provided with hackle points.

Claim.—The reciprocating plate or plates *f*, in combination with holding or retaining rollers *e*, for effecting the separation of the fibres of flax and hemp, substantially as herein described, and combined therewith.

I also claim the combination of the hackle bar, operated as described, with the rollers and reciprocating brakers or plates.

No. 16,279.—EDWARD W. LACY.—*Improvement in Hemp-Brakes.*—Patented December 23, 1856.

The driving-shaft G transmits motion to shaft I and cam K, which operates the lever M to lift the braker and braker-block S attached to the rock-shaft D. During the operation, the attendant shifts the adjustable weight F by means of a pedal to a point at which it will give to the stroke such a momentum as the quantity or quality of the stalks under the braker may require.

Claim.—The adjustable weight F to be used with or governed by a treadle-roller, or its equivalent, to regulate at pleasure the momentum of the blows upon the stalks, as described.

No. 15,166.—R. W. BOWEN.—*Improvement in Hemp-Brakes.*—Patented June 24, 1856.

The lower arm B of the braker is jointed to the upper one by connecting pieces *d d*, and turns around a pivot *e* in the smaller posts C. The upper arm has two blades; the lower one three blades. By means of connecting pieces *ff*, the lifting blades D D are firmly attached to the upper blades, and move uniformly with them, and come up clear to the top of the lower blades, when the breaker is opened.

Claim.—The peculiar construction of the upper and lower blades of the brake so that they shall approach each other at the same moment, but with different velocities, substantially in the manner described—that is to say, pivoting the lower blades at or near their front ends in a firm frame, and connecting their rear ends to the top blades, which are pivoted at a point about two-thirds of their length in a solid frame, and operated in front.

No. 15,498.—MERIWETHER THOMPSON.—*Improvement in Hemp-Brakes.*—Patented August 5, 1856.

Motion being imparted to the machine by means of crank 19, and the hemp being placed upon the rails G J K, the swords P and braker Q are caused to work up and down by the arrangement of the conical pulleys V and V¹, crank 2, pitman 5 6, curved crank arm 7 8 9, and shaft O. The compensating pitman and crank connexion, consisting of buffer-block 3, spring 12, and elastic block 10 at one end, with a pin at the other end sliding in the curved slot of the crank-arm 7 8 9, afford the means of overcoming entirely the checking or retard action of the swords P, caused by an excess supply of material under

the brakera. The forked lever X serves to regulate the entire apparatus, as by it the velocity of the conical pulley V can be regulated by shifting the belt W, and also the cord 1S and end 6 of the pitman can be raised or lowered.

The inventor says: I do not claim a compensating pitman as such.

But I *claim* the arrangement of a compensating pitman when applied to a hemp-brake, and constructed substantially in the manner and for the purpose described.

I do not claim cone-pulleys for varying the speed of my machine, nor the slotted arm and shifting pitman to vary the stroke of the brake.

But I *claim* the arrangement described of the cone-pulleys, or equivalent mechanism for varying the speed, and the arrangement of the slotted arm 7 S 9 and shifting pitman, as described, in such relation to each other that, by the described connexion between them, through the shifting lever X and the cord 1S, any change of speed shall effect a corresponding change in the stroke of the brake.

No. 16,285.—WILLIAM H. McNARY.—*Improvement in the Manufacture of Hosiery*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not confine myself to the use of any particular machinery to produce the results described.

I *claim* the production of the heels and toes of hosiery by knitting a spherical piece on the cylindrical or straight portions of the leg or foot, by the mode of operation described, whereby the same number of stitches is always left remaining on the needles, and the cylindrical or straight portion is enabled to be proceeded with again, when desired, thus enabling the whole leg and foot to be produced by a continuous operation of the devices or machinery employed.

No. 15,607.—WILLIAM GODDARD.—*Improvement in Manufacturing Seamless Hosiery*.—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The process or method of manufacturing seamless hosiery of the form required for what is known as seamless tubular knitted fabrics, such as are knitted on machines that knit the tubes of a uniform diameter, and adding thereto the ribbed top, the heel, and the toe, by hand knitting, or any equivalent therefor, as described.

No. 15,314.—JONAS B. AIKEN and WALTER AIKEN, assignors to HER-
RICK AIKEN and JONAS B. AIKEN.—*Improvement in Knitting Ma-*
chines.—Patented July 8, 1856.

The needles are inserted into the grooves of the hollow conical needle-plate B so as to be flush with the sides; the conical driving-

plate F rests with its sides on the needles, and they are held between the sides of the two plates F and B; the object of the conical shape of the needle-plate B is, that needles of greater length can be used than in horizontal plates. The driving-plate F which operates the needles has two grooves *b* and *c* cut in its outer surface—the groove *b* for operating the needles, and the grooves *c* for the retreat of the same. The grooves *b* and *c* are represented in figs. 2 and 3; they operate the needles by means of their bent ends sliding in the grooves. When the needles are not required in operation, they are made to pass into the horizontal retreating groove *c*, by means of a needle-switch *g* (fig 3), which is pivoted to the handle *f*, and can be operated by it. The machine is set in motion by turning the driving plate F by means of the handle *f*, when the needles will operate as represented in the illustration.

Claim.—1st. The hollow circular needle-plate having grooves cut in its inner surface.

2d. We claim the horizontal groove *c* near the bottom of the cone, so arranged in relation to the inclined operating groove that the needles may be retreated thereto, as described, and retained therein when they are not wanted to operate on the fabric knit.

3d. We claim the switch *g*, arranged substantially as described, to change the needles from the inclined operating groove to the retreating groove.

No. 15,435.—JOHN NESMITH.—*Improvement in Knitting Machines*.—
Patented July 29, 1856.

The nature of this invention consists in narrowing the knitting work by lowering one or more of the needles *a* at each passage of the yarn-carrier P, so that the yarn will continue to pass through only the remaining loops of the raised needles until the narrowest part of the fabric is made or arrived at, and then widening this fabric as the knitting progresses by raising the needles, one at a time, to an equal level with the other needles, so that the yarn may pass through their loops in common with those not lowered, and thus widen the fabric as much as the distance from needle to needle, when each of them is raised on the knitting line, so that the yarn will pass through their loops. The desired number of needles are lowered to allow the remaining ones only to knit, which constitutes the narrowing, by means of slides N⁶ and N², having a lower slot to carry the needles when lowered, and an upper slot or plane to carry the needles when raised, these slots being connected together by an angular slot; and the needles are caused to travel in these slots by moving along the slides, whenever it is desired, by means of a registering apparatus, consisting of the worm A², gear C³, shaft B⁴ and its cams K³ and K⁶, cam B² revolving between the levers H³ and H⁶, and thus imparting the vibrating motion to dogs H² and H⁷, which operate upon the governor G², turning the ratchet I⁶, which is secured to the shaft E² so as to turn it and pinion T³, which meshes into the rakes Y² and Y⁶, which latter move the slides N² and N⁶, the entire registering apparatus being driven by main shaft D.

Claim.—1st. The lowering or raising the ends of the needles which receive the threads, so that the threads will not enter the hooks of the needles when out of their working line, as the carrier passes them, while the other ends of the needles remain connected with the mechanical arrangement used for pushing them forward and drawing them back to form a stitch on their working lines, essentially in the manner and for the purposes set forth.

2d. I claim the slides N², or their mechanical equivalents, for taking the needles out of the work for narrowing the fabric, and bringing them back into the work for widening the fabric, essentially as set forth.

3d. I claim the metallic rests or guards *d*, or their equivalents, for constantly keeping a number of the needles in their working line, essentially in the manner as fully set forth and described.

4th. I claim the connexion of a registering or measuring apparatus, constructed as described or otherwise formed, with the moving parts of my machine, for the purpose of bringing into use and taking out of use the requisite needles at the proper time of shaping the fabric, and for severing the threads when the work is done, and stopping the machine when required, essentially in the manner as set forth.

5th. I claim the arrangement and movement of the finned bar W, or its mechanical equivalent, to aid in forming the stitch, also its movement backwards to uncover the ends of the needles for putting on the new fabric, essentially in the manner and for the purposes set forth.

No. 15,484.—AUGUSTUS J. GOFFE and DEMUS GOFFE.—*Improvement in Knitting Machines.*—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventors say: We are aware that machines have been made which have a complete converging series of latch needles arranged in a circular plane to slide endwise and down the yarn from a yarn-carrier around stops arranged between the needles to take up enough yarn for the new loops; and we know that machines are in use which have a complete converging stationary series of fixed needles arranged in a plane; but our invention, as described, is not embraced by such machines.

We claim the employment of a stationary circular converging series of hooked needles *a*, arranged in a plane, and made to slide in respect to the revolving or travelling yarn-carrier E and presser D, and also in regard to the stationary ring of stops *c c*, as described, in connexion with the inside web guide C, or its equivalent, as set forth, for knitting plain tubular work.

No. 16,297.—CLARK TOMPKINS.—*Improvement in Knitting Machines.*—Patented December 23, 1856.

Motion being imparted to pinion *r* on shaft C, the disks E and F are rotated with shaft C, the draught roller A not being connected with sa

shaft. By operating screw-nut *d*, the disk F can be pressed against disk D¹, and the friction between the driving disks E F and the disks D D¹ on roller A can be regulated so that the driving disks shall just slip forward on the roller A when the web has the proper tension for knitting. After this first adjustment, the tension produced by the rollers A B on the web, as it is drawn by them directly from the needle cylinder, will continue the same, whether the yarn from the bobbins runs fine or coarse.

Claim.—The improvement of driving the rough roller A of the take-up mechanism of a rotary knitting machine, by means of rotary friction plates, or their equivalent, substantially as described, instead of giving a positive rotary motion to this roller, as heretofore, so that this draught roller, with its incumbent take-up roller B, without any additional mechanism or any re-adjustment, continually gives the same tension to the web, in knitting, however much the yarn varies in size, or whether much or little yarn is fed to the needles, or whatever quantity of web is on the take-up roller.

No. 15,006.—RUFUS ELLIS.—*Improvement in Needles for Knitting Machines.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Making the journals *c d* or connecting-rod of the hinge fast to the male or entering projection *b* thereof, in combination with so constructing the female socket *f g e* of the hinge as to enable the male part, or its journals, to be moved downwards and laterally in order to detach the same from the female part, and providing such female part with a spring stop *i*, or its equivalent, whereby, when the male and female parts of the hinge of two links are connected together, they may be prevented from accidental disengagement.

No. 14,975.—CLARK TOMPKINS and JOHN JOHNSON.—*Improvement in Rotary Knitting Machines.*—Patented May 27, 1856.

D¹ is a bent arm fastened to the guide frame E. D is a rod, attached at one end to the outer end of D¹, and at its other end to the shield B, which is hung on the shaft S. The take-up reel F is geared so as to wind up the web a little faster than is required; but as the tension roller A begins to rise, the shield B is so turned by its connexion with the tension roller as to lift the click C out of the ratchet, and thus prevent the further taking up of the web until the tension roller descends by the production of more web, so as to let the click C act on the ratchet again; the tension roller A can therefore only rise in the take-up frame K to a certain point; and by allowing the tension roller but a very short movement, it will continually produce an even tension on the web until the take-up reel is full.

The inventors say: We do not claim any arrangement of a tension rod or roller to give even tension to the slat or non-revolving circular

fabrics of knitting looms or machines at the same time such fabrics are

The belt cone *d*¹ is acted upon by the shipping lever *g*¹, which

fabrics of knitting looms or machines at the same time such fabrics are produced and taken up, nor do we claim any mode of causing the tension rod or roller in such stationary machines to so govern the motion of the take-up beam that it shall take up the fabric as fast as produced; but we *claim* the combination of the tension roller A with the take-up mechanism, or its equivalent, when applied to rotary knitting machines.

No. 15,492.—SIDNEY W. PARK and EDGAR S. ELLS.—*Improvement in Rotary Knitting Machines*.—Patented August 5, 1856.

A detailed description of this invention would occupy too much space to be given here; the principal features are indicated by the claims and engravings.

Claim.—Combining two annular series of hooked needles with a sinker C, two pressers F and G, and a web guide D, or its equivalent, substantially as herein set forth, for use in the production of ribbed work, as specified.

2d. The manner of arranging two annular sets of needles in relation to each other: that is, arranging them together so that the hooked ends of the needles of one set are parallel or nearly so with, alongside of, and pointed in the opposite direction to those of the other series, as herein set forth.

3d. The improvement of arranging the sinker C, substantially as herein described, to increase the distance between the yarn and the loops of the second set of needles just before the barbs of these needles are pressed.

4th. The improvement of arranging the cam B so as to spring out the ends of the second set of needles, substantially as described for the purpose specified.

5th. The improvement of holding the needles of an annular series in place on the grooved needle block, or its equivalent, by a ring A, constructed, arranged, and operating as set forth.

No. 14,590.—ERASTUS B. BIGELOW.—*Improvement in Looms*.—Patented April 8, 1856.

A friction brake, for holding the warps firm at the beat of the lathe c, vibrates on the stud m; the shipper arm n forms the brake, and is made to conform to the flange l, while the arm o extends downwards, and is connected with the sword of the lathe by the rod p, so that when the lathe advances to the cloth it brings the brake arm n into action.

When the warps are used up so as to require more to be given out from the yarn beam, the tension roller f is drawn forward, and the projection b¹ raises the feeler z and allows the spring x to draw back the rod w so that when the lathe again falls back it turns the yarn beam. When more warps are being given out than are wanted, the arm z falls down and holds the lever v in a state of rest until it is released as before.

The belt cone d¹ is acted upon by the shipping lever g¹, which presses the cone d¹ against the friction cone c¹. Fig. 4 represents a cross section of these cones and a part of the shipping lever g¹.

The shipper k¹ projects below the stud p¹, and carries the cam r¹, which acts, when the shipper is released, on the roller o¹, and brings the brake into action.

When the loom is started again, the cam r¹ turns and liberates the roller o¹, and allows the brake to free itself from the cone by its own gravity.

The friction brake may be released by means of the treadle u¹, which forces the roller o¹ from under the cam r¹ and the projection w¹, whilst the projection x¹ prevents the roller o¹ from rising above the line of the small part of the cam r¹, so that the spring g¹ is sure to force the roller o¹ under the said cam for another operation.

Claim.—Connecting the tension roller f, or its equivalent, with the let-off motion, to regulate the delivery of the warps by the arm or feeler Z.

I also claim the devices for holding the tension roller, or its equivalent, firmly at the beat of the lathe c.

I also claim the mode of constructing the belt cone d¹, and combining it with the shipping lever g¹.

I also claim the mode of connecting the friction brake with the shipper and stop motions of the loom.

And, finally, I claim releasing the said friction brake to allow the loom to be turned by hand, substantially as specified.

No. 14,971.—ROBERT PILSON and STEPHEN P. HEATH.—*Improvement in Looms*.—Patented May 27, 1856.

By reference to fig. 1 the shuttle R R is shown as passing into the shuttle-box K¹, and in this movement the thread filling S S S is being taken off the bobbin t; and so long as the filling has the least tension upon it, the eye e of the balance drop is kept down nearly horizontal towards the bobbin, and thus the lower part or the toe f is kept from striking or tripping against the end a of the gravitating catch a¹ a², as the shuttle passes into the box K¹; and as the shuttle passes into the box it strikes the swell-spring m, which causes the rod i i to turn outward, thereby admitting the horizontal finger q to pass below the breast beam of the loom and the frog lever, and thus, so long as the filling is not exhausted, the shuttle will slide over the gravitating catch a a¹ a²; and as the momentum of the shuttle is not disturbed, the shuttle readily acts against the swell-springs m m, causing them to perform their required office. As soon as the filling runs out, the balance drops down, its toe part f striking the gravitating catch a a¹ a², when the momentum of the shuttle is checked, which prevents the shuttle from completely passing into the box K¹, and which also counteracts the pressure of the shuttle against the swell-spring m, by which means no action is imparted to the stop-rod i i, whereby the horizontal finger q

instead of passing below the frog lever, strikes flush against the frog, whereby the band of the driving pulley is shifted.

Claim.—The combination of a balance catch in the shuttle in combination with the balance weight in the lathe acting from gravity also, for the purpose described.

No. 15,186.—LUCIUS J. KNOWLES.—*Improvement in Looms.*—Patented ne 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the combination of the vibrator P and the angular notch O with either of the levers or jacks G of the harnesses so as to operate in connexion with the lifter rod I, because I am aware that such has been the subject or a portion of the invention for which a patent was granted to B. F. Rice on the 18th day of October, 1853, my invention being in part an improvement thereon and subordinate thereto; nor do I claim for operating the vibrator the mode described in the patent of the said Rice, wherein the pattern chain is represented as having an intermittent rotary motion while at work, and made to move the vibrator by the alternate actions of pins and hooks in a cam groove formed at the upper part of the vibrator, or in an arm projecting above its fulcrum; my improvement enabling the spring-arm not only to perform all the functions necessary to move the vibrator, but an additional one viz: that of allowing the toothed cylinder M to be continually revolved—important advantages both in the construction and operation being gained thereby.

What I therefore *claim* is, the application of the spring R to the jack G, the vibrator P, and the tooth-cylinder M, substantially in manner and under their arrangement as described, in order to enable the cylinder M not only to effect the movements of the vibrator by the aid of its spring, but to be continuously rotated or maintained in constant and not intermittent rotary motion.

I also claim combining the double shuttle or drop box C with one of the levers or jacks G, (operated as described,) by means substantially as herein before explained, viz: the rod S, the elevator U, the friction roller T, and slide-bar V, so that such drop-box may be operated by the toothed cylinder of the harness levers or jacks.

No. 15,295.—WILLIAM J. HORTSMANN.—*Improvement in Looms.*—Patented July 8, 1856.

This invention relates to a novel mode of applying and operating the pile wires in looms for weaving piled fabrics.

The operation for inserting and withdrawing the wires is performed in the following manner: During the opening of the shed, one or the other of the bars B B¹ is acted upon by the mechanism connected with the cords H H¹, and moved in such a direction as to draw its respective rod E or E¹ away from the other rod far enough for its respect-

ive wire to clear the selvage threads of the warp, as is illustrated by the position of the rod E and wire D, shown in dotted lines, in figure 2. The wire D, before this operation, has been confined in the web, immediately in front of the position now occupied by D¹, by the shed having crossed over it; but being now liberated, it is quickly thrown backwards by the action of the spring b on its rod, till the shoulder a strikes the front guide g. Immediately after the rod has been driven back by the spring, the bar B is liberated by its treadle ceasing to draw on its cord H, and left free to be acted upon by the spring G, which pulls in the direction indicated by the arrow marked upon it, and thus carries the wire D into the now open shed. In this position it is shown in full lines, in figure 2. The advance of the lay causes the reed to drive back the wire D and its rod E; and after the shed has crossed over it, the other wire D¹, which, during the above described operation of D, has been in the web, is drawn out by the movement of the bar B¹, produced by the traction of cord H¹. The wire D¹ now goes through the same operation as that just described of the wire D; and after it has been carried forward by the reed, and had the shed crossed over it, the wire D is withdrawn, and its operation repeated. The object of the spring latches I I is to retain the bars E E and wires D D¹; after having been driven forward, they serve to relieve the tufts or pile threads of the tension produced by the springs b b, and also retain the wires in proper position at the commencement of the web. The rods E E are drawn away from the latches I I¹, and liberated almost as soon as their respective bars B B¹ commence their movement to withdraw the wires.

Claim.—The permanent attachment of the pile wires by one end to the independent sliding rods, which are carried each on one side of the warp, and controlled by springs in such a manner as to allow them an independent movement longitudinally to the warp by transversely sliding bars B B; the said rods, bars, and springs being operated and operating in combination with each other.

And I also claim the spring latches H, acting in combination with the rods E E¹ of the pile wires.

No. 16,015.—LUCIUS J. KNOWLES.—*Improvement in Looms.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not claim a single picker, operating in connexion with a movable series of shuttle boxes, and so as to pass from one box into another of the series, as occasion may require; but what I *claim* is a combination of a single picker staff D, pickers C, and boxes a, substantially as described, wherein there is a separate picker C for each box of the series, and all such pickers are successively moved towards and operated by such single picker staff D during the operation of weaving with the shuttles of such series of boxes.

I would remark, that I by no means claim making a bar with a bend

or recess, as I am well aware that such, without any reference to a special use of said bend or recess, is no new invention.

But I *claim* the improvement in the picker staff when applied to operate a series of pickers, arranged in a set of shuttle-boxes, as described; the improvement consisting in the bend or recess G, applied to the picker staff, so as to enable it while operating a picker to pass by another picker under the former, and not move the said other picker in its box, the whole being substantially as specified.

And I also claim making the picker staff with a bend or recess g, or its equivalent, so as to enable it while operating a picker to pass by another picker, and not move the same in its box, the whole being substantially as specified.

No. 16,306.—BENJAMIN G. DAWLEY, assignor to Z. ALLEN.—*Improvement in Looms*.—Patented December 23, 1856.

By means of the intermediate wheel D, sustained by disk F, the two yarn beams A B are so connected together that the resistance of friction applied to plate F is distributed equally to the threads of the warp yarn wound on each of them, whereby both of the combined sections of the warp yarn are let off evenly to produce uniform selvages of the fabric, although there may be a difference in the circumference of the beams.

Claim.—The use of an intermediate wheel D, or wheels, to balance and regulate the tension in the delivery of the warp from two or more yarn beams combined together to form one web of wide cloth, substantially as described.

No. 16,271.—ANDREW L. FULLER.—*Improvement in Looms*.—Patented December 23, 1856.

This improvement relates to the manufacture of that class of fabrics in which two thicknesses are woven at once for a part of their length, then changing to a single thickness. The loom, in weaving the single part, is arranged to feed about twenty picks to the inch, with the lever C at full play; and when it is wished to change to double, lifting the fingers P by the guard R, the slide N is moved to the double pattern. This shifts the feed to a finer one of about fifty picks to the inch; and when the proper length is woven, the pattern and slide are changed back again to single work.

The inventor says: I do not claim controlling the feed or take-up motion of a loom, as has heretofore been done, but only in connexion with the devices and arrangement described.

1st. I *claim* regulating or changing the feed, by governing the action of the lever C, by means of the graduating stop F, or its equivalent, in connexion with the change of slide and pattern, in the manner and for the purpose set forth and described, or any other substantially the same.

2d. The guard R, for lifting the fingers, when constructed and operating in the manner and for the purposes described.

3d. The flexible connexion between the stop F and the rod or slide, to give motion to the stop without moving the slide, as described.

No. 14,746.—SAMUEL T. THOMAS.—*Improvement in Looms for Weaving Bags*.—Patented April 22, 1856.

When the cam b^1 of the endless belt P is moved into contact with the stud a^1 of the lever o , it will move said lever so as to produce the elevation of the tripping-lever x , and to such an extent as to carry its cam w into the path of the cam v of the slide t . The slide t of the rotating cam K will thus be moved so as to throw the switch r across the groove o , whereby the stud n of the tri-armed lever I of cam K is turned from the groove o into the sideling groove p . While the stud of the tri-armed lever is passing from the sideling p into the groove o , the switch q extends across the groove o , so as to prevent the stud from being turned out of its proper course. As soon as the cam b^1 has passed beyond the stud a^1 , the lever x will move by its own weight, so as to move the slide t back again, when the cam K moves the cam v into contact with the cam w . Thus, the switch r will be moved across the groove p , so as to cause the stud n to travel in the groove o . The stand S is jointed to two upright arms ff , extending from a rocker-shaft T, which latter is vibrated by means of an arm g^1 resting upon a cam h^1 on the main driving-shaft B.

Claim.—In combination with the compound cam K, the endless chain or belt P, and the mechanism for moving the switch r ; the whole being arranged as above described, and for the purpose of determining the length of the sides, or when to form the bottom of the bags.

I also claim the arrangement by which a uniform tension of the warps is secured during the movements of the harnesses; or, in other words, I claim combining with the breast-roller or beam mechanism, by which the breast-roller or beam may be moved, with respect to the lay or harnesses, and during the movements of the latter, as specified.

No. 15,291.—JOHN GOULDING.—*Improvement in Jacquard Looms*.—Patented July 8, 1856.

A detailed description of this invention would take up too much space to be given here.

Claim.—1st. The combination and arrangement of the mechanism described for operating the suspension and trap-boards in jacquard looms—that is to say, lever S1, sector 15, on shaft E, pulley 16, on shaft F, connected by a chain or belt having slots P and 12, suspension and trap-board 10 and 11, connected to the lifting rods by arms 51.

I claim the lever S9, (fig. 1,) or its equivalent, operated by the tap-pets SS, or their equivalents, so arranged as to lock the beams or straight and ground warps, as described.

I claim the mode of giving tension to the warp-threads or yarn taken

from bobbins, as shown in figure 2, by drawing it against itself or the bobbin or yarn which remains upon it, by means of a weight or its equivalent, but so arranged as to be lifted by the yarn when it is drawn, and release the bobbin, and allow it to turn until the yarn delivered permits the weight to descend again, and stop the bobbin by the friction of the weighted yarn against it.

I claim the traversing board 167, (fig. 3,) or its equivalent, arranged upon the knot cords, pile, or figuring harness below the warps, substantially as described, to bring down any single cord which may catch accidentally so as not to be brought down by its own weight.

I claim holding the parting wires 44, (figs. 1 and 3,) hanging them to a rod in rear of the heddles, and passing them between the upper and lower loops of the heddles.

I claim the trap-boards (fig. 4) pierced in the manner described, combined with the needles, constructed as described.

I claim the thimble or socket 120, (fig. 5,) or its equivalent, for receiving, stopping, and holding the shuttle in the box.

I claim the apparatus for holding and drawing up the filling or binding weft for the purpose of tightening the selvage, substantially as herein described, and represented in fig. 6.

I claim the arm 100, and score 121, (fig. 6,) constructed, arranged, and operated substantially as described, or their equivalents, to carry the weft thread from the fell at the edge of the cloth, nearly to where the pile warp crosses or makes an angle with the shed.

I am aware that a knife revolving on an endless belt has been used; I therefore do not claim this feature.

But I claim the application of the knife 175, in combination with its guides.

No. 15,717.—JAMES C. COOKE, assignor to THE HOTCHKISS AND MERRIMAN MANUFACTURING COMPANY.—*Improvement in Jacquard Looms*.—Patented September 9, 1856.

When the front cross-bar E is elevated, it will carry up such of the lifting-bars as have the hooks *b* in the position shown in fig. 2, and at *b'* shown in fig. 3, and will also carry up the side pieces which contain the diagonal slots C and D, which, by means of the connecting-rods *g*, will give a horizontal motion to the cylinder A, and, by means of the dog G, will give the cylinder an intermittent rotary motion, and by the operation of the dog H, cam K, and tracer L, will, at suitable times, give a vertical motion; all of which motions change the pattern as desired, by bringing different portions of the cylinder A to the needles *d*.

Claim.—The combination of the lifting-bar with the sliding-hook and rocking-piece for operating the needle.

2d. The use of a pattern cylinder having a reciprocating horizontal and vertical movement, combined with the movement of rotation on its axis, in the manner and for the purpose set forth.

No. 14,237.—ELIJAH HALL.—*Improvement in Power Looms*.—Patented February 12, 1856.

The nature of this improvement will be understood from an inspection of the engravings.

Figure 2 represents only one-half of a front view of the loom, the other half being similar to it.

Claim.—Locking and unlocking the reed by means of sliding bolts *g g*, applied to the back of the lay, behind the reed, and operated by connexions with the connecting rods B B, by which the lay is driven, substantially as herein described.

No. 14,222.—ERASTUS B. DIGELOW.—*Improvement in Power Looms*.—Patented February 12, 1856.

When more warps are being taken up by the formation of the cloth than are being given out, the tension roller *f* will be thereby depressed, which through the medium of the regulating rod *l* will raise the pawl or feeler *g'*, and allow the lever *c'* (provided with catches or steps *f'* *f'*) an increased range of motion; then when more warps are being given out than are required, the said tension roller *f* rises and allows the pawl or feeler *g'* by engaging with some one of the lower catches *f'* *f'*, to diminish the range of motion of the said lever *c'*, thus adapting the delivery of the warps to the actual requirements in forming the cloth. In order that the feeler *g'* may properly engage with the catches *f'* *f'*, to regulate the delivery of the warps as aforesaid, the cam *v* is so formed as to cause the lever *c'* to act to turn the let-off motion, (consisting of the let-off shaft *w* and worm wheel *z* gearing into cog wheel *a'* upon yarn beam *c*,) when the shed of the warps is open and the tension roller consequently at rest. The end of brake lever *r* and the projection *s* on the framing form together a sort of vise to gripe and hold the regulating rod *l* whenever the brake lever is brought into action.

Claim.—The combination of the tension roller *f*, the regulating rod *l*, and the brake or holding lever *r*, when co-operating substantially in the manner and for the purpose specified.

Also, regulating the action of the delivery motion by the combined action of the tension roller *f* or its equivalent. The regulating rod *l*, the pawl or feeler *g'*, and the series of catches or stops *f'* *f'*, substantially as specified.

Also, the method of holding the tension roller, (or its equivalent,) whereby the regulating rod *l* (or its equivalent) is griped, substantially as specified.

And, finally, the mode of constructing the brake or holding lever *r*, and combining it with the cam *v*, whereby the said holding lever *r* is made to do the double duty of turning the let off motion shaft and holding the tension roller, (or its equivalent,) substantially in the manner and for the several purposes above set forth, and whereby, also, the apparatus which regulates the delivery motion is made to act thereon, when the shed is open and the tension roller at rest, substantially as specified.

No. 14,285.—JOHN JOHNSON.—*Improvement in Power Looms.*—Patented February 19, 1856.

The improvement for shedding the warp consists in elevating the pile warp above the ground or backing warp, so as to form two separate and distinct sheds at the same time, one above the other, as seen in fig. 2. This enables the wires to be put in above the ground warp, under the upper shed, while the shuttle is thrown through the lower shed, and thus obviate the necessity of missing a pick for the purpose of inserting the wire, as heretofore required. To effect this, the harness containing the pile warp is made to rise higher than the ground warp, having a double elevation, so as to leave sufficient space to pass the wire through. The shuttle and wire then pass through their separate sheds at the same instant, without interference with each other or stoppage of the shuttle.

The wires *f* are attached to endless bands *a*, which bands receive a reciprocating movement at proper intervals, for the purpose of advancing and withdrawing the wires at the proper time. The motions of the belts are such that one wire will be inserted when the other is withdrawn. The two wires are inserted alternately from either side of the work, as will be seen from the engravings.

The inventor says: I do not claim a double shed; but what I do claim as my invention is first inserting the wires at the same instant the shuttle is thrown, by which I save a pick by the employment thereof of a double shed in the manner set forth.

I also claim the vibrating belt, or its equivalent, to which the wires are connected, arranged and combined substantially as herein set forth.

No. 14,358.—JAMES GREENHALGH, Sr.—*Improvement in Power Looms.*—Patented March 4, 1856.

A detailed description of this machine would take up too much space to be given here.

Claim.—1st. In combination with the method of balancing the boxes, the method of giving motion to the shaft *f* to operate the boxes, by means of two notched bars *j j'*, which are geared with opposite sides of the pinion *e* on the said shaft, and are suspended from levers *t t'*, which are operated upon by a pattern cylinder in such a manner as to raise either of the said bars as may be necessary to bring its teeth into engagement with a dog *i*, or *i'*, suitably arranged and operated to give the requisite motion to the bar.

2d. The method of giving the shuttle-boxes a single or double movement, as may be required by the pattern, by employing two hooks, *i i'*, or their equivalents, having unequal movements; arranging the said hooks, or their equivalents, with their points at different elevations, and employing long and short studs in the pattern cylinder, or its equivalent, to raise the rack bars *j j'*, which give motion to the boxes, to a position to be caught only by the hook having the shorter movement, or to a position to be caught by the hook having the longer movement, substantially as herein described.

3d. Controlling the order of succession of the movements of the two pickers to make them act in regular alternate succession or otherwise, as may be desirable, by means of a pattern cylinder, or its equivalent, acting upon the mechanism by which movement is transmitted from the driving-shaft to the pickers in such a manner as to throw or retain either picker in gear with the said shaft, and the other one out of gear, substantially as herein described.

4th. The combination of the levers *J J'* through which the cams on the driving-shaft operate the pickers with the sliding-shaft *K*, the lever *9*, and the V-shaped stud *7*; the said lever *9* being moved from side to side by the pattern cylinder, and the said V-shaped stud receiving a suitable motion to operate on the said lever *9*, substantially as herein described.

No. 14,644.—ANDREW ALLEN.—*Improvement in Power Looms.*—Patented April 15, 1856.

The wrist *k* gives the rod *F*, with its pin *h*, a movement forth and back during every revolution of the treading-shaft *H*, causing the pin *h* to advance into and retreat from one of the spaces *h¹ h² h³ h⁴* between the fingers of the hand *E*, and by that means either to raise or lower or leave stationary the lifting-rod *C*, according to space which the pin enters, and to the previous position of the lever *D*.

Claim.—The combination of the fork *c c'* on the lifting-lever *D*, the stationary hand *E*, and the sliding-pin *h*, or its equivalent, the whole operating substantially as herein described.

No. 16,037.—ALEXANDER SMITH and HALCYON SKINNER.—*Improvement in Power Looms.*—Patented November 4, 1856.

A detailed description of this invention would take up too much space to be given here.

Claim.—1st. Mounting the yarns for forming the ranges of tufts in parcels on a series of spools, or equivalents therefor, in the order required for producing the design or pattern required, so that each spool, or the equivalent therefor, may be brought in succession to the required position for each range, substantially as described.

2d. The mode of operation, substantially as described, by which the spool frame required at each operation is brought down in close proximity with the tufting warps, and then carried out of the way of the lay when performing its operation, as described.

3d. The mode of operation by which the tufts of yarn are introduced and applied to the tufting warps, substantially as described.

4th. The mode of operation by which the tufts are cut off from the yarns after they have been introduced and applied to the warps, substantially as described.

5th. The mode of operation by which the tufts are carried to the required place in the fabric by the combined action of the reed and plate, or any equivalent therefor, as described.

6th. And in combination with the several modes of operation by which the tufts are introduced, the employment of the heddle motion, substantially as described, for binding and holding the said tufts by the warp threads.

No. 14,292.—RENSSELAER REYNOLDS.—*Improvement in Temples for Looms*.—Patented February 19, 1856.

When the lay beats up, the stud *s* strikes against the downward projection *e*, and drives the temple forward with it from position 2 into position 3. This is a very little way, just enough to make the forward end *f* of the arm D run under the roller B, to open the jaws sufficiently to release the cloth. When the lay recedes, the temple follows it, (the receding motion of the latter being caused by the tendency of the spring E to raise up the arm D, the pressure of the arm under the roller tending to throw it out,) and the rear jaws *h* close upon the cloth.

Claim.—The arrangement and gear, substantially as herein shown and described, of the shank D of the opening and closing jaw with the stop or roller B, in combination with the closing and receding spring E, for the operation together essentially as specified.

No. 14,988.—WILLIAM W. WIER and WILLIAM GROVER.—*Improvement in Self-Acting Mules*.—Patented May 27, 1856.

As the spindles commence to revolve and the carriage to move out, the third faller C is drawn up by the yarn, when the points of the cam E, formed by the meeting of the concentric and eccentric parts, pass the centres of the rolls *i i*, and they being drawn against the cam by the spring S, the cam and parts attached to shaft C are immediately thrown into their proper position. As the carriage continues to move outward the latch *f* is brought in contact with the stand *g*, depressing the latch and lever H until the latch will pass under the stand, and bringing down the counter-faller to the proper position for it, while the carriage is running out. When the carriage is out and the spindles have backed off, the front faller is put down to wind the yarn on the spindles as the carriage runs in; and by the action of the cam W, against the pin in the arm *x*, C is also put down and remains on the yarn until the carriage returns to the position shown in the drawings. The counter-faller is controlled by the yarn until the carriage is nearly in, at which time the latch, being elevated, is brought in contact with the stand *g*, depressing the latch and bringing the stand and lever G in contact, whereby the lever is held down so as to just clear the cam F when the front faller rises, but allowing lever H and counter-faller to rise sufficient to bring the faller-wire level with the tops of the spindles. As soon as the carriage starts out, the lever is released from the stand *g*, and is then held down by the cam F.

Claim.—The application to mules of the faller C, herein denominated a third faller, operated by the mechanism herein described, or the

equivalent thereof, when used in combination with a faller and counter-faller, substantially as described and for the purpose specified. Also, the combination and arrangement of the levers G and H and latch *f*, substantially as described and for the purpose specified.

No. 15,245.—JOHN McMULLEN.—*Improvement in Netting Machines*.—Patented July 1, 1856.

The nature of this invention consists in conveying the net as it comes from the machine between and partially around two pressure rollers R R', and in effecting the tightening between those rollers and the cloth beam B. The invention further consists in so connecting a lever-bar *d*, under which the net passes on leaving the machine, with the pawl *p* driving the cloth beam B, that the tightening of the net between the machine and the lever-bar, beyond the slackness requisite for the formation of the knots, will stop the rotation of the cloth beam.

Claim.—Finishing the meshes of the net and tightening the knots by the simultaneous longitudinal and lateral strain of pressure rollers and cloth beam, operating as specified, the relative position of said rollers and beam being automatically preserved.

No. 15,738.—HERVEY LAW.—*Machine for Cutting Paper*.—Patented September 16, 1856.

A block of paper being placed upon the platform C, and motion being communicated to the shaft of the knife B, said motion is transmitted to the mechanism by the band J. As the platform C rises by the action of the eccentrics D D', the upper lever F' of the toggles is carried up and made by the cranks to assume a vertical position; and, in doing so, exerts an upward pressure on the platform C, and, by means of the lower lever F, a downward pressure on the clamping-frame E, which allows the platform C to rise sufficiently to clamp the paper between itself and the upper cross piece *c* of the clamping-frame. As soon as the toggles assume a vertical motion, the clamping-frame E commences to rise with the platform C, and the paper is fed to the knife B. The toggles are caused to exert a pressure between the lower cross-bar *d* and the platform, during the feeding and cutting operation, by the pintles *j* of the cranks G being confined and moving up in the straight portion of the grooves *k*.

Claim.—The combination of the rising and falling platform C and clamping-frame E, by means of toggles F F', said toggles having cranks G G' connected with them, the pintles of which work in curved grooves, or are otherwise actuated, substantially as and for the purposes set forth.

No. 14,804.—WILLIAM CLARKE.—*Improvement in Processes for Making Paper from Straw*.—Patented May 6, 1856.

The inventor says: I have found by experiment that coal-tar will neutralize the lime used, which heretofore has been of great in-

jury to moulds and felts used in the manufacture of paper. The coal-tar prepares the material to be made into paper to receive colors such as may be desired, which it has heretofore been found impossible to do in consequence of the alkalis remaining in the material.

He says further: What I claim is not the use of lime, or other alkalis used in the preparation of vegetable material used in the manufacture of paper.

But I claim the boiling of coal-tar in with the straw, or other vegetable material for the manufacture of paper, in the manner and form herein set forth, and for other similar purposes, or purposes substantially the same.

No. 14,621.—P. H. WAIT.—*Improvement in the Felt-Guide of Paper Machines*.—Patented April 8, 1856.

As the felt deviates from its course in the centre of the cylinder, its edges bear against the guide rolls F F, causing the connecting rod G to move together with the levers E E, and displacing the roll D, as shown by dotted lines, which works the felt back to its proper position.

The inventor says: I do not claim the roll D nor the use of a roll to guide the felt, for this has been previously used in various ways.

But I claim the employment and use of two crooked levers E E, hung upon pivots L L, and operated by connecting rod G and guide-pins or friction-rollers F F, against which the felt bears, working the rod G and levers E E, changing the position of the roll D, by action of the felt, substantially as here shown for the purpose set forth.

No. 15,582.—ISRAEL KINSEY.—*Improvement in Feeding Pulp to Paper-Making Machines*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Regulating the flow of pulp for making paper upon the web or cylinder of the paper machine by the pressure of the pulp in a box A, receiving its supply of pulp from the stuff chest E, through the aperture *f* in the trunk R, and discharging it through an adjustable aperture *p* below the surface of the pulp in the box A, the pressure being regulated and kept uniform by the height of the pulp *h* in the box A, which is adjusted and maintained by means of a valve *e* fitting the aperture *f*, operated by a float B, substantially as described, the combination of the several parts forming a self-acting regulator, for the purpose of making paper of equal thickness.

No. 16,278.—JOSEPH KINGSLAND, JR.—*Improvement in Paper Pulp Engine*.—Patented December 23, 1856.

The stuff is fed into the cylinder C through the pipe F, and when reduced to pulp by the action of disk E on the end of the cylinder, it is discharged through pipe G, and the level of the nozzle of this pipe can

be adjusted relative to the head of water on the feed pipe F, whereby the effective head of pressure is varied and the velocity of the feed current adjusted.

Claim.—The method of regulating the feeding of the fibre to the grinder by varying the hydraulic pressure by means of an adjustable discharging nozzle or its equivalent, as set forth.

No. 16,239.—JOSEPH KINGSLAND, JR.—*Improvement in Machinery for Grinding Paper Pulp*.—Patented December 16, 1856.

Rotary motion being communicated to the shaft D, the mixed half stuff and water may be let into the feed-pipe F from a tank above, and the hydraulic pressure will force it into the cylinder C through the space *e* between the disk E and the outer head *d*, round the periphery of disk E and through the space *f* to the orifice of the discharge pipe G, where it will leave the cylinder passing through said discharge pipe into a suitable receptacle.

Claim.—The combination of the revolving grinding disk, having play in the direction of its axis, with the fixed grinding disks on either side of it, whereby the revolving disk is free to adjust itself at such varying relative distances from the fixed disks as may be required to prevent the girder from clogging, and to adapt it to working properly upon different qualities of fibre, and under different rates of feeding, substantially as set forth.

Also, the arrangement of the feeding and discharging orifices of the grinder and its grinding surfaces, as described, so that the motion of the revolving disk will facilitate the entrance of the fibre into the grinder, tend to retard its discharge therefrom until properly reduced, and to keep it while in at those places where the grinding action is most energetic, substantially as set forth.

No. 16,316.—JOSEPH KINGSLAND, JR.—*Improvement in the Process of Grinding Paper Pulp*.—Patented December 23, 1856.

Motion being imparted to the driving-shaft D, the half stuff is fed into the cylinder *e* through pipe F from a tank above, and operated upon by the grinding disk E, which reduces it to pulp. The centrifugal motion of disk E will co-operate with the hydraulic pressure under which the pulp is fed to cylinder C, to force said pulp through the grinding cylinder and out through discharge-pipe G.

Claim.—The process of reducing fibrous matter in water to pulp, by grinding it under hydraulic pressure, which creates a current that feeds the fibre into the grinder, and removes it therefrom as fast as it is sufficiently reduced, and renders the feeding independent of the grinding, substantially as set forth.

No. 14,218.—WILLIAM ADAMSON.—*Improvement in Machinery for Cutting Sand Paper.*—Patented February 12, 1856. Antedated August 12, 1855.

The paper P is slit as it passes between the slitting rollers A and B, the effect being similar to the action of a pair of shears. As the grit in the paper wears the edges of the rollers away, they are pressed against other by means of spring S, and thus the edges always wear themselves smooth and square.

Claim.—The arrangement and combination of the slitting drums A and B in the manner and for the purposes as herein set forth.

No. 16,162.—VESPASIAN O. BALCOM and CHARLES H. HILL.—*Improvement in Engines for Grinding Paper-Stock.*—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The revolving pulp-tub E, or its mechanical equivalent, in combination with the grooved grinding roller G revolved thereon, at a greater or different speed than this tub.

Also, the combination of the revolving pulp-tub E and friction or evening roller J, arranged and operated essentially in the manner and for the purpose set forth.

No. 14,165.—JOSEPH N. PITTS.—*Improvement in Machines for Cutting Flocks and Paper-Stock.*—Patented January 29, 1856.

The material to be cut is placed within the drum B. The cylinders F are rotated rapidly by pulleys and belts, and drum B is rotated slowly. The material passes down between the two cylinders F F, and between the knives f on said cylinders and the cutters I I, and is cut by them. The material is fed to the cylinders F F by the rotation of the drum, the knives catching the material and drawing it downward, so that it passes between the knives and cutters. The cutters I are made yielding by means of springs i, and can be adjusted by means of nuts j.

Claim.—The combination of the cylinders F F, provided with spiral knives f, cutters I I attached to the adjustable and elastic or yielding bars G G, and the drum B; the above parts being arranged as shown, for the purpose specified.

No. 14,938.—WILLIAM R. DUTCHER, assignor to HARVEY CHURCH.—*Improvement in Machinery for making Rope and Cordage.*—Patented May 20, 1856.

The inventor says: I do not claim the wheels 7 and 8, and other gearing for giving a larger or smaller amount of twist to the strands, as

this is the subject of a patent granted to Messrs. Harris, Stott, & Richmond, October 31, 1854; neither do I claim rubbing down or sizing the yarn.

I do not claim regulating the tension of warps or strands by means of a wire or cord in a grooved disc, neither do I claim a belt or strap running around bobbins, as they stand in a circular range, for the purpose of rotating such bobbins; neither do I claim a revolving tube passing the strands, nor a plate or lay-up block through which the strands pass; but I am not aware that a pipe has ever before been fitted above each lay-up block in such a manner as to regulate the tension of the yarn by adjusting said pipe nearer to or further from the said lay-up block. I do not claim the grooved cone t, as this has been used in rope-walks and machinery; also a tube has been used in connexion with such cone, therefore I do not claim the same, but limit my claim as hereafter specified to the peculiar construction of the parts.

I do not claim leading the yarn or sliver off to one side of the enclosing can; but where bobbins are made use of, there must be sufficient distance between the bobbin and the hole through which the yarn passes to allow said yarn to pass off freely. Hence in cases where the yarn is led towards the centre of the circular range of bobbins, that range has to be so large, to provide for the above requirements, that the machines become heavy and cumbersome; therefore I lead off the yarns towards the opposite side of the range to where the bobbin stands, which provides sufficient distance to cause the yarn to run off with a uniform tension from the top and bottom of the bobbins, and thereby said bobbins can be brought into less space. The holes in the arms thus do not become regulators of the tension by their size, but provide for the yarn being drawn off in such a manner as not to be varied in its tension by any varying angle of the yarn in passing off the bobbins.

But I claim, 1st. The arrangement of the gear wheels h and i, pinions B and 14, plate k, and ring 12, (figure 3,) for sustaining and revolving the creel shafts l.

2d. I claim the adjustable friction wire or cord passing around in the disks 16 of the circular ranges of bobbins, thereby simultaneously regulating all the yarns in each range to precisely the same tension (figure 4).

3d. I claim the adjustable tube 18, over the centre of the lay-up block g, for the purpose of regulating by its proximity to said lay-up block the tension of the various yarns composing the strands, (figure 5).

4th. The construction of the lay-up cap S, on the end of shaft c, fitted to receive the moveable cone t and adjustable tube 24, so that the tube and cone can be conveniently changed to adapt the parts to laying up different sized rope or cordage (figure 6).

5th. Leading the yarn off from the bobbins to a hole or guide on the arms 43, or their equivalents on the opposite side, or nearly so, of the circular ranges of bobbins in the creel (figure 7).

No. 14,194.—OLIVER S. HAZARD and ISAAC PECK.—*Improvement in*

their equivalents, revolving around the axis of the laying-spindle and

No. 14,194.—OLIVER S. HAZARD and ISAAC PECK.—*Improvement in Machinery for Making Rope*.—Patented February 5, 1856.

A difficulty in rope-making always occurs in piecing up the strands from time to time as the cans are exhausted, or whenever the sliver breaks; for, before such occurrence can be seen, the end will have passed up above the rollers. Then the splicing must be done above the rollers, and then the strand, being loose, must be tightened by being drawn down to bring the strands even. But the sliver has no strength below the rollers, and cannot be drawn back through the guide. To avoid this difficulty, the inventor applies the trumpet-shaped guide Z, which compresses the sliver, and is suspended on the sliver, extending up through the tubular shaft close to the rollers; and when the strand is to be tightened he allows the trumpet to drop back by opening the rollers, and when the machine is again put in motion the rollers draw the trumpet again up to its place.

Claim.—The movable self-adjusting trumpet guide Z, as above described.

No. 15,326.—THOMAS G. BOONE.—*Improvement in Rope Machines*.—Patented July 15, 1856.

The strands from the several spindles H, H¹, H², having been led through the conducting tubes O, O¹, O², over the laying block and through the hollow upper journal *d* of the laying spindle or rotating frame to the capstans W, rotary motion is imparted to the drum C and capstan W. The laying of the rope is performed by the revolution of the conducting tubes O, O¹, O², around the axis of the laying spindle. The revolution of the strands to produce the lay of the rope being effected between the unlaied ends and the laied portions, while those parts are stationary, involves the necessity of the strands receiving each a separate rotary motion in a direction contrary to the lay, as imparted by the rotation of the tubes O, O¹, O², on their own axes; otherwise, the parts of the strands between which the revolution to perform the lay takes place and the unlaied ends would receive an additional twist, and the parts above between that and the laied portions would receive a diminution of twist.

Claim.—1st. The arrangement of the strand spindles with their axes all in the same line with each other, and with the axis of the laying spindle, substantially as herein described, or in an equivalent manner, whereby I am enabled to put in a forehard, equal in turn to that of the lay, without rotating the strand spindles.

2d. The arrangement of gearing, whereby, during the rotation of the laying spindle, the strand spindles may be kept stationary, or have a slight rotary motion imparted to them, either in the same or in a contrary direction with the laying spindle, consisting of the stationary gear 1, the shafts L, L, L, with their gears M, M, M, and N, N, N, and the gears J, J, J, and K, K, on the strand spindles, all operating substantially as herein described.

3d. The conducting tubes O, O, O, furnished with rollers *i, i, i*, or

their equivalents, revolving around the axis of the laying-spindle and spool spindles, and rotating at the same time on their own axes, operating in continuation with the above described arrangement of strand spindles, to take out the first additional twist received by the strand, and carry it forward to produce a forehard in the rope.

No. 15,623.—SIMON F. STANTON, assignor to J. M. and S. F. STANTON.—*Improvement in Machinery for Filling Seine Needles*.—Patented August 26, 1856.

Motion being imparted to the apparatus from the shaft M, a vibrating motion is given to the toothed sector F, cogged wheel E, arm D, and needle H. The cams *a* and *b* in the pulleys N and O impart to the shaft T and arm U a vibrating motion at the same time that the cam Y imparts to the arm U a vertical vibrating motion which corresponds to the vibrating motion of the needle H. By means of this arrangement the end V of the arm U, which carries the twine, is carried across the point *d* of the needle so as to carry the twine around said point *d* while the end V is in the needle; and as the arm U and needle H vibrate in opposite directions in the same time, the twine is carried alternately across the score *f* of the needle and around the spindle *d*, first in one direction and then in the other, so as to fill the needle with twine as the machine is operated.

Claim.—Giving the needles a vibrating motion by devices such as described, or their equivalents, in combination with the arms which deliver the twine, vibrated perpendicularly and traversed horizontally by devices such as described, or their equivalents, so as to deliver the twine across the score and around the tongue of the needle, substantially as described.

No. 14,283.—SETH P. CHAPIN.—*Improvement in Sewing Guides*.—Patented February 19, 1856.

The cloth (represented by slightly waved lines) is drawn along between the overlapping projection *g* of plate A¹ and the part of plate A projecting under said overlapping portion of plate A¹; and then it passes between the overlapping projection *g* of plate A and that part of plate A¹ which lies under said overlapping projection of plate A. In the central section (see fig. 5) the edge of the cloth stands vertical, as seen at *j*.

By arranging two pairs of such plates as shown in fig. 7, the cloth is made to turn twice, and in the central part *i* the edge is properly doubled for being hemmed by the needle of a sewing machine. F is the spring which holds the cloth in the rear of the plates.

The inventor says: I do not claim a device invented by S. C. Blodgett, for cording umbrella covers, in the use of which the edge of the cloth in a partially turned state is guided into a slot, and a turn over the cord completed by passing under the presser.

I claim the method of forming hems on the edge of flexible mate-

volving bobbin or ball E, containing the thread, and N, which

I *claim* the method of forming hems on the edge of flexible materials by means of folding guides made to turn the edge 180° or more, substantially as described.

And in combination with guides, substantially as described, I also claim the employment of a spring (F, fig. 13) or analogous device:

- 1st. To hold and to guide a piece of cloth by an edge or plait.
- 2d. To cause the cloth to follow the guides, placed between it and the needle, with certainty.
- 3d. To keep the cloth on a stretch while the stitch is being drawn.

No. 14,022.—PHINEAS L. SLAYTON.—*Improvement in Sewing Machines*.—Patented January 1, 1856.

This machine is intended to sew and embroider cloth and also to work button-holes. The shuttle-box B is rotary; the shuttle C is made to run as near the circumference of the box as possible, see fig. 2, and the parts by which it is operated are represented in fig. 1, and in detached views figs. 3 and 4; the shuttle is operated by these arrangements in such a manner that there is no possibility of missing a stitch. Every time the shuttle makes one revolution the thread from the cloth would either twist or untwist, which would cause the thread to have so much twist as to kink and prevent it from working, or make it too slack; to overcome this, the arrangement as represented in figs. 5, 6, 7, 8, and 9, is made use of.

Figures 10, 11, and 12 show the arrangement of the feeding apparatus: fig. 10 is a side view, fig. 11 a front view towards the shuttle-box, fig. 12 a rear view of the same. The needle-frame E, with all that is attached to it, and the plates F¹, G¹, H¹, with everything attached to them, form a separate sliding frame which moves in a lateral direction of the cloth by means of cam I², which is brought in contact with the end of H¹ at every revolution of the shaft, and as there are two stitches made at each revolution of the shaft; there is a stitch made at each end of the motion; carrying the needle-arm and shuttle-box with it. This motion is regulated by patterns M¹, M², M³, figs. 13, 14, and 15, of whatever shape will suit the figure to be worked, which is attached to the lower end of the frame, as shown in fig. 1.

Claim.—What I claim as my invention and desire to secure by letters patent, is—

- 1st. The horizontal motion of the needle and shuttle-box combined, at any required distance from the cloth.
- 2d. The combination of mechanism by which the pattern receives motion and operates to control the movements of the needle and shuttle, consisting of the worm wheel L and screw, or their equivalents, of which the screw or their first mover is furnished with arms Z¹, Z² operated upon by a lever O¹ on a shaft S¹ which receives a continuous rotary motion, substantially as herein described.
- 3d. Though I do not claim a circular shuttle-box, or raceway and revolving shuttle, I claim furnishing the revolving shuttle with a re-

volving bobbin or ball F, containing the thread and spool N, by which the twist of the thread remains unchanged, or their equivalents.

4th. I claim the manner of connecting the fly F with the feeding-hook H as it is operated upon by the thread as the shuttle passes through the loop to prevent missing stitches.

5th. The feeding apparatus attached to the revolving turn-table I¹ and otherwise arranged and combined, substantially as herein described.

No. 14,141.—JOHN O'NEIL.—*Improvement in Sewing Machines*.—Patented January 22, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim a feed bar, or one divided into a number of points; nor do I claim a roughened surface of any kind; but I *claim* the broad chisel-edged piece *e*, which takes hold of several of the warp or weft threads, and thus feeds along the material without piercing or penetrating the cloth, when such edge is of sufficient width to catch or hold several threads of the fabric being sewed, substantially as set forth.

No. 14,207.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Sewing Machines*.—Patented February 5, 1856.

z represents the thread which, by means of this improvement, receives a proper and uniform tension. The improvement also serves to prevent the wax from being scraped from the thread, as takes place when a waxed thread is carried and pressed between two flat surfaces.

The inventor says: I do not claim a tension apparatus composed of a spring bearing against a fixed surface or another spring, the thread being drawn between the two; but I do *claim*, as a tension apparatus, the combination of a rotary grooved roller M and a pressure roller O, operating by means of a spring S, or its equivalent, essentially as specified; the same when a wax thread is used, producing advantages substantially as herein before stated.

No. 14,324.—T. J. W. ROBERTSON.—*Improvement in Sewing Machines*.—Patented February 26, 1856.

When the looper *b* is free, it rests upon the fixed rest *d*. The needle *a* and thread, when descending, pass close by the point of the looper, but so that as the formation of the loop is commenced by the slackening of the thread when the needle commences rising, the thread will pass under the point of the looper, and as the loop is drawn up through the cloth by the continued movement of the needle, it catches the said point and swings it up (see fig. 4) nearly close to the cloth A, a little behind where the needle passes through, leading the loop to such a position that the needle must pass through in its next descent. The

looper is then liberated by the loop slipping off it, and falls by gravitation to its first position on the rest *d*. The guide *e* serves to lead the opening loop over the point of the looper.

Claim.—The looper *b*, constructed, applied, and operated substantially in the manner set forth.

No. 14,393.—HENRY R. DAVID.—*Improvement in Sewing Machines.*—Patented March 11, 1856.

The nature of this invention consists in providing the needle *F* with a groove 1 in its under side leading from the eye *r* near the point of the needle to a second eye 2, which passes the thread up through the upper part *g* of the groove containing the needle.

Claim.—The method herein described and shown of leading the thread to avoid wear or derangement thereto, by combining with the slide *D*, in the before mentioned patent of David M. Smith, of 16th April, 1850, and on which this is an improvement, the needle *F* constructed with the two eyes and the groove to act in the manner and for the purposes specified.

No. 14,433.—WILLIAM C. WATSON, assignor to IRA W. GREGORY.—*Improvement in Sewing Machines.*—Patented March 11, 1856.

The device for preventing the loop forming on both sides of the needle, consists of a narrow strip of metal fixed in a slot cut in the post *e*¹, by a spring or tongue *r*, which tends to project it beyond the face of the same. This tongue has a groove on its face, and lies directly in the path of the needle in its descent. The top is rounded off so that the needle in striking will press the tongue back, and slide down in the groove. The tension clamp consists of a pair of nippers *S*, which are made to close upon the thread by means of a wedge-shaped bar, (*s*¹), which is thrust between the legs of the same and moved back and forth by a cam *t*.

Claim.—1st. The tongue or spring *r* in combination with the needle for insuring the formation of loops on one side only as described.

2d. The gripper for seizing the thread and holding it until the needle has entered the cloth, thus securing the last stitch against the slacking up as described. The whole being constructed and operating substantially as set forth herein.

No. 14,475.—ISAAC M. SINGER.—*Improvement in Sewing Machines.*—Patented March 18, 1856.

The two feeding wheels *d* and *d*¹ are moved with different velocities in order either to distend or to pucker up the cloth. This is effected by the spur wheels *i* and another wheel *j*, which turns on the fulcrum pin *k* of the lever *h*, which latter carries a spring ratchet head *l* that en-

gages the cogs of the wheel *J*. The lever is vibrated in the usual manner, and thus an intermittent motion is imparted to the wheels.

Claim.—The method, substantially as herein described, of distending or gathering up the cloth or other substance where the needle operates upon it, to form the seam by combining in a sewing machine two distinct feeding wheels, or their equivalents, moving with a differential motion substantially as described.

No. 15,396.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Sewing Machines.*—Patented July 22, 1856.

The thread is taken from bobbin *X* and passed through the thread carrier *H* of the hook *B*, the material to be sewed being sustained on the top of the support *F*. After the awl *C* has descended and punched a hole through the work it rises, and the hook *B* follows up straight through said hole, and immediately after the barb has been elevated above the work the hook is turned a little towards the thread carrier *H*, in order that during the next downward movement it may seize the thread. On the descent of the hook *B* the thread is drawn in the form of a loop through the work, the hook descending entirely below the horizontal needle *D*, which next passes into the loop and there remains long enough to permit the hook *B* to rise and pass between said needle and the thread carried by it. The horizontal needle next falls back, having looped its thread around the shank of the hook *B*. Next the hook descends as before, drawing a loop down with it through the cloth and the loop previously formed upon its shank.

Claim.—The employment of a hook in connexion with the looping needle, and arranging said hook so that it shall pass into the cloth or material from the same side of it on which the looping needle works or is situated.

No. 15,469.—SHERBURN C. BLODGETT.—*Improvement in Sewing Machines.*—Patented August 5, 1856.—Antedated February 5, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The arrangement of the crimping notch *g*, in the shuttle, for the purpose of drawing the slack thread from the needle, and thus preventing the loop of thread from being taken up a second time, as above described.

2d. The employment of a series of pawls or drivers around the circumference of a discoidal or circular shuttle, whereby the driving force is applied equally or nearly so, through a considerable arc of the circumference of such shuttle.

3d. The mode of driving the disk shuttle at its circumference, by means of a hollow pulley or sleeve *B* revolving around a fixed shaft or axis *C*.

4th. The mode of giving motion to the needle arm *E*, and the feed-rollers, by direct connexion with the same sleeve *B*, or revolving shaft,

to which the drawers *d* are attached, which drive the disk shuttle, substantially as described.

5th. The arrangement of the cams *C* *C*¹ and lever *k*¹, for operating the slide *k*, in combination with the cam *e* and arm *H*, for operating the pressure pad, in the manner and for the purpose as herein before described.

No. 15,470.—JOSEPH BOND, Jr.—*Improvement in Sewing Machines*.—Patented August 5, 1856.

The driver *E* being set in motion, the teeth *e* on the top of the cylindrical portion *d* of the driver will, on account of the eccentricity of the latter with the stationary shaft *D*, enter the recesses of the spool case *G*, two teeth being in said orifices at a time; the other teeth as the driver revolves clearing the piece *K*, as well as the needle *P*, thus causing the spool case *G* to revolve within its holder, and at the same time leaving ample room for the operation of the needle and the lever *L*. The lever *L* is connected to the stationary spool case *G* in such a manner that by the action of the cam *n* in the driver *E* on the arm *l* of said lever, the hooked arm *m* catches the needle thread and holds the same while it is carried over the spool by means of a nose *g* on the latter, the thread being released from the hook when the spool case is in a proper position for the loop to escape.

Claim.—1st. The driving of the spool case *G*, by placing the latter on a stationary spool case holder, within a cylindrical driver, having any convenient number of internal teeth, the driver being situated eccentrically with the holder, so that the internal teeth of the former may catch into the recesses in the edge of the spool case, and cause the same to revolve, at the same time leaving a space between the holder and the driver on the side opposite to that where the teeth act on the spool case, for the play of the needle and its thread.

2d. The hooked lever *L*, in combination with the cam *n*, on the driver *E*, arranged and operating substantially in the manner and for the purpose set forth.

No. 15,635.—A. F. JOHNSON, assignor to himself and F. A. HOUGHTON.—*Improvement in Sewing Machines*.—Patented August 26, 1856.

In this sewing machine a positive motion is imparted to the feeding plate *i* by means of cam *q*, fig. 3, operating upon arm *k*, which is attached to a rocking shaft *n*, fig. 1, and connecting rod *p*, attached to the vertical shaft *o*. By the vertical up-and-down motion of the feeding plate *i*, the latter with the cloth is brought against the spring clamp *u*. The distance that the feeding plate traverses, and consequently the length of stitch, is regulated by varying the position of either end of the connecting rod *p* with regard to the centre of the cam *q*, which can be effected by operating the screw *w* in the female screw *r*.

The shuttle *a*¹ is operated by an elliptical shuttle thrower *b*¹, turning on pivot *c*¹, and actuated by a cam *d*¹ on the driving shaft *b*. By

reference to fig. 2, it will be seen that when the cam *d*¹ bears on the part of the shuttle thrower *b*¹ nearest its pivot *c*¹, the shuttle *a*¹ will be moved through a longer space in the same time, or will be moved quicker than when the cam *d*¹ is at the most remote point from its pivot *c*¹, thereby causing the shuttle to travel faster in passing through the loop than in going back.

The inventor says: I do not claim the feed motion described; and although eccentric shuttle throwers have been used before, I cannot find that the pivoted swinging ellipse or a thrower has been so combined with a cam which operates it as to get a quicker motion of the shuttle when the cam operates near the point and is throwing the shuttle forward through the loop than when it is drawing it back.

I claim the combination of a swinging ellipse, as a shuttle thrower hung on a pivot, with a cam on the driving or other rotating shaft, so operating with said swinging ellipse as that when the cam is bearing upon it near its pivot it shall move the shuttle faster or through a larger space in the same time than when it is bearing upon the other parts, for the several purposes set forth.

2d. I claim the combination of the rocker shaft and its arm *K* *K* and connecting rod with the grooved cam, operating together for giving the required motions to the feeding plate, substantially as described.

3d. I claim the means employed for varying the length of the feed motion, and consequently the length of the stitch, at pleasure, the same consisting of a screw shaft working in the vertical hollow shaft that moves the rocker shaft, and raising or lowering a loose collar to which the connecting rod *p* *p* is attached.

No. 15,695.—CHARLES R. GARDNER.—*Improvement in Sewing Machines*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—The sharp pointed needle having a flexible beard, as described, for sewing in woven, felted, or other close fabrics, in the manner set forth.

2d. The adjustable slide *C*, so arranged as to close the beard of any sized needle that may be used in the machine.

3d. Also the guide *G*, consisting of the thread channel *C*¹ and the needle passage with the side thereof either slightly inclined, as described, or provided at the top with the inclined groove *J*, and so operating that the feed motion given to the cloth shall carry the thread in proper position to be caught by the hook or beard of the needle, as described.

4th. Also the folding plate *E* or its mechanical equivalent for the purpose specified.

I do not claim running several folds or corrugations on the needle at the same time, as is done in machines for sewing with a running stitch. Nor do I claim sewing along parallel with the fold, as is done in hem-

ming, binding, and forming welts, where the length of the stitch is parallel with the fold.

I claim sewing with a machine through one fold or corrugation of the material at a time, the cloth being fed along at right angles, or nearly so, to the line of the fold, substantially as described.

No. 16,026.—S. H. ROPER.—*Improvement in Sewing Machines*.—Patented November 4, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood by reference to the claim and engravings.

Claim.—1st. A thread guide which guides the thread into the eye of the needle by means of the projection *y* and the thread holder *m*, forming a thread clamp, and gripping and holding the thread between them while the thread guide with its clamp revolves until the thread is wrapped partly round it and stretched across the aperture therein; and then also by means of the thread guide with the thread thus held moving laterally, until in this manner and by means of these rotary and lateral motions the thread is effectually guided into the eye of the needle.

2d. The working of eyelet holes in cloth or other material by means of a rotary feed motion combined with the slotted tube *v* and two needles, all substantially as described.

No. 16,030.—ISAAC M. SINGER.—*Improvement in Sewing Machines*.—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not wish to be understood as limiting my claim of invention to the precise form and construction of parts, as these may be varied without changing the principle of my invention.

I claim operating the needle to give it the required reciprocating motions, substantially such as described, by a crank-pin or roller on a rotating shaft, acting in a cam groove, substantially such as described, whereby the required motions are imparted to the needle with much less extent of motion of the crank-pin or roller in the cam groove, and consequently less friction, than if the cam groove were on the shaft, and the pin or roller on the needle-carrier, as described.

I also claim projecting the operative part of the surface of the feeding apparatus through the surface of the table, substantially as described, so that such feeding surface may act on a portion of the under surface of the material to give the required feeding motion to space the stitches, while the other portions of the said material slide on the table which answers the purpose of stripping the said material from the feeding surface, and to cover and protect the mechanism which operates the feeder, as set forth.

I also claim imparting the feeding motion to the feeder, to present

the material to be sewed to the action of the needle for spacing the stitches, by gripping the periphery thereof, or any equivalent therefor, by a gripping lever, substantially as described, in contradistinction to the action of the pawl or hand, catching on to ratchet teeth, whereby the extent of the feeding motion may be adjusted and varied to any degree, instead of being restricted by the size of ratchet teeth, and whereby also I avoid the wear and liability to derangement incident to the use of a ratchet motion, as set forth.

And, lastly, I claim in combination with the feeder attaching the presser for controlling the material to be sewed, and holding it to the surface of the feeder to a slide or equivalent therefor, substantially as described, so that the plane of its under surface shall always bear the same relations to the plane of the table in a line at, or nearly at, right angles to the line of the seam, whether the material to be sewed be thick or thin, and for the purpose set forth.

No. 16,136.—WILLIAM C. WATSON, assignor to Himself, GEORGE H. WOOSTER, and MORRIS KNIGHT.—*Improvement in Sewing Machines*.—Patented November 25, 1856.

As the needle descends through the cloth and commences to rise, pushing out thereby the thread which lies at the inner side of the needle, the hook *a* is in the position as shown in fig. 3. The cam *B* then strikes the tail of the lever connected with *A*, which is moved in the direction of the arrow. The hook *a* catches the thread and draws the loop off to one side, then, turning round, it spreads the loop as shown in fig. 4. The needle, in descending, passes through the groove in the brace-plate *i*, placed on the opposite side of the hook, where it is braced by the side of the groove, and steadied against the lateral pull of the hook, at the same time that the feed finger *k* returns to be ready for a new grip upon the cloth; and as it pushes along against the frictional pressure of spring *K*, the cloth is kept from going with it by the needle holding it in place, the brace-plate also serving to steady it against this action as well as against the pull of the hook.

Claim.—The revolving and reciprocating looping-hook, constructed and operating substantially as described.

Also, the inclined and grooved brace-plate *i*, so placed beneath the cloth as to deflect the lower end of the needle to one side of its path, whereby its vibrations are prevented, and it is secured from breakage by the lateral pulls, as set forth.

No. 16,234.—JAMES E. A. GIBBS.—*Improvement in Sewing Machines*.—Patented December 16, 1856.

By turning the crank the shuttle *b* is thrown back, and the needle *I* descends. Half a revolution being completed, the arm *H* begins to rise, but does not lift the needle-bar *g* in the first part of its motion; that is done by the recoil of spring *a*² against pin *c*². This forms the loop in the vertical groove *o*; the needle-bar stops for an instant of

shuttle has passed, while the shuttle descends and draws the other

time, while the arm H is moving from the lower to the upper shoulder of the neck. At this moment the shuttle *b* darts through the loop, the needle recommences its upward motion, and draws the shuttle thread up to the centre of the cloth, and forms the stitch; in the mean time the feed motion is put in operation, and the clamp R is moved up another stitch.

The inventor says: I *claim*, 1st. Feeding up the thread to the needle by connecting the needle-thread with the cloth-feed motion, or by giving the needle-thread an independent feed motion, so that there shall be sufficient thread, and no more, at each stitch fed into the needle to form the stitch, thereby causing the needle to draw the shuttle thread into the cloth, and never above it, for the purpose of insuring the meeting of the loops or locks within the body of the cloth.

2d. I do not claim straight clamp feeders for the purpose of feeding the cloth, as they are not new.

But I *claim* fastening the cloth upon a slotted table, moving with a rectilinear motion by means of a slotted curved spring, the slots in both spring and table corresponding with each other, and holding the cloth on both sides of the seam.

No. 16,237.—LEWIS JENNINGS.—*Improvement in Sewing Machines*.—Patented December 16, 1856.

The principal features of this invention will be understood by reference to the claims and engravings; a detailed description thereof would take up too much space to be given here.

The inventor says: I do not claim the belaying double-looped stitch, described in the patent of W. H. Johnson, dated March 7, 1854.

I *claim*, 1st, the formation of the seam from a single thread by passing each loop, after it has passed through the cloth, or material to be sewed, through its immediate successor, and round the second one which succeeds it, by means of a needle and a "thumb and finger," operating substantially as described.

2d. The combination of the arm F to which the thumb and finger *b c* are attached, the pivot *f*, the slotted arm *i*, the fixed pin *j*, and the lever G, or its equivalent, substantially as and for the purpose set forth.

No. 16,281.—WILLIAM R. LANDFEAR.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

As the shaft C is rotated, the crank D on descending draws down the needle-bar F G H, carrying the needle through the cloth, which is on plate O, the bar sliding on fulcrum J. As the lower end of the bar is carried around by the crank, the needle I draws the cloth forward a short distance for a stitch; at the same time the crank E carries the shuttle-guide K forward, carrying the shuttle L through between the needle and the thread which it carries. The crank D now raises the needle and draws up the loop of thread through which the

shuttle has passed, while the shuttle descends and draws the other thread tight.

The inventor says: I do not claim the forming of the seam by means of the needle and shuttle, or the feeding of the cloth by the needle.

I *claim*, first, the manner of regulating the length of stitch by raising and lowering the fulcrum J, thereby changing the relative lengths of the two arms of the lever G, as described.

I *claim* the manner of combining the shuttle-guide K with the crank E and fulcrum N, for the purpose of giving the shuttle a downward motion when the stitch is tightened, in the manner set forth.

No. 16,321.—JEROME B. WOODRUFF.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I *claim*, 1st, the construction of a feed-bar *g* sliding in a dovetail or slotted guide and moved by a lever E, connected with the feed-bar *g* by a swivel joint, or its equivalent, so as always to move the feed-bar *g* in a plane with the material being sewed, the feed-bar *g* being moved back the distance required for the length of the stitch while the needle is in the material, and when the needle is withdrawn is moved forward, carrying the material therewith.

2d. The arrangement of a series of pins *r* through which the needle thread is laced, for the purpose of giving a uniformity of tension without affecting its twist, or their equivalent.

3d. I am aware that needle-bars have been made to vibrate in the arc of a circle, which I do not claim.

But I *claim* a balanced needle-bar for sewing machines when constructed in the form of a segment of a circle operating the shuttle-driver by one end direct, and carrying the needle by the other end, when the whole of said bar F forms the arc of a circle, of which the point of suspension is the centre, as described.

4th. A slotted shuttle-driver P, the same being operated direct from the needle-bar, and so arranged that the shuttle may pass through the loop of the needle thread in its proper time, gradually decreasing its speed and stopping at or about the same time with the needle, as described, or its equivalent.

5th. I do not claim carrying the shuttle back and forth by two pins, one at the heel and one at the point, independent of a shuttle-carrier; for this has been done by Messrs. Blodgett & Lerow, and patented to them.

I *claim* carrying the shuttle back and forth by a single pin *o*, as described.

No. 16,315.—A. F. JOHNSON and F. A. HOUGHTON.—*Improvement in Sewing Machines*.—Patented December 23, 1856.

By the arrangement of the parts, as stated in the second claim, the brake *u* is caused to operate upon the circumference of the wheel X,

and thus to regulate the speed of the machine when the speed of fan-wheel *a*¹ increases beyond the desired rate of the machine.

The inventors say: We do not make any claim now to the manner of vibrating the needle-arm by means of an eccentric stud working in the slotted arm.

But we *claim* the described arrangement of parts of a spring power mechanism, when combined with a sewing machine, and located in a box forming the pedestal of said machine.

We also claim the device by which the machinery is made self-regulating as to speed, consisting of the lever *U* and brake *u* in combination with the fan-wheel *a*¹ attached to the loose collar *c*¹, in the manner described, and operating as set forth.

No. 14,956.—WILLIAM O. GROVER.—*Improvement in Cases for Sewing Machines*.—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Arranging a box or case for a sewing machine, so that, when open, the box shall constitute the bed for the machine to be operated upon, and hanging the machine thereto to facilitate oiling, cleansing, and repairs, without removing it from the box; and the peculiar adaptation of the handle *F*, so that it may be pushed out when required to drive the machine, and when returned within the box shall serve to prevent motion of the parts whilst the machine is being transported.

No. 15,402.—BURRITT C. BOYES, assignor to Himself and HERMAN DERGUM.—*Improvement in Folding-Guides of Sewing Machines*.—Patented July 22, 1856.

The cloth *E* passes through the helical rings *C D*, fig. 2, and under the guard, and at a sufficient distance from the orifice *a* for the penetration of the needle; the cloth, by passing through said rings, is folded or hemmed, as represented in fig. 2.

Claim.—I do not confine myself to the precise shape of the metal plate *B*, as shown, to the precise arrangement of the guard *b b*¹ in respect to the plate, or to the number of helical or slit rings shown.

Nor do I claim a device for which a patent was granted to Seth P. Chapin, and in which hems are formed on the edges of flexible materials, by means of folding-guides made to turn the edge 180 deg. or more.

But I *claim* the employment of one or more helical or slit rings for the purpose of forming on the edges of fabrics single or double hems, or for forming plaits in the middle of fabrics previous to the said hems or plaits being submitted to the action of the needle and thread of sewing machines.

No. 15,020.—ISAAC M. SINGER.—*Improvement in Sewing Machines for Binding Hats*.—Patented June 3, 1856.

Between the folding *g* and the gauge *f* is a bifurcated spring *i*, one branch of which serves to make pressure on the binding on the rim of the hat, and the other to extend over the pressure-pad *e*, so that when the pressure-pad is lifted the spring will be lifted also.

The binding is carried alternately in opposite directions, around the folds of the wire *k*, to keep the binding under a state of tension as it is drawn by the feed-motion. The binding is guided to the folding-tube *g* by means of the guides *l l*.

The spring *n* bears against the body of the hat, so that its tension will tend to push the hat in a direction the reverse of the feed-motion. The tension of the spring *n* being very slight, so as not to overcome the bight of the pressure-pad on the rim when the needle is drawn out, and yet being sufficient to prevent the body of the hat from being moved towards the back of the table by the feed-motion, the effect of the feed-motion will be to turn the hat and to keep the edge of the rim against the face of the gauge to insure the making of the range of stitches at a regular distance from the edge.

Claim.—The method of turning the hat by the action of the spring, or its equivalent, in combination with the feed-motion acting on the rim, and the gauge against which the edge of the rim bears.

And I also claim the mode of regulating the tension of the binding, and smoothing out the plaits and kinks by passing it around the several folds of a spring.

No. 16,120.—A. F. JOHNSON.—*Improvement in Stitches for Sewing Machines*.—Patented November 25, 1856.

The thread is carried in a loop form by the needle, both in passing up through the cloth and down through the same, while the shuttle carries the thread in a single strand through the cloth, thereby tying or knotting the thread, as represented in the engraving, and in such a manner that it cannot possibly be drawn out.

Claim.—Making a stitch of a single thread by throwing a shuttle and thread through a loop formed from the shuttle thread, as described, thereby tying or knotting each stitch, for the purpose of uniting pieces of cloth or other material to be sewed.

No. 15,535.—THOMAS W. TAYLOR.—*Improvement in Spinning Frames*.—Patented August 12, 1856.

The neck of the flyer *F* is of sufficient length to receive the bearings in the upper and lower side of a box *B*, running lengthwise of the frame, through which passes a shaft *L*, communicating motion by bevel wheels to a spur-gear *A*, which, meshing into pinions *a* upon the necks of the flyers *F*, drives both front and back lines of flyers, instead of using two shafts for driving both lines, as is the case in the machines used heretofore.

Claim.—The construction, arrangement, and driving of the flyers of fly-frames, in combination with either a live or dead bobbin spindle, as the case may be, substantially as set forth.

No. 16,028.—JOEL SMITH.—*Improvement in Throstle Spinning Machines.*—Patented November 4, 1856.

Motion is imparted to this apparatus through the main shaft A to the conical pulley F, thence by belt to pulley E; pulley G drives pulleys I and H, and screw K, which operates worm-wheel L, thence shaft M, pinion O and pinion P. The pins Q, on pinion P, tilt lever R, which actuates pawl T, and ratchet-wheel U, and screw V, thus causing the nut W to move on said screw, and the arms attached to nut W, cause the belt which passes around the pulleys E and F to traverse upon said cones, so as to communicate from the shaft which drives the spindles to the rollers a motion constantly varying in speed, and that in ratio corresponding to the increase of the diameter of the bobbin while being filled.

Claim.—Regulating the twist of the yarn in ring-spinning machines by communicating a gradually accelerated motion, proportionate to the gradually increasing diameter of the bobbins, to the rolls which give out the yarn to the bobbins, substantially in the manner and for the purposes set forth.

No. 14,482.—LYMAN WIGHT.—*Improvement in Spinning Wheels.*—Patented March 18, 1856.

The hand-wheel 6 transmits motion to the spindle 20 by means of the pulley 9. The attendant splices the roll to a thread in the spindle 20, and by pressing his foot on the treadle 14, drives the spindle back and draws out the thread. The weight 8 at the end of the lever 12 forces the spindle back again.

Claim.—Attaching the spindle of a hand-spinning wheel to a vibrating pendulum, and operating the same, substantially in the manner and for the purpose set forth.

No. 1,1531.—HENRY S. HOUGHTON.—*Improvement in Brushes for Cleaning Travellers.*—Patented June 17, 1856.

The cleaner consists of a piece A to hold the brush G. The cleaner is connected to the piece E, which rests on the ring rail C. These pieces are adjusted so that the ends of the brush shall be lightly hit by the traveller H in passing the front of each ring, and catch the waste fibres without retarding the traveller.

The inventor says: I do not claim the use of a brush to clean a throstle, whether automatically operated or otherwise, when the live or dead spindle alone is used; but I claim the application of a brush, when constructed and operated substantially as described, to the delicate movement of the ring traveller, so as to rapidly clean the same, without breaking down the thread.

No. 14,858.—LUCIUS DIMOCK and IRA DIMOCK.—*Improvement in Machinery for Trebling Single Thread.*—Patented May 13, 1856.

Before starting, the carriage F is run up near shaft G, and the threads from the bobbins are arranged as seen in figure 3, after which the carriage is allowed to run back, which leaves the threads 1, 2, 3 stationary, while the hitch-pin h^1 draws off the thread from B, and runs out with a double thread. The motion is then reversed, and the spool C takes up 1, 2, 3, while 2 and 3 slips from g , and enchains the thread passing through said arm. As the carriage arrives within a very short distance of the shaft G, the said shaft with its arm g is thrown back (figure 1) by means of arm k and stud j^2 , and the shaft H is turned by means of lever n , pin s^1 , and pin p , so that the hitching arm h descends far enough to throw the loop over the end of the conducting arm, (figure 1,) and the portion of threads 1 4 strikes the conducting arm, which causes it to slip over the top of the hitch-pin. The loop passes then down to the bottom of the conducting arm, and the hitch-pin is caused to fly up by the escape of lever n , past the pin p , and thereby to hitch on it the portion of thread issuing from the conducting arm, so that when the directions of the rotation of the shaft J, and of the motion of the chains I I are changed, the hitch-pin runs back with that portion of the thread doubled, and thus commences a repetition of the looping and enchaining operation.

Claim.—The rock-shaft G, with a hollow conducting arm g , to conduct each strand thread from its bobbin to the hitching-pin and its equivalent, and to effect the enchaining of the loops.

2d. The attachment of the hitching-pin or pins h^1 to the arm or arms h of a rock-shaft, for the purpose of forming and disengaging the loops.

3d. The arrangement and combination of the rock-shaft G having a hollow conducting arm or arms g , the travelling carriage F carrying the rock-shaft H and its vibrating hitching arms h , the strand bobbins B B, and the trebled thread spools C C.

No. 14,969.—MARCUS ORMSBEE.—*Improvement in Winding Thread from Skeins.*—Patented May 27, 1856.

The hooks are to be caught into the dress on the knees, and by separating the knees the spools are placed at the exact distance apart required to tighten the skein, which may then be wound without difficulty.

Claim.—The arrangement of the hooks a , the spools c , and the elastic strap B.

No. 16,164.—ANDREW L. FULLER.—*Improvement in Covering Thread with Wool.*—Patented December 2, 1856.

The spindle F is attached to the frame of a card to hold the bobbin of the thread which forms the core of this covered thread, and the end of said thread is passed into the condenser C and between the rollers

D; the fibres of the last roll A are delivered by the comb B, the

2d. Guiding the operations of the arms which carry the fingers 29, employed in forming the loops and knots to produce the size of the

D; the fibres of the last roll A are delivered by the comb B, the motion of which curls the fibres around the core, and the rolls D draw the whole through as condensed and perfect, and the core will be found in the centre of the thread.

The inventor says: I do not claim the weaving of quilted, wadded, or padded goods, nor the use of wadding in the loom. Neither do I claim making the sliver of two materials in order to spin a finer round a coarser, or *vice versa*, as I am aware that is old; but I *claim* the described mode of placing the core in the sliver and covering it by the combined action of the comb B and condenser C, so as to produce the sliver above described, and this I claim whether a twist be given to the sliver or not.

No. 15,308.—SAMUEL TAYLOR.—*Improvement in Brushes for Dressing Warps*.—Patented July 8, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—The improved warp-dressing brush as made with the external ends of its bristles cut slantwise, or bevelled with respect to their stocks, for the purpose of enabling the warps to enter the brush with more facility than would be the case were the points cut off square in the usual way.

No. 14,061.—GEORGE L. JENKS.—*Improvement in Machinery for Making Weavers' Harness*.—Patented January 8, 1856.

This is an improvement upon J. S. Winsor's machine, patented January 2, 1855. S^1 is one of the hollow studs through which pass the twines for forming the harness bands b^7 . Fig. 2 shows the adjustment for a different width of harness. The head-pieces a^1 (of which there may be two or more for each stud) carry the stems u^6 , upon which are formed the knots for connecting the heddles to the harness bands. With the head-piece a the studs are essentially like Winsor's. By having studs a^1 with arms of different lengths, the distance between the two stems u^6 and between the two bands b^7 , and consequently the length of the heddle and width of the harness, can be increased. When a pair of head-pieces a^1 is employed, it is necessary, in order that the points of the stems at their inner ends may pass the outer ends of the head pieces, that the depressors should have a movement about in the dotted lines 23 and 26. To produce this movement the packing piece 22 is taken from hole 21, and the pieces 28 and 27 are secured to the sides of the depressor bar X.

Claim.—1st. The within described method of adapting the machine to the making of harness of different widths by the application of movable head-pieces a^1 of different forms to the studs S^1 and its fellow, which form the end or outside studs of the range, and the application to the single depressors of a movable packing piece 22 and blocks 27 and 28, or other variable guides, the whole operating substantially as herein described.

2d. Guiding the operations of the arms which carry the fingers 29, employed in forming the loops and knots, to produce the eyes of the heddles by means of a pin 37 working in a slot in plate 33, which is made variable by swinging on a stud 35, whereby the movement of the finger may be varied to any extent necessary, without varying its position when in contact with its respective stud S^2 or S^4 , substantially as herein described.

No. 16,029.—JOHN C. SMITH.—*Improvements in Weaving Long Warps*.—Patented November 4, 1856.

The yarn is taken from the reel through the perforated plate B and over the roller C, thence down under and between the rollers D, thence between the rollers I and L, and is laid in layers on the box P. The yarn is taken from the box P up over top roller A, and around middle roller A and forward to roller D, down to roller E, and through the take-up motion F F, and through the harness in the usual manner, and made fast in the ordinary way, as is usually done previous to commencing the weaving operation.

The inventor says: I do not claim a carriage travelling at right angles with a warping frame, carrying the beam so that the warp may be laid in a regular succession of layers as received thereon, for I am aware that such is not new. Nor do I claim dispensing with a warp beam in manufacturing cloth, for I am aware that cloth has been woven with yarns for the warp taken directly from spools. But I *claim* a box arranged substantially in the manner and operated by the mechanism described, in combination with the arrangement for dispensing with the warp beam as described, for the purpose of laying the warp in a regular smooth succession of layers evenly, that the box may give out the warp free from twists or tangles.

No. 15,415.—ALGERNON L. COLE.—*Improvement in Harness for Weaving Seamless Bags*.—Patented July 29, 1856.

The nature of this invention consists in providing each leaf of harness with an additional row of eyes K to the one row now in use, thereby dispensing with an additional set of cams. One set of cams only is used to spring two distinct warps, four leaves of harness being required to weave a twilled or mixed twilled bag, and only two leaves being required to weave a plain bag. And with this kind of harness two distinct warps can be woven into plain or twilled cloth in the same loom, one warp being above the other, and two sets of shuttle boxes, one being placed above the other and stationary.

Claim.—The application to weavers' harnesses of the addition of one row of heddle eyes, making two rows instead of one upon each leaf of harness, as described, or any other substantially the same.

cave l , down and over the adjustable burring bar q , which separates all

No. 16,248.—THOMAS NELSON.—*Improvement in Machinery for Weaving Shade Cord.*—Patented December 16, 1856.

The cord to be covered is passed up through D, P, and R, to roller S, and thereto attached; the ends of the threads from the spools are attached to the cord just below R, and the woof threads, being carried up through V, are also attached below R. The machinery being as represented in the engraving, it will be seen that car H¹ is down, and that the shuttle U will pass over it; on starting the machine, car H², which is already half way up, rises so that the shuttle U passes under it as the shuttle, revolving with the eccentrics A M N, passes on. Car H³ is and continues down, the woof passing over it; but car H⁴ begins to rise, and when the woof has reached it has risen so that the shuttle passes under it. The same operation in a reversed direction takes place in regard to shuttle U², these combined operations causing the passage of the shuttle between an up and down thread in succession.

Claim.—The arrangement of the inclined planes C C G G around a circle, and divided from each other by the chasm or pathway Z, the same being intended as the course or track of the spool cars. The arrangement of the spool cars in combination with the eccentrics M and N, which operate the cars in the rear of the inclined planes by means of pens or equivalent apparatus passing from the cars through slots in the planes. The arrangement of carriers or shuttles U U² attached to the eccentrics passing through the chasm Z, between the upper and lower planes, and traversing circularly and delivering the woof or filling between the threads of the warp, as they change their relative positions, by the alternate vibrations and depressions of the spool cars.

No. 14,463.—JOHN McCRONE.—*Improvement in Cone Tubes for Winding-Frames.*—Patented March 18, 1856.

L represents the flanges which project through a slot in the socket, for the purpose of preventing the yarn from wearing against the socket. N is a projection on the said socket, with a button attached to it for the purpose of securing the cone in its place. B is a zinc lining inserted between the cone and the metal socket.

Claim.—The use of the crystal as a material for the cones or trumpets used for shaping and consolidating yarn of woollen, cotton, or other materials on bobbins.

No. 15,856.—ANDREW W. PUTNAM.—*Improvement in Machinery for Cleaning Wool.*

The wool, being spread on the apron b, is carried by means of the feed-rollers e to the main picking-cylinder h, where it is operated upon by the teeth i, when the coarser impurities drop through the open concave j, and the wool is carried over the closed concave K, seized by the serrated plates o of the burring cylinder g, and carried over the con-

cave l, down and over the adjustable burring bar g, which separates all foreign matter attached to the fibres. As the plates o carry the wool upward, the blast from the fan u acts upon these, and discharges the wool to the rear of the machine.

Claim.—The combination of the main picker-cylinder and the open and closed concave, in combination with the burring cylinder, arranged and operating substantially as described.

I claim the burring cylinder in combination with the adjustable burring bar or bars, arranged and operating substantially as described, for stripping the burrs and other foreign substances on the fibres, as described.

No. 15,268.—WILLIAM H. WALTON, assignor to Himself and J. E. WINANTS.—*Improvement in Machinery for Combing Wool.*—Patented July 1, 1856.

The teeth of the combs d d take hold of the fibre projecting from the feed-rollers b b, which fibre is brought in contact with a cylinder apparatus g i i² for working the fibre. As the brushes f behind the combs pass the cylinders g, its ends strike the curved rails c c c affixed to the frame, which rails throw the brush outward and force the fibres on to the teeth of the small cylinders; after the comb has passed, the brush falls back, and the comb d, as it reaches point W, revolves on its axis x so as to reverse the position of the teeth. This motion is effected by means of a small pinion n gearing into rack a¹, that slides in the line of the axis x by means of rod c¹, lever B, and cam x. The comb, being reversed, passes onward into contact with the teeth on an endless chain comb, where the fibre is deposited. The clearing bar m is operated by means of rods w w, and cam u.

Claim.—1st. The reversing comb d d, arranged substantially as described, for conveying the wool from the feed-rollers b b past the cylinders and on to the endless chain-comb, as set forth.

Further, in combination with the above mentioned reversing comb, the brush f in the rear thereof, for the purpose specified.

Also, the clearing-bar m for clearing the fibres of wool from the cylinder i² before the comb reverses, when combined with the reversing comb.

No. 14,120.—ABNER J. SUTHERLAND.—*Improvement in Yarn-Dressing Frames.*—Patented January 15, 1856.

When the beam is full of yarn B, the lever E y is pressed down, and consequently the short arm x is also down and causes the spring D to exert its greatest force on the friction strap C.

The inventor says: I claim the use and application of a lever or its equivalent, one end of which presses on the surface of the yarn wound about the beam, and to the other end the friction spring is attached for the purpose and substantially as herein described.

I am aware that James and John Haworth obtained a patent in 1848

for a contrivance acting on the same principle as that above described; but that contrivance was applicable only to looms, and could not, without material modification, be applied to dressers.

I do not claim the use of my let-off motion as applied to looms, but only as applied to dressers and similar machines excepting looms.

I do not claim the friction strap with the spiral spring, as they have been used before.

No. 16,117.—GEORGE G. HENRY.—*Improvement in Manufacturing Cotton Yarns*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not wish to be understood as limiting myself to any precise sequence of machinery after the combined gin and lap machines, for it is obvious that my invention may be applied to any preferred machinery for manufacturing cotton yarns.

I am aware that it has been proposed to spin cotton yarns directly from the gin, as in Brant's patent of 1823, and by other modes. This I do not claim.

But I *claim* the combination of the gin and preparation, substantially in the manner and for the purposes described, that is to say, the arrangement of the cotton gin in immediate connexion with, and to operate in combination with the spreader or lap machine of any desired construction, so that the gin and spreader combined shall operate in a regular sequence with the carding and drawing, and other spinning machinery, substantially as set forth.

No. 14,815.—MOSES A. JOHNSON.—*Improvement in Manufacturing Felted Yarns*.—Patented May 6, 1856.

Steam is admitted into the rubber R a short time before starting, and the spools of roving S being laid upon the drum D, the several ends are separated as for spinning; each end is then introduced between the rollers V V and twist belt g g, and thence entered a short distance under the back edge of the rubber; the machine being started, the apron, rolls &c., carry the yarn forward beneath the rubber, which, having a motion at right angles to that of the apron y and vibrating, has the effect of rolling and effectually felting the roving into a smooth yarn, and it is finally delivered and taken up by the reel N. The rubber is vibrated by means of the connecting rods H H and cranks on crank-shaft F.

The inventor says: I do not claim the use of an endless apron, draw-rolls, twist-belt, reel, or self-adjusting belt, each being in itself old and well known.

But I *claim* the arrangement of the steam rubber R in relation to, and in combination with the endless apron y y.

IV.—CHEMICAL PROCESSES.

No. 14,722.—EBEN NORTON HORSFORD.—*Improvement in preparing Phosphoric Acid as a substitute for other Solid Acids*.—Patented April 22, 1856.

The pasty mass of phosphoric acid prepared in the usual manner is leached, and the extract together with the addition of white bone ashes concentrated and cooled. Wheaten flour and potato starch are then added in succession and the whole mixed, after which it should turn out friable, so that it may be passed through a sieve. When tried, the preparation should be packed in close boxes to prevent the absorption of moisture.

Claim.—Pulverulent phosphoric acid, for neutralizing alkaline bases, and producing carbonic acid at will from a mixture of this pulverulent acid with alkaline carbonates upon the addition of moisture or heat, or both.

No. 15,222.—WILLIAM T. CLOUGH.—*Improvement in Concentrating Apparatus for Sulphuric Acid*.—Patented July 1, 1856.

Lead is dissolved by hot sulphuric acid, but not by cold; the lead tank e is therefore not liable to be dissolved, as the heated acid in the furnace a becomes nearly cold before reaching the lead, after passing through the tiles and sand a b c d. The radiated heat from the under side of the arch H evaporates the watery particles from the sulphuric acid.

Claim.—The construction of a furnace A so that the sulphuric acid will not affect or injure the lead or mineral tank or pan during the process of concentration, by means of a hot surface being placed above the liquor, substantially as described in the above specification.

No. 15,662.—JAMES MACKINTIRE.—*Improvement in Ale and Beer Coolers*.—Patented September 2, 1856.

The ale to be cooled passes from pan A through the passages F, and is discharged through the escape pipe g. The water for cooling said ale is pumped through pipe U into vessel I, and passes through the passages b, k, l, pipes m, and passages p and n, into the spout L, the gate o serving to regulate the discharge of said water.

The inventor says: I do not claim constructing an ale or liquid-cooler, so that the heated liquid, while descending in a channel between plates, shall be cooled by cooler currents of water or liquid made to flow in a contrary direction against the outer surface of said plates or channel, as described.

Nor do I claim arranging the water and ale channels in a zig-zag

serpentine, or equivalent manner, with respect to one another, as de-

No. 14,925.—PHILIP PERDEW and ALEXANDER W. BRINKERHOFF.—*Improvement in Ash-Leaching Apparatus*.—Patented May 20, 1856.

serpentine, or equivalent manner, with respect to one another, as described, so as to produce an effect as stated.

But I *claim* the combination of the passages *p n* and gate *o* with the ale and water chambers, pipes *m m*, and zig-zag passages; the same being for the purpose, or to accomplish results as set forth.

No. 15,957.—GEORGE THOMPSON.—*Improvement in Devices for Putting up Caustic Alkalies*.—Patented October 21, 1855.

This invention consists in wrapping the cakes of caustic soda in paper impregnated by a preparation of beeswax and rosin; by which said paper is rendered impervious, so as to protect said soda from the action of the atmosphere.

Claim.—The mode described, or its equivalent, of protecting small packages of caustic soda or potash from the action of the atmosphere, in the manner and for the purposes described.

No. 15,804.—JOHN FIDLER.—*Improvement in Journal-Box Alloys*.—Patented September 30, 1856.

This alloy is composed of six parts of copper and four parts of block-tin melted together; and to each pound of this product is then added nine pounds of zinc, which, when melted and mixed with the above metals, will serve as an alloy for journal boxes.

Claim.—The composition of the ingredients named, in the specified mode and proportions.

No. 15,934.—HENRY DAVIS POCHIN.—*Improvement in Preparing Clay for Alum-Making*.—Patented October 21, 1856. England, January 30, 1855.

The nature of this invention will be understood by reference to the claim.

Claim.—The calcining of china, clay, or other aluminous minerals, with the carbonaceous substances, in the manner described, by which the alumina is brought into a condition to be easily acted upon by strong sulphuric and other acids, without adding thereto any substance injurious to the quality of the resulting compound; and the use of aluminous cake, obtained in manner described, in manufacturing the aluminous mordants used by calico printers and dyers, and in various other processes used by dyers, and in the preparation of white leather, in the process termed tawing; also in the manufacture of paper, as a substitute for alum and the ordinary sulphate of alumina, as well as for the purpose of deodorizing and disinfecting decomposing animal or vegetable matters, and for the preparation of the ordinary sulphate of alumina and alums of commerce.

No. 14,925.—PHILIP PERDEW and ALEXANDER W. BRINKERHOFF.—*Improvement in Ash-Leaching Apparatus*.—Patented May 20, 1856.

The inventors say: We do not claim the boiling of ashes in a pan, neither do we intend to limit ourselves to the precise form and dimensions of the apparatus; for it is evident that they may both be slightly varied without altering the result.

But we *claim* the general plan and arrangement by which we are enabled to have one continued operation, instead of heating up for one charge, and cooling off and then shovelling out by hand.

We *claim* the pan *a*, combined with its reservoir, figure 2, immediately below it, having its opening through its bottom covered with grating and canvass, or its equivalent, leaving a space on each side of the reservoir, where the bottom shall be exposed to the fire in order to keep the ashes in constant ebullition, and having its conductor *d*, by which all the ashes may be discharged from time to time by the flowing of water without hand labor. (We hereby disclaim all pans, pots, or kettles that do not answer this description.)

No. 15,956.—WILLIAM THOMAS, Jr.—*Improvement in Stove Blacking*.—Patented October 21, 1856.

This stove blacking is composed of two ounces of powdered graphite, one and a half ounces of lamp black, one ounce of asphaltum varnish, half an ounce of oxyde of manganese, and one and a half gills of common spirits of turpentine; these are mixed together until thoroughly incorporated, when the compound thus formed may be applied to the surface of stoves.

Claim.—The described compound to be used for coating stoves and metallic surfaces, to impart to them a very durable polish, and to protect them more effectually from rust, as set forth.

No. 15,983.—JOHN PHYFE.—*Ivory-Bleaching Apparatus*.—Patented October 28, 1856.

The table *A* being exposed to the direct rays of the sun, the pieces of ivory to be bleached are placed upon table *A*. The rays of the sun, being then admitted through the glass cover *D* to the ivory, pass through the ivory and through the glass table *A* to the reflector *B*, by which they are thrown back again through the glass table and the ivory.

The inventor says: I do not claim the exclusion of air from the ivory during the bleaching process, and I do not confine myself to the construction of the apparatus in such a manner as to exclude the air during the process, or to any particular construction of the apparatus.

But I *claim* the bleaching of ivory by exposure to the rays of the sun on a glass table, with a reflector below it, substantially as described.

No. 15,590.—A. C. BRECKENRIDGE, assignor to JULIUS PRATT & Co.—*Improvement in Frames for Bleaching Ivory*.—Patented August 19,

and through steam-gauge box *K*, and then separating them by means of

No. 15,590.—A. C. BRECKENRIDGE, assignor to JULIUS PRATT & Co.—*Improvement in Frames for Bleaching Ivory*.—Patented August 19, 1856.

The ivory pieces *e* are inserted into the grooves *a* formed of the glass pieces C and D, which extend through the entire length of the frame, thus the entire surface of the ivory pieces is exposed to the rays of the sun by turning the frame; either side of the ivory can be bleached, thus avoiding the tedious process of turning each piece separately, as was done heretofore.

Claim.—Providing the bleaching-frame with grooved strips of glass C C and D, to receive the ends or sides of the pieces of ivory exposed to the sun's rays whichever side of the frame is upward, substantially as described.

No. 16,100.—JULIUS A. ROTH.—*Bleaching Process*.—Patented November 18, 1856.

The paper pulp or other fibre to be bleached is placed upon the perforated bottom B of the tank A which contains the bleaching agents. Atmospheric air is forced into the bleaching liquid through the pipes *c*, by which a gentle agitation is produced in said liquid, and the free oxygen of the air is brought in contact with the bleaching agents, whereby their action is greatly facilitated.

Claim.—Aiding the action of the usual bleaching agents by the application of atmospheric air, in the manner and for the purpose substantially as described.

No. 14,662.—JOHN JONES.—*Improvement in Candle-Cutting Apparatus*.—Patented April 15, 1856.

The side of the box B, which is in contact with the tips of the candles, is made slightly concave, in order to have them cut of equal length by the circular cutter D (the form of the candles being slightly tapering). C C are guides upon which the box B is made to slide past the cutter D.

Claim.—1st. The concave guiding surface G as a means of gauging the candle's length, taken at its axis, as set forth.

2d. The combination of the sliding-box B with the cutter D, operating for the purpose of cutting candles of equal length, taken at their axes, as specified.

No. 16,211.—C. A. MCPHETRIDGE.—*Candle-Dipping Machine*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Dipping candles on a continuous wick from spools E by passing it through the heated beeswax in vat I through gauge-plate J, and then alternately through heated tallow at H and cold water at F,

and through steam-gauge box K, and then separating them by means of the cutters *c*, as herein described and set forth.

2d. The steam chambers or floats G, constructed as described, and for the purposes set forth.

No. 14,376.—VINCENZO SQUARZA.—*Improvement in Candle Dipping Machines*.—Patented March 4, 1856.

A detailed description of this machine would take up too much space to be given here.

Claim.—1st. The employment of intermittently rotating vertical wheels C C, or their equivalents, carrying a number of wick-frames or wick-holders, in combination with a rising and falling dipping-trough F, substantially as herein described.

2d. I claim keeping the dipping-trough supplied to the proper level with tallow from a reservoir above by a valve which is opened by the trough, or by some attachment thereto every time it rises, substantially as herein described.

3d. I claim the within described method of regulating the supply of tallow to the dipping-trough to make up exactly for the quantity taken therefrom by dipping, by the employment of two or more arms L, L¹, L², arranged at different elevations on a pivot *n* attached to the trough, so that either one of them can be turned to a proper position to lift the valve in the reservoir.

4th. I claim the employment for the purpose of tapering off the points of the candles of a trough H of hot water, into which the candles are plunged by the raising of the said trough while the candles are stationary, substantially as herein described.

5th. I claim the construction of the wick-frames in pairs, each pair consisting of a shaft D, carrying two fixed bars *b b*, two sliding-bars *d d*¹, to which are attached two pairs of clamping-bars *e e* and *e*¹ *e*¹, and two wick boxes *g g*¹; all the said parts being arranged and operating substantially as herein described, so that each frame of the pair may in its turn be supplied with wick as required to commence a new batch of candles.

6th. I do not claim the reduction of dipping candles to a uniform size by passing them through draw-plates. I claim constructing the draw-plates in two parts attached each to the jaw or jaws of one or more pairs of nippers, whether attached rigidly or to rollers fitted to the said jaws, as herein described.

7th. I claim the swinging frame P with its jaws R R¹, and rotary cutters *y y*, all operating substantially as described, to take hold of the candles and cut them off when finished.

8th. I claim the arrangement and combination of the table N which carries the boxes and the jaws R R¹ which take the finished candles, substantially as described, that is to say: having both the table and the jaws on shafts or centres, and gearing them together so that they will move in such a way as to deposit the candles in the boxes gently and without injury.

No. 15,668.—JOHN ROBINGSON.—*Improved Candle-Moulding Machine*.—Patented September 2, 1856.

The moulds, as they reach a point in line over the jaws J, rest in consequence of the pins *c* and levers H on the wheels E, and the teeth on the pulleys F gear into the racks G, and raise the jaws J, which separate the two parts of the moulds, the jaws ascending and grasping the ends of the wicks *a** of bobbins *b**; the jaws are then allowed to descend, the teeth on the pulleys F passing out of gear with the racks G. The jaws draw the wicks down through the moulds; the jaws when lowered are opened by bar *j* and the wicks above the moulds are cut off, the moulds being previously filled with tallow. The moulds pass along in the direction indicated by the arrow, and pass through a reservoir of water placed in the lower part of the framing. The water cools the tallow, and as the moulds reach a point directly over the jaws *n n* on the rod L, said jaws and bars M are raised by the arms K, the bars M being elevated sufficiently to open the moulds I, and the jaws *n* grasp the ends of the candles as they descend and draw them from the moulds, the plate P moving forward at the same time, throwing the candles into a receptacle Q.

Claim.—Attaching a series of moulds I to endless chains B B, which have an intermittent movement; the moulds being formed of two parts, and opened and closed at the proper time by the jaws J, operated for the purpose specified.

I also claim drawing the candles from the moulds, by means of the jaws *n n* attached to the rod L, arranged and operated for the purpose shown.

I further claim, in connexion with the jaws *n n*, the plate P, operating for the purpose of turning or conveying the candles into the receptacle Q.

No. 15,968.—WILLIAM C. CHILDS.—*Improvement in Mould-Candle Machines*.—Patented October 28, 1856.

In operating this machine the wicks are drawn from the spools in the spool-box B and upward through the moulds C, respectively, and are fastened to the bar H of the lifter frame E, each wick being run through one of the notches of the centering plate *d*. After the moulds have been filled with tallow, the bar H and frame E are elevated by means of a windlass, and the candles are raised out of their moulds, fresh wicks at the same time being drawn upwards through the moulds. By repeating this operation a number of times, a row of candles may be formed on each wick, which will depend from the bar H.

Claim.—Arranging the wick-centering plate *d* in the trough of the candle-moulds, and on the bottom of said trough as specified.

Also, so applying the front board to the bottom board of the trough, that said front board may be turned down or removed from the trough, in order that the vertical edge or front part of the surplus fat in the trough may be exposed, for the purpose of facilitating the removal of said surplus fat from the candles.

No. 16,056.—AUGUST HENGSTENBERG.—*Candle-Mould Machine*.—Patented November 11, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood by reference to the claim and engravings.

Claim.—The combination of the spools, as constructed in my machine, with their gearing and locking; also the securing of the cutter by means of the layer S, substantially as described, and for the purposes specified.

No. 14,397.—FRANCOIS GARCIN.—*Improvement in the Preparation of Tallow for Making Candles*.—Patented March 11, 1856.

For bleaching and purifying 3,500 pounds of tallow the following ingredients are used:

For washing the tallow are used $3\frac{1}{2}$ pounds of nitric acid, reduced by adding 22 parts of water to every 60 parts of acid. The tallow is then removed from reservoir 2 to reservoir 3 and melted, and there is then added to it 5 pounds of sulphuric acid, reduced by adding to it 25 parts of water to every 60 parts of the acid. The tallow is then taken to another reservoir 4 and mixed with 5 pounds of pure alcohol, 7 pounds of creta gallica, 11 pounds of slacked lime, and $1\frac{1}{2}$ pounds of camphor. It is then further bleached in other tubs 5 5, by adding to it 4 pounds of borax and 2 egg-shells. Then again it is removed into a double bottomed copper-boiler 6, and mixed with $1\frac{1}{2}$ pounds of pure alcohol, $1\frac{1}{2}$ pounds of camphor, and $\frac{1}{4}$ of a pound of oil of lemon—S, 9, 11, 12 are steam-pipes.

Claim.—The method herein described of bleaching and purifying fat or tallow, for the purpose of making candles, the same consisting in the use of reduced nitric and sulphuric acids, creta gallica, slacked lime, camphor, borax, egg-shells, and oil of lemon, in the proportions and order herein set forth and described.

No. 15,821.—BENJAMIN D. SANDERS.—*Improvement in Many-Wicked Candles*.—Patented September 30, 1856.

This invention consists in constructing a candle with three or more solid wicks, arranged angularly to each other, so that a straight line will not intersect them, and at such a distance apart that the several flames in uniting leave a central air-space between them, at the bottom, for the admission of air, thus affording a better supply of air than the supply on the exterior of a flame does.

Claim.—A candle constructed as described, with three or more wicks *a*, when said wicks are arranged angularly to each other, or in the path of a circle struck from the centre of the candle at equal distances apart or thereabouts, essentially as shown, and for the purposes specified.

No. 16,208.—WILLIS H. JOHNSON.—*Mode of Incorporating Bituminous Liquids with Wet Earths for Cement*.—Patented December 9, 1856.

This invention consists in mixing mortar in its wet condition with about fifteen per cent. of coal tar, which, when incorporated together, will form a better and cheaper bituminous mortar than that made by a composition of dry mortar and heated bituminous matter.

Claim.—The combination of bituminous liquid and aqueous cements or mortars, substantially as set forth.

No. 15,275.—HORACE BILLINGS.—*Improvement in Roofing Cement*.—Patented July 8, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The improved roof-coating cement or composition of matter, produced by combining shellac (or seedlac), rosin, linseed oil (or its equivalent), and powdered steatite (or its equivalent), in proportions which will give the said composition the character and adapt it to the purposes substantially as herein set forth.

No. 16,304.—ANDREW GRIMES, assignor to CHARLES DAY.—*Improvement in Burning Charcoal*.—Patented December 23, 1856.

The sticks of wood *c* are piled around the chimney *a*, and then kindled from its top. The top part of the pile, composed of the sticks *e*, is then laid on to the lower part; and when thus arranged the wood is prevented from burning to ashes without the use of any covering.

Claim.—Burning wood in the open air without any covering of earth, or any substitute therefor, in such a manner as to reduce any given amount of wood to a mass of red hot coals, preventing the pile from burning to ashes until the result is accomplished in the manner set forth.

No. 16,170.—TIMOTHY BROWN.—*Alloy Composition*.—Patented December 9, 1856.

The alloy, as specified in the claim, is intended to be used for metallic cheese hoops, as it will not be oxydated by the lactic acid of the whey.

Claim.—The metallic composition or alloy, composed of zinc from fifty-six to seventy parts, tin eighteen to eight parts, copper one part, and antimony one part, for the purpose specified.

No. 14,037.—ANDREW H. WARD, Jr.—*Improvement in Compositions for Treating Wool*.—Patented January 1, 1856.

This invention relates to the treatment of wool with oleic acid instead of oil. The oleic acid is used in the same manner that oil has been

ordinarily used; a small quantity, however, is sufficient for producing the desired effect, as it has a greater penetrating power in saturating the fibres of wool than oil. When the wool is to be cleansed a compound of purified carbonate of soda, sulphate of soda, and common salt, in the proportion of one pound to every quart of oleic acid is used, and this proportion dissolved in water is to be mixed with the portion of water in which the goods are first washed.

The inventor says: I do not claim the employment of ordinary oils or the mixture of crude oily acids called "*red oil*," for oiling and cleansing wool and goods. Nor do I claim the use of a nearly pure oleic acid in the treatment of wool, nor its subsequent removal by alkaline carbonates only; but what I do *claim* is, the employment of neutral salts as specified, with the alkaline carbonates and the oleic acid, for the purpose and to produce results as stated.

No. 14,832.—JOHN ROSE.—*Improvement in Compositions for Stuffing Leather*.—Patented May 6, 1856.

The inventor says: Being well aware that other meal than rye, and other oil or fatty matter than cod, if commingled with the wax, rosin, and molasses, can be used and would produce nearly the same effects, I therefore do not claim the rye meal or the cod oil exclusively, nor the precise proportions.

But I *claim* softening leather by stuffing it with a compound made of paste, made of rye or other meal, beeswax, rosin, molasses, and oil, or other fatty matter.

No. 15,161.—HORACE VAUGHN.—*Improvement in Compositions for Working Steel*.—Patented June 17, 1856.

The composition is used in a dry pulverized state and in the following proportions:

2 ounces of bi-chromate of potash.

14 ounces of prussiate of potash.

17 ounces of chloride of sodium.

Claim.—The dry compound of chloride of sodium and bi-chromate of potash, with or without the prussiate of potash, for hardening and tempering steel, combined, applied, and operating substantially as set forth.

No. 15,551.—LEWIS BUCHHOLTZ.—*Improved Blastic Compound*.—Patented August 19, 1856.

This composition consists of four ingredients, saltpetre, charcoal, lycopodium, and white sugar.

Claim.—I claim the composition and application of the ingredients mentioned, whether in the ratio described or in any other substantially the same, in the manner and for the purposes substantially as specified.

No. 14,911.—FRANCIS GERAU.—*Improvement in Artificial Decoloring Compounds*.—Patented May 20, 1856.

The inventor says: I will mention particularly that I do not claim the use of phosphate of lime as such and in general, as it is found in burned bones, and has lately been discovered in large alluvia; but it is the phosphate of lime in that particular state of precipitation, which state alone affords to the coal its main properties, and which is entirely different from the former.

Claim.—The use of phosphate of lime, precipitated out of a solution in muriatic acid, as an ingredient in a compound of materials for the manufacture of a decoloring coal, which other materials may be varied according to circumstances.

No. 15,563.—I. ANSING E. HOPKINS.—*Improvement in Felting Compounds*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—Keeping the articles to be felted constantly saturated with or immersed in a solution of saponaceous matter during the operation of felting, and near the close of the operation adding to said solution a small quantity of ammoniacal matter, substantially as set forth.

No. 15,520.—FREDERIC KUHLMANN.—*Improvement in Vehicle for Paint Compounds*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The admixture of silicate of alkali in substance with a paint, varnish, ink, or dye, (instead of using it in layers or coatings, as heretofore done,) using for the protection of the several individual coloring matters such agents as are known to scientific or practical chemists, and which I have described.

No. 15,806.—ISAAC GATTMAN.—*Improvement in Mixing Wheat Flour with Paints*.—Patented September 30, 1856.

This invention consists in manufacturing paints by grinding the dry or crude colors in a paste composed of one hundred pounds of flour mixed in fifty gallons of water, and the adding a solution of fifty pounds of rosin, and forty gallons of fish or any other drying or volatile oil; which paste is then diluted in two hundred gallons of boiling water.

The inventor says: I do not claim exclusively the use of watery solutions for mixing paints; but I claim the manufacture of paints by grinding crude colors in a composition of water, flour, or its equivalent, rosin, or its equivalent, fish oil, or any drying or undrying oil, in the proportions and manner substantially as set forth, in order that the paint thus manufactured may be produced at a cheap rate, and afterwards thinned with water to the required consistency.

No. 14,053.—DOMINIQUE EMILE COUTARET.—*Improvement in Disinfecting Fecal Matter*.—Patented January 8, 1856.

This invention consists in using a deodorizing liquid of the following description for disinfecting fecal matter: Chimney soot is boiled in water in order to extract from it the empyreumatic principle, and chiefly the creosote; salt of iron is then dissolved in this decoction, the liquid drained, and the deposit dried, which consists of charcoal, impregnated with acetate of iron, containing sufficient creosote to form a powerful deodorizing powder.

Claim.—The use of the ingredients named for deodorizing feculent or other decomposing organic matter, and converting said matter into manure, as described.

No. 15,959.—JOHN P. DERBY, assignor to the SALISBURY MANUFACTURING COMPANY.—*Improvement in Dyeing*.—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The object of it is to produce figures of various colors by the process of dyeing with no application of any process of printing, whereby the brightness of the colors is shown on both sides of the goods.

Claim.—Protecting certain portions of the fabric from the action of the dye, by a resinous compound, which may be applied cold; and afterwards removing the same by water, diluted alcohol, or the other means enumerated, substantially as set forth.

No. 15,361.—FRIEDRICH EMIL SCHMIDT.—*Improvement in preparing Vegetable Dye-Stuff*.—Patented July 15, 1856.

The nature of this invention consists in subjecting the juice of *Bacca Phytolacæ decandriæ*, generally known by the name of buckberry, to a treatment by which the red pigment of the juice is so altered that it will give, with or without mordants, durable colors in red or violet. The treatment consists in filling said juice into hermetically sealed vessels, in which it will undergo, in the space of two months, such a change as to obtain the property to give a durable red color with mordants.

Claim.—The treatment above described of the juice, previous to its use for dyeing, to produce permanent and durable colors.

No. 14,418.—ABRAHAM STEERS.—*Improvement in Apparatus for making Extracts*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The within described displacing apparatus, in connexion with the application thereto of heating and cooling agents, substantially as herein set forth, viz: The said apparatus being composed of the per-

colater K and the receiver M, separated from each other by means of a perforated diaphragm Q, or its equivalent, the said percolater having its upper end closed by a metallic cover, supplied with an outwardly opening-valve, at the same time that the top of said percolater is connected directly with the said evaporating receiver by means of a pipe supplied with a valve or stop-cock, by which arrangement the contents of said percolater can be operated upon; first by steam generated in the evaporating receiver, and then by the percolation of the menstruum after it has been evaporated and condensed again, substantially as herein set forth.

No. 15,155.—GEORGE F. WILSON and GEORGE PAYNE.—*Improvement in Saponifying Fats*.—Patented June 17, 1856.

The nature of this invention consists of the process of distilling over glycerin, together with the fat acids from neutral or partially neutral fats, the glycerin and fat acids being mixed, but uncombined, so that they will separate when allowed to stand.

By this process the fat acids will be pure, and the glycerin will also be pure, but dissolved in the water resulting from the condensation of the steam passing off with the vapors of the glycerin and of the fat acids.

The inventors say: We are aware that oils and fats have been heated with steam, and that it has been used as a carrier in the still, but they have not been treated in accordance with our process, viz: by steam maintained at about 550° to 600° temperature, above specified, and so as to produce results attained by it. We therefore lay no claim to the process above mentioned of treating oils or neutral fats by heat and artificial pressure, so as to prevent the formation and use of steam or vapor, nor do we claim the common method of treating them by steam in a superheated state; but we *claim* the improved process of treating them, so as to distil over glycerin with fat acids, mixed but uncombined, as herein before explained.

No. 15,517.—IRA HOLMES.—*Improvement in Filtering-Sand for Cider*.—Patented August 12, 1856.

The nature of this invention consists in filtering the juice of apples through a filter consisting of flannel cloth, covered with a certain kind of sand; this consists of silica, alumina, carbonate of lime, black oxyd of iron, titaniferous iron, and peroxyd of iron and has the peculiar quality to convert the acid of the apple juice into saccharine, thus rendering the cider of a superior quality, and adapting it to the manufacture of molasses or syrup.

The inventor says: I do not claim making cider from apples. Nor do I claim simply evaporating cider by boiling.

But I *claim* the described discovery and process for making a beverage and syrup from the juice of apples, as set forth.

No. 16,129.—CHARLES F. THIEME.—*Improved Gas-Cock and Swinging-Joint*.—Patented November 25, 1856.

The plug B being inserted in the barrel A, and the cap B¹ screwed into a cemented connexion with the lower end of the same, the apparatus can be used both as a swing joint and cock. By screwing the key C up to its shoulder, no gas can pass through plug B nor out of barrel A; but when said key is screwed down, the gas can pass through opening *p* into plug B.

Claim.—Making a swinging joint for gas brackets, substantially as described, the same consisting of the tubular plug B and its cap B¹, with the leather washer *k* and spring *i*, or their equivalents, in combination with the barrel A, constructed as set forth and described, so as to produce a gas-tight swing-joint without the usual boring and grinding required, as described.

Also, the combination of the key with the lower end of the plug when the same is used as a gas cock, so as to dispense with a distinct barrel heretofore required for a cock, the said key being constructed, combined, and operating substantially in the manner set forth and described.

No. 14,368.—ALPHONSE QUANTIN.—*Improved Method of Bottling Fluids under Gaseous Pressure*.—Patented March 4, 1856.

The end of the cock N is to be inserted in the opening of the bottle stopper. The cock A is opened by means of lever I. This permits the mineral water to enter the tube E, which contains the requisite measure of syrup, and forces it by the cock D, opened by the same motion of A, to enter O and N, which is in the stopper of the bottle, and which fills it instantaneously. The lever M is then turned, which shuts the cock N, gives half a revolution to the cylinder P, and shuts the top part of the stopper and completes the operation.

Claim.—The compound apparatus, composed of metal or other substances, constructed and operating substantially as herein before described, that is, to introduce a certain portion of a liquid into the apparatus, and force it out by the action of another liquid, gaseous or fermented.

No. 15,973.—CHARLES A. HOWARD.—*Gas Generator*.—Patented October 28, 1856.

The operation of this apparatus is as follows: The gas supplied to the burners I is lighted, and when the retorts are properly heated by them, the material from which the gas is to be produced is fed into the upper retort L through the feeding pipe B, and is vaporized by coming in contact with the heated surfaces; and the material which remains undistilled flows down into the lower retorts A and M, where it is distilled, and the gas, as produced, is taken off by the pipe C and conveyed to the gasometer E.

Claim.—The series of inclined retorts, constructed and arranged substantially as described.

No. 14,926.—MAX PETTENKOFER and CARL RULAND.—*Improvement*

Claim.—The arrangement of the lime purifier in the same vessel or

No. 14,926.—MAX PETTENKOFER and CARL RULAND.—*Improvement in the Construction of Gas-Generators*.—Patented May 20, 1856.—Bavaria, February 24, 1851.

The retort A containing the vegetable fibre is enclosed within walls forming flues; the gasses pass through pipe E into the upper regenerator B B B, in which the gas is compelled to travel backwards and forwards by dividing plates $x x^1$, and from the back end of B into the lowest regenerator B¹, and having traversed it through its chambers, passes off by the exit pipe H to the purifying apparatus.

Claim.—The construction and arrangement of the many-chambered regenerators for making gas from wood or vegetable fibre, whereby the primitive vapors of destructive distillation of wood or vegetable fibre are progressively heated up beyond the heat in the retort.

No. 14,045.—N. AUBIN.—*Improvement in Making Illuminating Gas*.—Patented January 8, 1856.

The nature of this invention consists in generating illuminating gas from rosin, grease, oil, tar, or other such substances, rich in hydrogen and carbon, which are in a liquid form, or become so on being subjected to heat, by mixing the same with coarsely divided charcoal, bricks, &c., which contain no gas and are slow conductors of heat, for the purpose of decomposing the same and to facilitate the withdrawal of the contents after the gas is extracted. The above described mixture is introduced into the vessel E, which is provided with a perforated bottom E¹, which is placed inside the retort B. Water is allowed to drop through the cock u^3 and syphon pipe a^2 into the steam generator D, and as the apparatus is heated by the fire of a fire-place A¹, gas is generated and expelled from the retort through pipe B².

Claim.—Mixing the materials from which the gas is to be generated with porous or coarsely divided substances, which are slow conductors of heat, and introducing the mixture into the retort in a vessel with a perforated bottom, so constructed as to compel the contents of the vessel expelled by the heat to escape at the lower end, near to or in contact with the bottom of the retort, where the heat is most intense, substantially as described.

No. 15,267.—CHARLES F. WERNER and CHARLES DEUTSCHMANN.—*Improvement in Dry-Lime Gas Purifiers*.—Patented July 1, 1856.

The gas in passing from the retort through the pipe D is cooled, and all condensable matter is precipitated by the pipe D¹ into the vessel E. The gas enters then pipe F, and escapes therefrom in minute streams into compartment c , where it percolates through the hydrate of lime; it passes then through pipe F¹ into c^1 , after which it escapes by another pipe F² into a third compartment c^2 , from which, after having been for the third time purified by passing through hydrate of lime, it escapes by pipe G to the gasometer.

Claim.—The arrangement of the lime purifier in the same vessel or cooler B with the cooling pipe, when the said cooling pipe is arranged in serpentine form below the purifier, in the manner substantially as herein described.

No. 15,010.—JOHN G. HOCK.—*Improvement in the Arrangement of Gas-Retort Bench*.—Patented June 3, 1856.

This invention consists in an arrangement of flues $a a c d e e f g h i j j k k$ in a bench of five retorts A¹ A¹ A A A², whereby the heated products of combustion are brought into action on the retorts in such a manner as to heat them individually in all their parts and with great uniformity.

Claim.—The within described arrangement of the flues, by which the flame and heated products of combustion are caused to pass first under the bottom retorts A A, next under the top retort A², then under the retorts A¹ A¹, and over A A, and finally over A¹ A¹ and A².

No. 14,934.—SAMUEL H. WALKER and MATTHEW C. WALKER.—*Improvement in Gas-Retort Cleaners*.—Patented May 20, 1856.

When the operation of the retort A commences, the part d of the handle c is detached, and the opening through which the scraper-rod passes closed. When the retort requires scraping, the cap E is taken off, the rod d is fastened to the scraper-rod c , and the scraper is then pushed into the opposite end of the retort, and the residuum on the bottom is scraped off and drawn through the passage g into the box D. The opening f through which the rod passes is just large enough to allow the said rod to pass freely through.

Claim.—Providing the retort with a receptacle D below its bottom, and applying in connexion therewith a scraper F arranged and operating substantially as described, to scrape the residuum from the bottom of the retort into the said receptacle without suspending the operation of the retort.

No. 16,075.—WILLIAM H. ST. JOHN.—*Copper-Ring Gas-Retort Fastening*.—Patented November 11, 1856.

The flange I of the retort is provided with a groove into which a corresponding projection of lid M fits, and the groove is lined with copper, to form a more perfect joint than the two surfaces of the same kind of metal can make. The hot air chamber M below the mouth of the retort is supplied with hot air from the flue H, for the purpose as specified in the claim.

The inventor says: I am aware that lead has been used for tightening the joints of boilers; this I do not claim.

But I *claim*, first, the tightening with copper of the joints of doors of gas-retort heads, when the said joint is effected by the otherwise usual

threads of the warp, for that was patented by Healey; nor do we

groove inserted in the flange of the mouth-piece, to meet a corresponding projection on the door in the manner and for the purposes specified.

I further claim the placing a hot air chamber beneath the mouth-piece, to consume the tar and oil collecting on the bottom of the latter.

No. 14,913.—JOHN G. HOCK.—*Improvement in Gas-Retort Fastenings*.—Patented May 20, 1856.

To fasten or unfasten the head it is only necessary to bring down the bail D, or to lift it up and throw it back, as shown in dotted lines in fig. 1. When the bail is thrown off the rib e, the head remains supported by the lugs a a resting on the shanks of the bolts B B, so that the bolts serve not only to attach the bail, but to support the head.

Claim.—The attachment of the bail to the retort or other mouth, by means of the hook-headed bolts B B.

No. 14,996.—N. AUBIN.—*Improvement in Feeding Apparatus for Gas-Retorts*.—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The vessel H to contain the materials from which the gas is to be made, in combination with the inner vessel or weight J, arranged so as to gradually expel the contents of the vessel H as they are melted or rendered more fluid by the heat of the retort A, and thereby afford a regular supply of said materials to the gas-making process going on in the retort.

No. 15,376.—JAMES HUMPHREY.—*Improvement in Gas Stop-Cocks*.—Patented July 22, 1856.

The gas coming from the supply-pipe and passing up the pipe c enters the chamber between it and the cylinder d, but is prevented from escaping therefrom as long as the triangular slot h is submerged in the mercury g; but as soon as the upper part b is raised by the pressure of the mercury, the slot h will partly be raised above the mercury, and the gas can escape through said passage to the burner, as indicated by the arrows.

Claim.—The mercurial gas cock, constructed with the adjustable slotted cylinder and the reservoir of mercury, arranged and operating substantially as described.

No. 14,814.—HENRY G. TYER and JOHN HELM.—*Improvement in Making Gum-Elastic Cloth*.—Patented May 6, 1856.

The inventors say: We do not claim as our invention the weaving of cloth, or cloth woven with the threads of the weft diagonally to the

threads of the warp, for that was patented by Healey; nor do we claim the stretching of cloth so that the threads of the weft, while held in the stretched condition, shall stand diagonally to the threads of the warp; nor do we claim generally the cementing of threads or sheets of rubber between two pieces of cloth so stretched; nor do we claim any elastic fabric consisting of two pieces of stretched cloth, united in whole or in part by unvulcanizable material.

But we claim an elastic fabric composed of two pieces of cloth, either woven with the threads of the weft in a diagonal position to the threads of the warp or of common cloth stretched so as to force the threads into such relative diagonal position, combined and caused to adhere together, exclusively by a vulcanized compound of India rubber or gutta-percha, the two pieces of cloth being first united by the vulcanizable compound and the compound being vulcanized after the union.

No. 14,972.—JAMES REYNOLDS.—*Improvement in Apparatus for Cleaning Gutta Percha*.—Patented May 27, 1856.

The gutta percha is cut into fine slices by means of the rotating disc C, with the cutters a fastened to it. The bark and foreign substances may now be extracted with little trouble. The gutta percha is then submitted to the beating or rubbing operation, which is effected by means of the beaters or lifters c c within the rotating circular screen H, as shown.

The inventor says: I do not confine myself to the employment of the particular machinery herein described; but I claim the extraction of the bark and foreign substances from gutta percha by cutting the blocks of the raw material into extremely thin slices or sheets, and submitting the said slices or sheets to a beating or rubbing and screening operation.

No. 15,439.—JAMES REYNOLDS.—*Improvement in Gutta Percha Apparatus for Covering Wire*.—Patented July 29, 1856.

The operation of this machine for covering telegraph wire is as follows: To prepare for filling the cylinder A with gutta percha, the piston G is run back by turning the gear f; the rear end of the cylinder is then raised by turning shaft d by a hand crank, and the cylinder is filled with gutta percha. The cylinder then being lowered, the piston is run up close to the charge; the outer ends of the die piece m and core piece n are then closed by stoppers; the cock p¹ is opened and an exhausting apparatus, connected with the cylinder by means of pipe q, is set in motion to extract the air which is contained in the material; when all the air is extracted, the cock r is closed, and the piston G is run in far enough to pack the whole charge into one compact mass. The stoppers are now removed from the die and core piece, and the cock p¹ opened, and the wire to be covered passes through the hole in the core piece and into the die m. Motion being communicated to the machine, the piston G moves slowly forward, and the circular trough J, filled

with water, begins to revolve to receive the finished wire. The piston forces the gutta percha through the die *m*; and the gutta percha, in passing through and being compressed in the die, carries with it the wire, drawing it through the core piece as fast as the rope issues from the die.

Claim.—1st. Providing the cylinder, or other vessel in which the gutta percha is submitted to the pressure, with a connexion to an air-pump or other suitable exhausting apparatus, for the purpose described.

2d. The arrangement of the die and core or core piece, transversely to the direction in which works the piston or other device for producing the pressure, substantially as and for the purpose specified.

3d. Providing the stomach *I*, or its equivalent, which contains the die with a variable escape opening *p*, substantially as and for the purpose set forth.

4th. The continuously revolving water trough, arranged relatively to the die, and operating substantially as and for the purpose set forth.

No. 16,215.—JAMES REYNOLDS.—*Mode of Making Gutta Percha Cord.*—Patented December 9, 1856.

The gutta percha cord *G* is inserted between the dies *D*, then passed around the rollers *C* and *C'*, and rotary motion being given to said rollers, the cord is operated upon as described in the claim.

The inventor says: I do not claim as new a mere combination of dies and rollers, as such, variously arranged, is common in the manufacture of metallic tubing and other articles; but I *claim* the process described of finishing gutta percha cord by means of the dies *D D'* and grooved rollers *C C'*, arranged and operating together and on the cord, as described; the said dies being of larger diameter than the grooves in the rollers, and serving to close up flaws, draw and compress the cord and equalize its size, while the smaller grooves in the rollers serve to slightly compress and give a smooth finish to the cord, and establish or sustain the feed of the cord, without risk of bruising by attrition, through a windlass action, as specified, and by which combined action of dies and rollers the cord is stretched to its fixed point between the dies and rollers, as set forth.

No. 15,087.—JAMES REYNOLDS.—*Improvement in Feed Apparatus for Working Gutta Percha.*—Patented June 10, 1856.

The pistons are severally forced out as they approach their highest position, and then descending in contact with the concave, force down the material, thereby producing the necessary pressure to fill the dies. Any material leaking past the pistons into the space *f* is allowed to escape through the shaft *E* by means of the passages *e e e e*.

Claim.—The combination of the rotary forcing apparatus, consisting of a cam *E* for forcing out the sliding piston *D D'*, arranged entirely within the rotating head *C C'*, with a passage or passages within the rotating head which carries the said pistons, providing for leakage, substantially as and for purposes herein described.

No. 14,929.—A. D. PUFFER.—*Improvement in Lining Metal Pipes with Gutta Percha.*—Patented May 20, 1856.

To facilitate the operation of drawing down the leaden pipe, the lead may be sufficiently warmed, by means of hot water, to enable it slightly to soften the gutta percha. The accompanying drawing represents a pipe *a* lined with gutta percha *c*, and the method employed to unite the pipe with the ordinary coupling.

Claim.—The method of lining metallic pipes with gutta percha—the pipe being drawn down upon the lining.

No. 15,086.—JAMES REYNOLDS.—*Improvement in Mandrels for Making Gutta Percha Tubing.*—Patented June 10, 1856.

The shank *f* of the mandrel *F* is formed with an eye *h*, to connect the mandrel with the hooked end *g* of a long rod of iron *G*. This rod *G* is secured at *l*, while the tube is drawn over the mandrel; during which operation, the mandrel serves as a support to the material against the action of the die, and the die as a support against the action of the mandrel, which causes the material to be compressed and condensed.

Claim.—Constructing the mandrel with a joint, as described, and for the purpose as specified.

No. 15,067.—AUSTIN G. DAY.—*Improvement in Cleaning India-Rubber.*—Patented June 10, 1856.

The rubber is first cut into small pieces and worked in water, whereby the largest of the foreign matters are removed. The rubber is then placed in an air-tight cylinder *A*, and the vat *N* is filled with a solution of caustic soda, which is pumped into the vats *E* and *F*. The air-pump is now put in operation, and a partial vacuum produced in the cylinder; thus exhausting the air from the interstices of the rubber, and removing the noxious gases. The caustic alkali is now allowed to flow into *A*, which renders the wood, bark, and other foreign matters heavier. The liquid is now drawn from *A*, through *O*, into *N*; the rubber is then removed from *A*, and thrown into vats containing water, which is so stirred as to allow the heavier parts to sink, while the rubber is left floating upon the surface.

Claim.—The exhaustion of the noxious gases from the crude India-rubber, and its subsequent treatment, for the purpose of cleansing and purifying it.

No. 14,811.—NATHANIEL HAYWARD.—*Process of Preparing Elastic India-Rubber Cloth.*—Patented May 6, 1856.

The inventor says: I wish it distinctly understood that I do not claim the elastic fabrics usually denominated shirred goods, and made of threads or strips of rubber combined with cloth; nor do I claim what are commonly called woven elastic goods; nor do I claim

Claim.—The combination of the cylinders or drums *B B'*, over

the mere union of cloth with India-rubber; for this has been done in various ways, without producing an elastic fabric.

But I *claim* the producing an elastic fabric of uniform strength by uniting a sheet of rubber with sheets of cloth thinly coated on one side with a vulcanized compound of rubber; the sheet of rubber before it is united with the sheets of cloth being in the modes set forth so prepared that the central part of it is completely vulcanized, while the surfaces are not.

No. 15,947.—JACOB H. HOWELL.—*Improvement in Making India-Rubber Hose*.—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The herein described method of constructing India-rubber hose—that is to say, by winding a fillet *f* spirally upon a mandrel *c*, and upon this winding a second fillet *g*, which shall cover or break the line of joining the first; the said fillets being made to adhere along their cut edges, as well as to each other, substantially as set forth.

No. 14,657.—NATHANIEL HAYWARD.—*Improvement in Manufacture of India-Rubber*.—Patented April 15, 1856.

This invention consists in the mode of preparing and cementing vulcanized India-rubber fabrics.

The cement is applied to the two pieces in one, two, or three coats, according to the thickness of the coat; after which the whole is exposed to the vulcanizing process.

Claim.—The improved process of cementing and uniting one piece of vulcanized rubber with another piece of rubber, either vulcanized or in a state capable of being vulcanized.

No. 16,069.—T. SAULT.—*Process for Cleaning India-Rubber*.—Patented November 11, 1856.

The India-rubber is cut in slices, and placed into the tank *F*, and a constant stream of water is allowed to flow into it at the same time that it is submitted to the operation of the cylinder *B*, provided with teeth *C*, which pass between the serrated bars *D* of a concave; the India-rubber by this action is liberated from all its impurities, which subside to the bottom of the tank below the bed *F*, which is perforated for their escape.

Claim.—The cleaning of India-rubber by means of the serrated sided teeth *C C* and stationary serrated sided bars *D D*, constructed and arranged to operate in combination with each other, substantially as described.

No. 16,269.—HENRY DAVENPORT.—*Improvement in Machines for Cutting India-Rubber Thread*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of the cylinders or drums *B B*¹, over which the endless belt of India-rubber, from which the thread is to be cut, is stretched, with the revolving circular cutters *E E*¹, attached to the table *D*; the whole arranged, constructed, and operating in the manner described.

No. 15,531.—WILLIAM F. SHAW.—*Improvement in Treating India-Rubber*.—Patented August 12, 1856.

This invention consists in rendering fabrics of India-rubber impervious to illuminating gas, by treating them with linseed oil in a heated state, by which any excess of sulphur contained in the fabric may be combined with the oil to form an elastic compound of oil and sulphur, impervious to air and gases, yet allowing of bending and stretching.

Claim.—The treatment of sulphured rubber or gutta percha with unsulphured drying oils or unsulphured rubber or percha with sulphured drying oils, in the manner set forth.

No. 15,998.—HENRY FORSTRICK.—*Improvement in Working Over Vulcanized India-Rubber*.—Patented October 28, 1856.

Vulcanized India-rubber from which the sulphur is to be extracted is reduced to powder, and then heated with diluted nitric acid, which oxydizes the sulphur into sulphuric acid; the gum is then subjected to the vapors of fusel oil, (grain oil,) and then a small quantity of chloride of calcium is added, when the mass is dried and fit for use, either alone or in combination with native gum.

Claim.—The manner of extracting unorganic matter from vulcanized India-rubber, gutta percha, and other gums, or their compounds, by the application of diluted nitric acid and the use of fusel oil, (grain oil,) either in a heated state, mixed with the gum, or in the shape of vapors, for the restoration of the cleansed gums to the state of cohesion.

No. 15,942.—JOHN J. BATE.—*Improvement in Lard-Rendering Kettles*.—Patented October 21, 1856.

The material to be melted is placed into the double kettle *a* and concentric annular kettle *c*, and steam being admitted through the pipes *f* into the space *b*, the material in said kettles is melted.

Claim.—The combination of the double steam kettle with the annular chamber, substantially in the manner and for the purposes set forth, and covering the exterior of said chamber with a non-conductor.

No. 15,391.—JOHN C. FR. SALOMON.—*Improvement in Liquids used as a Motive Power*.—Patented July 22, 1856.

The nature of this invention consists in the use of sulphoil carbonic acid in combination with carbonic acid as motive power. The sulphoil

carbonic acid is made by a combination of coal tar, oil, and bisulphuret of carbon, decomposed by sulphuric acid.

Claim.—The sulpho-carbonic acid liquid, prepared in the manner substantially as described, and in combination with carbonic acid generated in any known way, or other equivalent liquifiable gas, as a motive power.

No. 14,791.—CLAYTON BROWN, sen'r.—*Improved Apparatus for Lubricating Grist Mill Spindles.*—Patented May 6, 1856.

By turning the piston G the oil will be forced against the spindle C. When the chamber D requires to be filled, the stop-cock F is turned, and the oil in the inner end of the tube E is prevented from flowing back into the chamber D.

Claim.—The oil chamber D, with tube E attached, the tube being provided with a stop-cock F, and the chamber with a piston or follower G, the inner end of the tube passing through the bush B.

No. 16,298.—JOSEPH WELSH.—*Improvement in Lubricating Spindle Steps.*—Patented December 23, 1856.

The oil in the recess *e* passes through the cotton *g* and channel *f*; and as the tube C rotates rapidly on spindle A, its upper bearing surface is also at the same time carried slowly up and down on the spindle, thus lubricating all that part of the spindle over which it moves. The surplus oil passes down the grooves *k* into the groove *h*, thus lubricating the face of step B.

The inventor says: I do not claim introducing the oil through the spindle, directly to the inside of the tube, as set forth and described; nor do I claim anything contained in the patent of E. W. Welch, dated January 28, 1840; nor anything in the application of Joseph Turner and E. S. Webster, rejected, respectively, in 1848 and '49.

I claim making the groove or grooves *h*, or their equivalents, at the lower end of the tube E, so as to conduct thereby, during the rotary motion of the said tube, the surplus oil from the spindle A to the horizontal face of the step B, substantially in the manner and for the purpose set forth and described.

No. 15,690.—GEORGE W. DAUGHERTY and THOMAS G. McLAUGHLIN.—*Improvement in Lubricating Throistle Spindles.*—Patented September 9, 1856.

By removing the cap A, together with the parts C and C', from the spindle B, as represented in fig. 3, the valve H is pressed down to its seat, and the oil passes from the reservoir *a*, through the passages *f*, into the chamber G. By replacing the cap to the spindle B, the valve H is raised, as represented in fig. 2, and the oil comes in contact with the upper part of the spindle and runs down the groove *h*, formed in the same, thus causing an effectual lubrication by the necessary act of

removing and replacing the cap, and without having recourse to the tedious operation of stopping and starting the machine every time the lubrication of the spindles is required.

Claim.—The lubrication of throistle spindles, in the manner and for the purpose substantially as described.

No. 14,236.—WILLIAM GEE.—*Lubricator.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I claim a glass cylinder H H, as above described, protected by a brass or other metallic cylinder I I, with openings to see the oil, and the tube K, as described, passing up through the oil, which, by radiating its heat derived from the hot steam, keeps the oil in a liquid state under all temperatures.

I also claim the method above described of preventing accidents or the glass breaking, by the elasticity of the India-rubber above and below the edges of the glass lubricator, as packing I' I' I' I', as well as the diaphragm of India-rubber P P, as described, the whole in combination as a lubricator, or to supply and regulate the flow of oil, and by sight enable the person attending to know when the oil or lubricating material is exhausted, and by the method herein described. By the diaphragm P P, I do away with the necessity of having grooved metallic surfaces, which are always getting out of order. This lubricator will answer for supplying vacuum by opening the cock X. The air passing up the tube K above the oil, forces the oil out and makes a vacuum lubricator, which I include as a part of my claim.

I do not claim India-rubber as packing, as that has been used by myself as well as others; nor do I claim cutting away the cylinder to see through it, as that has been used by myself as well as others.

But what I do claim is, the India-rubber diaphragm P P in combination with double cocks N, and cylinder H H, and tube K, and valve D, handle A, guide B B, with other parts, in combination and operation as set forth in the specification.

No. 14,352.—WILLIAM E. EVERETT.—*Improved Lubricator.*—Patented March 4, 1856.

The oil cup A is stationary, and therefore can be filled properly at any time, however rapid the motion of the part U to be lubricated may be.

The shaft S gives motion to the spoons inside of the oil cup A. When the spoons deliver too much or too little oil, the bolt P can be adjusted in the slots of the arms R and L so as to increase or diminish the motion of shaft S.

Claim.—1st. A stationary oil cup or reservoir A in combination with a flexible tube I K, one of whose ends communicates with the cup, and

No. 16,018.—JAMES F. MONROE.—*Improved Lubricator.*—Patented November 4, 1856.

the other with the surfaces *U a* to be lubricated, substantially in the manner and for the purpose herein specified.

2d. Giving motion to the spoons of a mechanical oil cup, when it is used, in combination with a flexible tube, by means of a vibrating lever, or its equivalent, which derives its motion from the tube itself, substantially as herein set forth.

No. 14,549.—EDWARD J. BAKER.—*Lubricator*.—Patented April 1, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The combination of the reservoir *A* with the vertical stem or spindle *B* by means of the conical sockets *a* and *b* and bearings in the upper and lower parts of the reservoir, together with the passages or openings *l m p* which are in said sockets or bearings for the admission and discharge of the oil or lubricating fluid, and also for the escape of the air from the reservoir while oil or fluid is being poured into it. The said passages being alternately opened and closed by rotating or moving the reservoir around, or partly around, the central stem or spindle, substantially as described.

No. 14,797.—ABEL BREAER.—*Improved Lubricator*.—Patented May 6, 1856.

The plug *C* is turned so as to bring the passage *b* opposite *C*; the plunger *E* is then drawn outward, which fills the cylinder *D*, and the plug is turned to bring the passage *b* opposite to *d*; by pressing now the plunger *E* inwards, the contents of *D* are forced through the passage *d*.

The inventor says: I do not claim the application of a piston or syringe to a grease cock to force the grease against a pressure of steam.

But I *claim* the attachment of the syringe directly to the plug *C* of the cock.

No. 15,775.—NORMAN W. POMEROY.—*Improved Lubricator*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—So constructing and connecting the disk which forms the bottom of the oil vessel, that, by reason of its curved or waving shape, the central part may be readily pressed inward by the thumb or finger, while its shape will cause it to return to its original position immediately on removing the pressure, when constructed, connected, and made to operate, substantially as described.

No. 16,018.—JAMES F. MONROE.—*Improved Lubricator*.—Patented November 4, 1856.

When the plug *E* is turned in a certain position by means of handle *L*, one of the holes through the bottom of the lubricating cup *D* falls over the hole *b* in the plug *E*, and the lubricating material flows into the plug *E*, any steam or air which may remain in the latter passing off through tube *G*. When the plug is turned again, the holes *a b* are closed, and the hole *h* is made to correspond with the hole *i* in the plate *H*, and the liquid within the plug *E* passes down to the steam cylinder.

Claim.—The plate *H* and plug *E*, as arranged and combined with each other and with the lubricating cup, for the purpose set forth.

No. 14,163.—ADOLPH C. MOESTUE.—*Improvement in Mastic for Covering Walls*.—Patented January 29, 1856.

The inventor gives the walls two coatings of a solution of rosin soap. Before the second coating is dry, he applies rosin powder to the wet surface. Finally, he applies to the wall a flame by means of a blow-pipe, or otherwise applies heat to the surface, moves the flame slowly over the wall, so as to melt the composition, and thereby produces a bright and hard coat resembling the glazing on stone ware.

The inventor says: I do not claim the application of an alkaline rosin solution, nor do I claim the sprinkling of pulverized substances on painted surfaces, and do not confine myself to any peculiar mode of coating the surface with rosin; but what I *claim*, and desire to secure by letters patent, is, the glazing of surfaces previously coated with rosin, or its equivalent, by a naked flame, in the manner and for the purposes described.

No. 15,553.—GAIL BORDEN, Jr.—*Improvement in Concentration of Milk*.—Patented August 19, 1856.

The nature of this invention consists in keeping the new sweet milk to be concentrated in a vacuum vessel *C*, to keep the milk out of contact with the atmospheric air; and in then concentrating said milk in a vacuum vessel *B*, to prevent incipient decomposition in the constituent elements of the milk during the process of evaporation.

The inventor says: I am well aware that sugar and various extracts have been and are now concentrated in a vacuum, under a low degree of heat, to prevent discoloration and burning.

I am also aware that scalding milk, to improve its preservative qualities, has been long known, and that it has been kept in hermetically sealed vessels. I do not claim these processes.

I am also aware that William Newton, and many others since, have obtained patents for concentrating milk by various modes of evaporation, and combining it with sugar to render it soluble and preservative. I do not claim this as my discovery or invention.

But I *claim* producing concentrated sweet milk by evaporation in vacuo, substantially as set forth, the same having no sugar or other foreign matter mixed with it.

No. 16,255.—RICHARD SHRODER, assignor to JOHN S. RUSSELL and RICHARD SHRODER and ALEXANDER ANDERSON.—*Improvement in Apparatus for Coal Oil*.—Patented December 16, 1856.

The retort *a* being filled with bituminous coal, and exposed to heat, the distillation of the coal is effected, and the vapors first pass through pipe *l m n o*, where they are condensed to a pure oil, which can be drawn off by means of faucet *r*. As the process progresses, gases begin to escape through pipes *l'* and *l''*, which, being condensed, furnish oils of inferior qualities. By this arrangement, the oils of different qualities are separated at one operation without applying the process of refining.

The inventor says: I do not claim, broadly, the extraction of oil from bituminous coal, excepting in the manner described.

But I *claim* constructing the retort, or generator, with openings at different heights, as shown, for the purpose of obtaining oil of different qualities, as set forth.

No. 15,643.—CUMMINGS CHERRY.—*Improvement in Apparatus for Distilling Crude Oil from Mineral Coal*.—Patented September 2, 1856.

The fresh coal to charge the retort is fed in through the door *g*, the coal being kept up to the height of the bottom of the head-piece *a* by the addition of fresh coal. The coke left after the extraction of the oleaginous vapor sinks to the bottom of the retort, and is drawn out by means of an iron hook from the bottom of the trough *d*; the water in the trough serves to close the lower extremity of the retort, and to condense any gas that may attempt to escape in that direction. From the head *a*, which serves as a receptacle for the oleaginous vapor, a pipe passes to a condenser, where the vapor is condensed into a crude oil.

Claim.—Providing upright retorts for the manufacture of oil from bituminous coal, with a closed top, and an opening at their bottom to be immersed in water, in the manner and for the purpose substantially as described.

No. 15,506.—LUTHER ATWOOD and WILLIAM ATWOOD.—*Improvement in Preparing Oil from Bitumens*.—Patented August 12, 1856.

Bitumens which do not yield paraffine by distillation, such as Trinidad pitch or Barbadoes tar, are freed from volatile matter by the process of distillation, and the product is distilled over again, and the distillate is placed in an agitator and mixed with sulphuric acid. After the subsidence of the acid, the oil is removed to another agitator and treated with a solution of caustic soda; when the foul soda solution has been withdrawn, and the oil has cooled, it is treated with a solution of manganate of soda. The material thus purified must be again distilled until all impure matter is separated and a pure oil is obtained.

The inventors say: We are aware that solid bitumens have been used to produce light naphthas by distillation, and the residuums for cements. Heavy acid oils have also been known as products of their decomposition.

We disclaim the production of such bodies, and confine ourselves to the use, as the basis of our manufacture, of such bitumens as do not produce paraffine, which we decompose by the aid of high temperatures conjoined with chemical agents, so as to obtain a nearly colorless and odorless oil, boiling above 600 degrees Fahrenheit, remaining fluid at 32 degrees, and having a density as high as 0.900, which the above described processes will produce.

We do not claim these processes, although they are the result of a large experience.

We *claim* the manufacture and use of the oil having the characters described from bitumens which do not yield paraffine by distillation.

No. 15,505.—LUTHER ATWOOD and WILLIAM ATWOOD.—*Improvement in the Production of Oil from Cannel Coal*.—Patented August 12, 1856.

The nature of this invention consists in modifying, by chemical processes conjoined with distilling operations, the proximate elements found in the distillates of coals and other bodies which yield paraffine, so as to produce an oleaginous body adapted in a high degree to lubricating purposes. A detailed description of this process would take up too much space to be given here.

The inventors say: We are aware that oils for lubrication have before been obtained from coals, bitumens, and schists, which afford paraffine in distillation, and they have been purified by acids and alkalis. These oils are solutions of paraffine in light oils or eupione, obtained in the first distillations, deriving their density and essential qualities from the paraffine. They do not resemble the heavier, uniform oils, which result from the decompositions and recompositions taking place in the same distillates at high temperatures, aided by chemical agents applied in large quantities at different steps in the manufacture, and we disclaim such oils.

We also disclaim mixed crude products heretofore obtained by distillation from schists, &c., and confine ourselves to a transparent, nearly colorless oil, having its boiling point above 600 degs. Fah., remaining fluid at 32 degs., and of a density above 0.864 at 60 degs., which is formed from coals, bitumens, and other bodies affording paraffine, in their treatment by the above processes.

We *claim* an improved oil, obtained by the processes substantially as set forth, from natural bodies, which, alone or when mixed, afford paraffine in destructive distillation, and which oil possesses the properties described.

No. 14,610.—AUGUSTUS A. HAYES, assignor to GEORGE ASHMAN and CHARLES PHELPS.—*Improvement in Processes for Extracting Oil from Cotton Seed*.—Patented April 8, 1856.

The inventor says: I do not claim any mode of crushing the matured seed, or expressing the oil from the kernels; but I *claim* the maturing

of the cotton seed after it has been separated from the cotton by heat artificially applied, so as to render the husk brittle and easily separable from the kernel.

No. 15,642.—CUMMINGS CHERRY.—*Improvement in Apparatus for Purifying Oil obtained from Mineral Coal.*—Patented September 2, 1856.

The crude oil is subjected to a distillation in the horizontal retort I, and as the vapor rises it is condensed in the copper heads J and L and passes into the receiver P, and thence into the rectifying chamber 2, which is furnished with trays z, on which are placed layers of unslacked lime. The vapor thence passes through a worm e in the second condenser R, and thence into cistern S, where it is mixed with diluted muriatic acid and stirred by means of a paddle Z. When the oil and the acid have been well mixed, the acid is permitted to settle down and the oil is drawn off into the cistern T, where it is well mixed with a weak solution of caustic lime by means of an agitator K; and when the oil has settled down, it is drawn off and pumped into a boiler, where it is exposed to the direct action of steam.

The inventor says: I do not claim any of the individual parts of my apparatus *per se*; but I *claim* the arrangement of the horizontal retorts I I, as combined with the copper heads J and L, of the rectifying chamber Q, of the steam conduits to the oil boiler, and of the agitating apparatus, in the manner and for the purposes described.

No. 15,644.—CUMMINGS CHERRY.—*Improvement in the Preparation of Drying Oil from Oils Extracted from Bituminous Minerals.*—Patented September 2, 1856.

The nature of this invention consists in boiling purified bituminous oil with litharge and common rosin, by which it acquires the requisite drying qualities which adapt it for the use in painting.

The inventor says: I do not claim the admixture of litharge or rosin to vegetable or animal oils in the manufacture of dressing oil.

But I *claim* preparing the oil, and for the purpose specified.

No. 15,418.—SAMUEL DOWNER and JOSHUA MERRITT.—*Improvement in Pyrogenous Lubricating Oils.*—Patented July 29, 1856.

The nature of this invention consists in dissolving caoutchouc, gutta percha, or bitumens, in the oils used for lubricating purposes, by which they assume the properties of fixed oils, and are not liable to evaporate when exposed to a current of air.

The inventors say: We disclaim the use of all mixtures in which caoutchouc is diffused without its chemical state being altered; and we confine the application of our discovery to the improvement of the qualities of the lubricating oils from coals, coal tar, and bitumens solely. Our improvement of these oils depends upon the perfect solution in

them of small portions of bitumens of the elastic kind, caoutchouc, or gutta percha, so as to prevent them from passing off in currents of air at common temperatures without diminishing their lubricating qualities in the slightest degree.

What we *claim* is the improvement of dissolving elastic bitumens, caoutchouc, or gutta percha, in the pyrogenic oils used as lubricators, substantially as set forth.

No. 14,042.—PHILO MARSH, assignor to Himself and SHUBAEL W. HOWLAND.—*Improvement in Treating Oils.*—Patented January 1, 1856.

The oil is introduced into wooden or lead-lined vessels, in which it can be boiled by means of steam-pipes running through them. It is mixed in these vessels with crude pyroligneous acid, in the proportion of a hundred gallons of oil to fifty gallons of crude pyroligneous acid, which latter has been obtained by the destructive distillation of wood. When the oil has been boiled with the pyroligneous acid for about two hours, it is left to cool off; and the pyroligneous acid, being heavier than the oil, settles to the bottom, and can be drawn off for further use.

Claim.—I am aware that acids have heretofore been used for clarifying oils; but my process does not rest in the use of acids alone, nor do I claim such.

What I *claim* for the purpose of defecating oil, is the employment, in manner substantially as above described, of the pyroligneic constituents of crude pyroligneous acid, except the acetic acid.

No. 15,243.—ANDREW LANERGAN.—*Improvement in Disinfecting Pastilles.*—Patented July 1, 1856.

This invention has for its object the manufacture of a permanent and portable form of solid matter, which may be ignited and applied to disinfect the air. The compound is made of—

- 24 ounces of nitrate of baryta.
- 4 ounces of chlorate of potash.
- 6 ounces of oxalate of soda.
- 4 ounces of chloride of barium.
- 1 ounce of oxyd of manganese.
- 2 ounces of shellac.
- 9 ounces of charcoal.

The whole being moistened with a solution of gum alcohol and water, and thoroughly mixed together, is to be moulded into proper forms.

Claim.—A disinfecting pastile or composition, made so as to be capable of being ignited and burned, and while burning to evolve chlorine or hydro-chloric acid gas, either in a free state or so combined or mixed with one or more other gases as to be capable of acting as a disinfecting agent.

No. 15,972.—JOHN ANTHONY GAUSSARDIA.—*Method of Preserving Dead Bodies.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—Injecting the body with a mixture of arsenical pyroligneous acid, and then charging it with a current of electricity, for the purposes described, and then filling the coffin in which the body is placed, and which is afterwards hermetically sealed, with an alcoholic mixture of arsenic, together with the oils of cicuta and caryophyllus aromaticus, substantially as described.

No. 14,464.—RICHARD McMULLIN.—*Improvement in Processes for Making Elastic Rubber Cloth.*—Patented March 18, 1856.

The object of this invention is to supersede the necessity of cutting up the sheet rubber into strips, thereby obviating waste of material, economizing time and labor, and producing a fabric of greater beauty, strength, elasticity, and durability from a less quantity of rubber.

Claim.—Rendering vulcanized India-rubber, for the manufacture of shirred goods, adhesive by boiling it in a solution of potash, to remove the sulphur from its surface, thus fitting the sheet of rubber to receive a coat of cement, whereby it is caused to adhere firmly to the cloth or other fabric between which it is placed, in the manner and for the purposes, substantially as herein set forth.

No. 14,457.—EDWARD R. KERNAN.—*Improvement in Processes for Making Transparent Window Shades.*—Patented March 18, 1856.

The material which forms the ground of the fabric is first soaked in a mordant composed of starch and alum water. It is then dried and rolled up upon rollers to make it even and smooth. The paint laid on the cloth is made of the following ingredients:

Chinese Prussian blue.....	2 ounces.
Chrome green.....	6 pounds.
Acetate of lead.....	$\frac{1}{2}$ pound.
Balsam of fir.....	2 ounces.
Copal varnish (No. 1).....	$\frac{1}{2}$ gallon.

The engraving represents the machine used for saturating the material with the paint. A is the paint box; C C are rollers which press the paint into the cloth; D D D D are scrapers.

Claim.—The making of flexible or pliable and semi-transparent oil-cloth for window shades, and other similar purposes, by a series of processes such as are herein described and set forth.

No. 15,950.—TONY PETITJEAN.—*Improvement in Processes for Silvering Mirrors.*—Patented October 21, 1856.

A detailed description of this invention would take up too much space to be given here; the main feature of it will be understood by reference to the claim.

Claim.—The employment of tartaric acid with ammoniacal nitrate of silver, in any manner substantially as described, for the silvering of glass.

No. 15,542.—WILHELM ZIERVOGEL.—*Improvement in Processes for Separating Silver from the Ore.*—Patented August 12, 1856.

The ores are heated in a calcining furnace containing two hearths *b* and *c*, both communicating by an opening *a*, which can be closed and opened, and through which the partly calcined ores can be let down to the lower hearth, where they are exposed to the full heat of the fire, the atmospheric air entering constantly through the doors *i*. When the calcination is finished, the ore is extracted from the furnace; and when cooled it is placed into strainers, and water is guided on to it. The liquid which passes through the filter contains sulphates of silver, of copper, and perhaps other metals; and the metallic silver is formed by placing pieces of copper into said solution, which decompose the sulphate of silver.

Claim.—The application of water or a solution of sulphate of copper slightly impregnated with sulphuric acid instead of lead, quicksilver or salt, hitherto used for this purpose, to the process of separating silver from copper and other ores, rendering thereby this separation easier, shorter, less expensive, and not noxious to the health of the operator.

No. 16,179.—ELIE JOSEPH HAINAUT.—*Process for Mashing Grain.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The described process of mashing the grain or grains enumerated, either separately or combined, as set forth, for the triple purpose of obtaining alcohol, yeast designed to be dried and pressed, and a mash sediment suitable for feeding cattle; the principal feature of which process consists in heating the said grain or grains in the mace-rator by steam applied externally, in the manner described, instead of injecting the steam directly into the mass, as has been heretofore the practice.

No. 15,953.—JOSEPH POLEUX.—*Improvement in the Process of Coating Metals with Metals.*—Patented October 21, 1856.

When the articles to be cleansed are immersed in the acid, small particles of spelter are added thereto. The acid acts at once and rapidly on the spelter, holds in solution what it dissolves, and precipitates

a film of it on the minutest portions of the iron surfaces the instant

standing until the precipitate is all deposited at the bottom of the vat,

a film of it on the minutest portions of the iron surfaces the instant the acid has cleansed them; which film protects such portions of the iron from any further action of the acid while remaining in it.

Claim.—In the process of coating iron ware with metallic alloys, the employment of muriatic, nitric, or sulphuric acid of the ordinary degrees of concentration in commerce, viz: muriatic of 18 deg. Baumé, nitric 38 deg., and sulphuric 66 deg., without diluting them, embracing the solution of the spelter in cleansing acid in the proportion and manner and for the purposes specified; and the passing the cleansed articles directly into the metallic bath without any intermediate treatment whatever.

No. 14,320.—WILLIAM LINCOLN.—*Process of Painting or Varnishing Woven Wire.*—Patented February 26, 1856.

This process gives the article a darker color on one side than what it has on the other, so as to improve the finish of the article.

Claim.—Exposing the wire-work cover or article after having been dipped in the varnish to a powerful blast, or current of air so brought to bear upon it as to pass through and clear its meshes of the liquid varnish, and pile it more on one side of each side of the wires than on the opposite side thereof, in the manner and so as to produce an effect as stated.

No. 15,594.—CHAS. MOORE.—*Improvement in the Process of Preparing Linseed, &c., for Pressing, in Extracting Oil.*—Patented August 19, 1856.

The nature of this invention consists in pressing the pulp of prepared linseed or other seeds into cakes by means of moulds and formers, as represented at O and P, taking care not to press it so hard as to force out the oil, but merely pack it into cakes and make it occupy a smaller space so as to put a greater quantity into a press for one operation, by which a considerable saving in time is effected. By this arrangement, cotton sail-duck bags can be substituted for knit woollen bags, which also affords great saving in the material.

Claim.—The process of extracting oils and other liquids from the pulp of prepared or ground linseed or other seeds or substances. Forming it or them into cakes, by moulding and partially pressing or packing it or them, substantially as described, for the purposes set forth.

No. 16,189.—OBADIAH RICH.—*Process of preparing Tannate of Lime.*—Patented December 9, 1856.—England, December 18, 1854.

To tannate of soda in solution is added a sufficient quantity of chloride of calcium to combine with the tannin; thus chloride of sodium is formed in solution, while tannate of lime is precipitated. After

standing until the precipitate is all deposited at the bottom of the vat, the solution of chloride of sodium is drawn off and the tannate of lime is taken out. It is now to be well washed, dried, and pulverized, and is ready for transportation.

Claim.—The preparation of the tannate of lime, in the manner set forth, for manufacturing or commercial purposes.

No. 15,664.—JOSEPH MCCrackEN.—*Improved Process for Stiffening Hat Bodies.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim.

Claim.—The process of stiffening wool hat bodies by acidulating the hat bodies before applying the stiffening, as a means of graduating and controlling the quantity and depth to which the stiffener can penetrate the body of the felt, in combination with a pearlash solution of shellac for stiffening the "tip" or "crown," and a pearlash and sal soda, combined with a solution of shellac, for stiffening the "brim," substantially as described, and for the purposes set forth.

No. 16,111.—CHARLES BICKELL.—*Process of Treating Feldspar for Manure.*—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The decomposing of feldspar by heating it with lime and phosphate of lime, for the purpose of obtaining potash or soda, either in the caustic or carbonated state, or for the purpose of obtaining a manure, in the manner substantially as described.

No. 15,598.—WILLIAM T. CLOUGH.—*Improvement in Apparatus for Evaporating Salt.*—Patented August 26, 1856.

The metal chambers A being filled with brine, the heated air passes from the grate into the space E, heats the chambers A on the top, and escapes through the flue I. The air in the flue B also becomes heated, and passes through passages c into the chambers A, and thence through the flues F and G to the smoke-stack I, the draught of which has a tendency to draw the hot air together with the steam evaporated from the saline mixture through the flue G to the stack. It is by this arrangement the chambers A containing the saline mixture are heated from above, instead of being heated from below; no incrustation can be formed, but the salt as it crystallizes drops to the bottom, and eventually can be raked into the aprons H.

Claim.—I do not claim the individual parts of the above described apparatus; but I claim the apron H, chamber B, and escape flues F F¹, arranged and combined with the pan A A¹ A², in the manner and for the purpose specified.

No. 15,411.—JOHN F. BOYNTON.—*Improvement in Apparatus for Solar Salt Evaporation*.—Patented July 29, 1856.

In the process of solar evaporation the covers B have to be removed from the vats A in fair weather, and then assume the position as indicated in the illustration. The space then occupied by the covers B was lost heretofore; but these covers can also be used for evaporation by conducting the salt water on to them through the troughs c, and letting it flow down into the vats A, during which time a part of the water will evaporate, and the salt will be deposited on the covers B.

Claim.—The use and application of the covers B of the salt vats A for the evaporation of salt water by solar influence, in the manner specified.

No. 14,813.—BENJAMIN L. HOOD and E. P. MONROE.—*Improvement in Salt Evaporators*.—Patented May 6, 1856.

The liquid to be evaporated is introduced through pipe R, and passes to pan E. The fire-box N is run into the cylinder A, and the latter rotated. The heat passes as shown by the dotted arrows. The liquid, in passing through the inner cylinder P, is, to some extent, evaporated thereby before passing to the pan E, where the outer surface of the outer cylinder is constantly effecting evaporation from the portion of the liquid at the top of said pan; the residuum of each partial evaporation effected by this cylinder, being of greater specific gravity than the body of the liquid at the surface of the said pan, at once sinks to such a position as will preserve it in equilibrio, the lighter portion of the liquid remaining at the top of the pan, thus causing the weaker portion of the liquid to be at all times presented to the evaporating surface. In this manner the operation will continue until the desired salt is obtained in the bottom of pan E.

Claim.—The construction of an evaporating apparatus of two concentric rotary cylinders, supplied with liquid heated, and operating as substantially as set forth, to effect evaporation from the weaker portion of the liquid and economize fuel.

No. 15,884.—JAMES L. HUMPHREY.—*Improvement in Salt Evaporators*.—Patented October 14, 1856.

By the arrangement of the flues D, blower F, and chimney H, the products of combustion from the furnace B are drawn through the flues D below the surface of the liquid and caused to heat it and produce evaporation, and are then forced back again over its surface, where they produce further evaporation, and charge themselves with the evaporated moisture and carry the same away to the chimney. The scraper K can be drawn along the flues by means of the rods d to remove the crystals deposited upon said flues.

Claim.—1st. The arrangement of the furnace, the closed evaporating vessel, the flues D D, the blower F, and the chimney H, whereby the products of combustion are drawn through the evaporating

vessel below the surface of the liquid to produce evaporation of heat, and afterwards driven in the opposite direction over the surface of the liquid to produce further evaporation and carry off the evaporation to the chimney, substantially as described.

2d. The scraper K fitted to the flues and pipes which pass through the liquid in the evaporating vessel, to operate substantially as set forth.

No. 15,975.—JOHN R. HOPKINS.—*Improvement in Evaporators for Salts*.—Patented October 28, 1856.

In operating the apparatus, as represented in the engraving, the vat P, boiler A, and connecting pipes are charged with the solution, and a fire being kindled in the boiler A, the solution contained in said boiler becomes heated, and a current is thereby produced flowing through the boiler, pipes, and upper division of the vat P. This current is regulated by the stop-cocks b and c in the pipes B and C. The solvent capacity of the solution forming this current is alternately increased by heat while passing through the boiler, and diminished while passing through the upper division of the vat P, where its volume is expanded over a large surface; and the steam generated in the boiler is allowed to escape into the atmosphere, where its salts are precipitated and gathered by the converging hopper D.

Claim.—The apparatus for the evaporation of solutions whose solvent capacities are increased by application of heat, and diminished by cooling, consisting of a close boiler in combination with one or more vats or reservoirs, arranged substantially in the manner described.

No. 15,432.—CAMPBELL MORFITT.—*Improvement in Soap-Boiling Apparatus*.—Patented July 29, 1856.

The shaft C is mounted in a metallic socket leading to the exhaust pipe; it is provided with tubular arms and coils r and s, through which the steam passes from the hollow part of the shaft C, and which at the same time serve as a stirring apparatus. The steam escapes through the hollow part at the lower end of shaft C.

Claim.—The combination of the hollow shaft and tubular arms as a mixing, stirring, and heating twirl for dry steam, either in open or closed vessels, as described.

No. 15,980.—GEORGE C. LAWRENCE.—*Improvement in Soap Mixtures*.—Patented October 28, 1856.

Common soap is first boiled in a solution of borax, and when brought to a proper consistence, castor oil and flour are added to the mixture; when these parts are well incorporated, they are cooled, and when stiffened, borax in a pulverized state is added.

The proportions are 100 pounds of soap, 24 pounds of borax, 5 pounds of flour.

moulds in turn under the faucet of the cooler. When the moulds are

The proportions are 100 pounds of soap, 24 pounds of borax, 5 pounds of castor oil, and two pounds of flour.

Claim.—The combination of the soap compound described, with borax in a pulverized or granular state.

No. 15,951.—AUGUSTUS PFALTZ.—*Improvement in Rosin Soaps.*—Patented October 21, 1856.

For every pound of rosin one pint of a solution of soda may be taken; the rosin being melted, the solution of soda is added, and the whole well mixed by the agitator. Full steam being applied, the mass is agitated and the water evaporated, until a piece on cooling becomes solid.

The inventor says: I do not claim rosin soap either alone or mixed with other kinds of soap. I do not claim rosin soap as ordinarily made, by using as much alkali as will dissolve the rosin; nor does my claim extend to any of the compounds of rosin and alkali, which attract moisture.

I claim the described mode of producing a solid soap from rosin, viz: by the use, as specified, of an excess of soda or carbonate of soda, so as to form alkaline salts, with the pinic and sylvic acids, which compounds are rendered nearly anhydrous.

No. 15,838.—J. F. BOYNTON.—*Improvement in Soda Fountains.*—Patented October 7, 1856.

The generator being connected with the fountain by an attachment at L, the supercarbonate of soda, with the requisite quantity of water, is introduced through the opening M; the acid is introduced through the tube B into the vessel D. By turning the tube g, by means of a handle attached to the upper end of said tube, the plunger E is caused to descend a short distance into the chamber D, and a portion of the acid which is thereby displaced flows over the outside of the vessel down upon the carbonate beneath. This operation may be repeated until the gas is all liberated from the carbonate beneath, when the drip-valve b is opened to permit the escape of the acid which still remains in the vessel.

Claim.—1st. The described arrangement of the plunger E and vessel D, or any other arrangement substantially equivalent thereto, whereby the acid may be measured and delivered to the other ingredients in determinate quantities, as set forth.

2d. The spring drip-valve b, or its equivalent, whereby the vessel D is entirely emptied of acid after a charge is worked off, as set forth.

No. 16,051.—GUSTAVUS FINCKEN.—*Sugar Draining Apparatus.*—Patented November 11, 1856.

The carriage containing the moulds c is wheeled to the cooler from whence the moulds are to be filled, and moved to bring each of the

moulds in turn under the faucet of the cooler. When the moulds are all filled, the carriage is removed to some convenient locality; and when the sugar in the moulds has sufficiently crystallized, the crank on each shaft E is turned, and the stops h are drawn from the moulds to allow the sirup to run from the moulds and to collect in the vessel A.

Claim.—Employment for the reception of the moulds of a wheel-carriage composed of a box or vessel A, with seats d d to receive the moulds and a frame D to keep them upright, and with stoppers h h so applied within the box or vessel as to enable several to be inserted in or withdrawn from their respective moulds simultaneously by a crank, or its equivalent, at one end or side of the carriage, as described.

No. 15,694.—SAMUEL H. GILMAN.—*Improvement in Pans for Evaporating Sugar.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The evaporator formed by the combination of a train of open boilers N O P Q—the boiler Q to receive the first, and the boiler N to receive the last fire; and each of the boilers in succession presenting an extent of surface to the fire in the reverse ratio of the intensity of the fire, as well as of its (the boiler's) cubic capacity, constructed and arranged substantially as described.

Also, the construction and use of a flue x, formed by a series of open boilers N O P Q, and being in a series of sections of its length, divided longitudinally and vertically by water-legs or strata of juice into two or more flues or spaces; the number of flues increasing from one section to the next, as the distance from the furnace increases, and the number of sections into which it is so divided corresponding to the number of boilers in the series, and each section being shorter than the boiler in which it is placed, so as to leave a space between each section where the flue x is undivided in its transverse section, substantially as described.

No. 14,717.—SAMUEL H. GILMAN.—*Improvement in Sugar Evaporators.*—Patented April 22, 1856.

The pipes c and b form an annular steam passage S, through which the steam passes, being condensed on its way by the colder temperature of the liquid in the pan, and falling in the form of water into the water chamber q.

Whenever the greater pressure in the steam chamber P forces the water in its reservoir m through the syphon pipe d d¹ d², the action of discharging said water into the main condensed water pipe n produces a tendency to a vacuum in the annular space, and thus tends to draw from the condensed water chamber q any water that it may contain; and in like manner, if the discharge from the condensed water chamber q through the annular space should be the most rapid, its effect in passing the end of the syphon leg d would be to form a partial

vacuum in the syphon pipe, and thus draw the water from reservoir *m* in the steam chamber.

Claim.—1st. The treble bottom *g h i*, forming the steam chamber *p* below, and the condensed water chamber *q* above, in connexion with the steam pipes *c*, open at both ends, and fixed into the division plate *h*, and with the evaporating pipes *b* closed at the top and open at the bottom, and fixed into the tube-plate *g*, all combined and for the purposes set forth.

2d. The compensating condensed water syphon pipe *d d' d''*, with one leg *d'* starting from the reservoir *m* in the steam chamber, and passing up through the division *h* and tube-plate *g* into the pan to about one-half the height of the evaporating pipes *b*, then turning down through the tube-plate *g*, and in the same vertical plane with and terminating in and near the lower end of the condensed water pipe *n* of the condensed water chamber *q*.

No. 15,421.—SAMUEL H. GILMAN.—*Improvement in Sugar Evaporators.*—Patented July 29, 1856.

The nature of this invention consists in the arrangement of a train of open kettles *L M N O R*, set lengthwise in a long kettle *B C*, which is thus divided into two side kettles, and which by a channel way (figure 3) that leads from the division *B* into the division *C*, underlies the train, and forms the sides and bottom of the flues *A*, passing direct from the furnace under the train of kettles, and by the side kettles *B* and *C* and the vertical juice space *S*, and returning through the flues *D* and *E*, and ultimately escaping through the main flue *K* into the chimney. The kettle *C* (figure 2) communicates by a pipe *S* with the central kettle *O* next to the battery, thus filling this kettle hydrostatically from a large body of assimilated juice. The kettles are provided with troughs *I* and *J*, which catch the overflow caused by the brushing of said kettles, and lead the same into the troughs *F* and *G*.

Claim.—The combination of the long kettle *B C* with the train of kettles *L M N O R* and pipe *S*, the serpentine channel *T U V*, and the fire-flues *A D E K*, in the manner and for the purposes specified.

2d. The combination of the troughs *F G H I* and *J* with the train of kettles *L M N O R* and the long kettle *B C*, in the manner and for the purposes specified.

No. 14,129.—ARI DAVIS and ASAHIEL DAVIS and CHARLES CUNNINGHAM, assignors to ALFRED W. ADAMS, JOSIAH B. RICHARDSON, and GEORGE W. PETTES, and SHERBURNE T. SANBORN.—*Improvement in Hydro-Carbon Vapor Apparatus.*—Patented January 15, 1856.

Hydro-chloric acid is placed in the generator *G*¹, and hydro-carbon is placed upon its surface, as seen at *Y*; the basket *C* is then depressed by means of rod *D*, and the zinc is introduced into the basket; it is then drawn up into the proper position, and the gas-holder *B* inserted. The gas begins to form, and as it passes up through the hydro-carbon

it becomes sufficiently impregnated therewith to burn with a luminous flame, the heat generated by the action of the materials raising the hydro-carbon to the temperature required.

Claim.—Employing the heat set free by the generation of the hydrogen to heat the hydro-carbon used to impregnate the nascent gas, as set forth.

No. 14,135.—DAVID H. KENNEDY.—*Improvement in the Arrangement of Tan Vats.*—Patented January 22, 1856.

The tanning liquor is conducted through pipe *K* and branch pipes *M* to the vats of each series, and runs from vat to vat, entering at the bottom through branch pipes *L*, and passing out at the top of each until it reaches the last, where it is discharged; the branch tubes *N* communicate through pipe *P* with the top of one vat and the bottom of the other. Stop-cocks are placed in the pipes *M* between the branch tubes; the branch tubes *N* are for the purpose of allowing the liquor to flow out of one vat into the branch pipe, to be conveyed past one or more vats of the series, if desired, and then back into the succeeding vats, to flow on as if it had not thus been interrupted; and in this case the cock of the branch pipe immediately back of the long egress tube *N* of the vat, and that of the branch pipe immediately in front of the ingress tube of the vat, into which the liquor is to be run, are open; all the intermediate cocks, except those in the tubes from the vat out of which the liquor flows, and to the vat into which it is conducted, being stopped.

Claim.—What I claim as my invention, and desire to secure by letters patent, is the arrangement of a tank, the tan vats, the main supply pipes and their branches, substantially as herein set forth whereby the tanning liquor may be caused to flow regularly through a series of vats, from one to another, without the aid of pumps, and any one or more of the vats may be insulated from the system of circulation, for any required length of time, without impeding a regular circulation of the tanning liquor through the rest.

No. 15,448.—JOSEPH WHARTON.—*Improvement in Apparatus for Purifying White Oxyde of Zinc.*—Patented July 29, 1856.

The nature of this improvement consists in conducting the products of combustion from the furnace *A* through flues *B* and *C* into a vessel *D D'* provided with helical or screw-like passages, having its bottom covered with water. On the surface of this water, the products of combustion from the furnaces are forced to impinge a number of times in succession by reason of said helical passages. The impurities are caught by the water and sink to the bottom, and the white oxyde of zinc passes on, and eventually issues pure at the other extremity of the chamber.

Claim.—Cooling white oxyde of zinc, and separating it from impurities, by causing the products of the furnaces to impinge successively upon a surface of water, in the manner substantially as described.

V.—CALORIFICS.

No. 15,155.—JESSE D. WHELOCK.—*Improvement in Coal-Heating Bakers.*—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The use of the descending flue or tube E in two parts, the one sliding into the other, so that the same can be lengthened or shortened at pleasure for the purpose of passing off the fumes and smoke of the coal burned in the chamber F, in combination with the said chamber F and the perforated bottom H and top D for baking purposes, substantially as shown.

No. 14,386.—LAFAYETTE BLAIR.—*Improved Hot-Blast Apparatus.*—Patented March 11, 1856.

The heated gases are received into the tunnels *b*, and the cold blast through the tube *f*. The cold blast will be diverted in its course by the division plates *d* in the direction of the arrows, as represented in fig. 2; and from the straight form of the tunnels the cleaning is easily accomplished.

Claim.—The tunnels *b*, diaphragms *h i j k l* and *m*, division plate *d*, and casing *e*, arranged and combined as herein described and for the purpose specified.

No. 14,875.—OLIVER L. LAWSON.—*Improvement in Blow-Pipes.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—In combination with the adjustable valve 1 the cylinder, the adjustable cock E in the tube D, so that a regulated blast may be had, whether sharp or mild, substantially in the manner and for the purpose set forth.

No. 15,774.—STEWART B. PALMER.—*Improvement in Blow-Pipes.*—Patented September 23, 1856.

The piston of the pump I is operated by a treadle connected with the rod S, and the wind is forced into the chest E and through the pipe G into chest F, and thence through pipe O into the nozzle P—the chest F serving as a reservoir, from which a continuous stream, equal in velocity, passes through pipe O.

The inventor says: I do not claim separately the pump or the mode of operating the same nor do I claim the arrangement of the nozzle; for these have been used in similar or analogous devices.

But I *claim* the two wind-chests E F, connected by the pipe G, provided with the faucet H, when said chests, thus connected, are arranged and used in connexion with the pump I, reservoir M, wick tubes N N, and nozzle P connected with the pipe O, substantially as described for the purpose specified.

No. 14,403.—HORATIO N. MACOMBER.—*Improved Spirit Blow-Pipe.*—Patented March 11, 1856.

Immediately below the main jet-pipe is another jet-pipe *b*, (the lighting jet-pipe,) with an enlarged mouth, so that the vapor entering the said pipe *b* from the vapor pipe E (which latter connects with the vessel containing the vapor) may be consumed with such little velocity at the discharging mouth, that the flame of said vapor will rise into the current flowing out of the jet *a*. Thus the powerful current of vapor will be maintained, inflamed by means of the said lighting jet.

Claim.—Combining with the vapor jet *a* of a spirit blow-pipe an air jet *f* and a mouth-tube *g*, so applied to said vapor jet that air may be blown from the lungs of a person directly into the inflamed current of said vapor jet, in order to control, elongate, or reduce said current, and increase its heating powers, as specified.

I also claim arranging the air jet concentrically within the vapor jet, in order that the effluent current of air may pass into a hollow tube or stream of vapor and flame.

I also claim combining with each main jet tube a lighting vapor jet tube, arranged so as to operate therewith as specified.

No. 15,633.—JOHN LIBLONG assignor to EDWARD BROWN and JAMES R. CASE.—*Improved Device for Preventing Liquids from Boiling over the Sides of Vessels.*—Patented August 26, 1856.

When the liquid in the stew-pan A rises, it will pass through the opening *d*, in the top of the cap B, and will fall down on the outer side of the cap, and pass again into the stew-pan through spaces *e*, between the lower edge of the cap and the stew-pan. If the liquid rises rapidly, the deflecting plate C directs it downward as the liquid will strike against it. The flanch *c* directs the liquid outward, and towards the edge of the cap.

Claim.—Cap B placed within the vessel A, and constructed and arranged substantially as shown and described, for the purpose set forth.

No. 14,271.—HENRY NEWSHAM.—*Improvement in Caldrons.*—Patented February 12, 1856.

The water in the caldron A almost surrounds the fire arranged below the arch B, and thus heat is economized.

Claim.—Constructing a caldron by giving the bottom thereof an arched form, in the manner described, and for the purposes specified.

No. 14,074.—ABNER WHITELEY.—*Improvement in Candle-Sticks*.—Patented January 8, 1856.

When the candle has burned to an end in the socket *e*, the cup *D* holds the grease which has dropped into it while the candle was burning down, until the flame begins to melt it, when it will flow into socket *e*, through the openings *g*, and to the flame to be burned.

When a new candle is inserted into the candle-stick, (warmed by the burning out of the previous candle,) the slide *C* can be drawn up (see fig. 3) so as to close up the openings *g* and to support the candle; when congealed, the candle is firmly held by the socket *e*, and the slide *C* can be shoved back.

The inventor says: I do not claim a cup or bowl, having three wire springs extending up from the bottom of the same; or a set of metal springs extending up to support the candle-end.

But, 1st. I claim the socket *e e*, having the openings *g g*, as described, and for the purpose set forth.

2d. I claim the combination of the socket *e e*, openings *g g*, and slide *C C*, as described, and for the purposes set forth.

No. 14,641.—THOMAS PRIESTLEY, assignor to DANIEL HOLDEN.—*Improvement in Oil Cans*.—Patented April 8, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—Combining with the oil vessel *A*, and arranging with respect to the discharging tube *B* thereof, a weight *C*, whereby, when said oil vessel is overset, the gravitating power of the weight may move the discharge tube into a position from whence no fluid or oil may escape from it.

I also claim arranging the air inlet-tube *D*, so that its openings into the air vessel, and its openings *c* for the reception of air, shall be on opposite sides of the axis of the vessel, or with respect to the weight and oil discharge tube, essentially as specified.

No. 15,986.—JAMES M. THOMPSON.—*Improvement in Oil Cans*.—Patented October 28, 1856.

The reservoir *A* is filled with oil at the cup *e* by unscrewing the spout *E*; and when the can is inverted, the oil will be discharged through the spout *E*, air passing into the chamber through the tube *D*, and thence into tube *C*, to fill the space left by the escape of the oil through the spout.

The inventor says: I do not claim arranging a chamber at or under the bottom of a can, and having a tube to extend therefrom through the oil can and into its spout, the said chamber having an air-tube passing transversely into it, or instead thereof, being connected with the oil reservoir and the tube by valve openings provided with valves,

as these contrivances or oil cans have had no drip or catching cup or recess to catch the oil which may flow down outside of the discharging spout; whereas my improved oil can is provided with such cup, and it makes an element or part of its combination.

Nor do I claim that combination and arrangement of a catching cup or recess, a chamber and, two tubes, with the oil reservoir and discharging spout of an oil can, as the whole is explained and represented in letters patent granted to me.

But I claim my described improved arrangement of oil-catching cup or recess *e*, tube *D*, chamber *B*, tube *C*, reservoir *A*, and discharge tube *E*, the same being productive of advantages, as stated.

No. 15,206.—SETH E. WINSLOW.—*Improvement in Safety Cans for Burning Fluids*.—Patented June 24 1856.

The conical form of the strainer for excluding the flame from the vessel allows the lamp to be filled easily, and its being placed above the fluid prevents chemical corrosion from taking place.

The inventor says: I do not claim the wire-cloth strainer placed at the mouth or opening of cans, or at the bottom of the spout of cans, or a long tube of wire cloth extending to the bottom of a lamp, or as forming part of said tube, for this use of it has been made by others.

But I claim the conical form of the wire-cloth strainer *A*, with a small aperture *B* at its apex or side, which may be adapted to the lower part of the lamp tops and to cans; and I do hereby disclaim any application of said conical strainer to the caps of a lamp with an orifice in said cap through which the lamp may be filled.

No. 14,619.—SANDFORD S. PERRY.—*Improvement in Charring Wood*.—Patented April 8, 1856.

The kiln *D* is constructed so as to be as nearly air-tight as possible. The furnace *A* contains iron pipes for the purpose of heating the air to be introduced into the kiln. The cold air is exhausted from the bottom of the kiln either by means of the fan *E* or the chimney *G*.

As soon as the process of charring the wood by means of the heated air is completed, the apertures leading from the flue into the kiln and from the kiln into the fan are to be stopped until the kiln is entirely cooled.

Claim.—The process or mode of charring wood, or, as it is commonly called, "burning charcoal," by the application of hot or heated air to the wood to be charred, as above described.

No. 15,726.—WILLIAM BROWNELL.—*Improved Chimney Cap*.—Patented September 16, 1856.

The shaft *A* is contracted at its upper end so as to form a conical top *B*, which is surrounded by another conical cap *C*, which is covered

No. 14,171.—CHARLES F. THOMAS.—*Improved Chimney Cowl*.—Pat-

and provided with a number of ventilating holes *b*, arranged in such a manner that the water passing through these holes cannot enter the conical top B. Another series of holes *a* is arranged in the bottom of the cap C, through which the air can pass up and down, and which allows any water coming in through the apertures *b* to escape.

Claim.—The described construction and arrangement of the ventilator, for the purposes specified.

No. 15,536.—GEORGE W. THATCHER.—*Improved Chimney Cowl.*—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The introduction of one or more central tubes, with their caps or frustums enclosed within an outer tube with its cap or frustum, and extending downwards within the outer tube, so as to increase the upward draught and afford protection from winds and storms.

No. 15,916.—THOMAS W. CHATFIELD.—*Improved Chimney Cowl.*—Patented October 14, 1856.

The nature of this invention consists in the arrangement of two inverted funnels B and D and a short cylinder C, in place of ordinary cones, for the purpose of creating a more powerful current of air between the body of the ventilator and the inverted funnels than can be effected by the use of ventilators constructed according to the various other modes now in use.

The inventor says: I am aware that a patent was granted to Braer & Simonds, June 13, 1854, as also one patent to F. Emerson, July 3, 1847, as well as other patents and rejected applications, wherein the use of cones is described, which I do not claim.

But I *claim* the improvements I have made upon said patents and rejected applications, by the use of two inverted funnels B B and D D, together with the short cylinder C C, arranged as described.

No. 15,584.—CHARLES H. WATKINS.—*Improved Self-Clearing Chimney Cowl.*—Patented August 19, 1856.

The revolving top B resting on spindle C¹ is turned by action of the wind on vane E, and causes the parts C C of the bolted legs H H to rub against the rounded part of the revolving top B and keep it clear of soot or other substances that may collect inside the revolving top B.

Claim.—One or more legs H H, having the circle of the revolving top B, and connected with a common spindle C¹, as described and set forth.

No. 14,171.—CHARLES F. THOMAS.—*Improved Chimney Cows.*—Patented January 29, 1856.

The object of the first part of the claim is to divide the effluent current of smoke into two currents, so that when part of the smoke is suddenly blown back into the cowl it will pass out of the protected half of the open end of the cowl. The object of the second part of the claim is to maintain the cowl more steady. The object of the last part of the claim is to strengthen the wing and prevent it from being bent by the wind.

The inventor says: I do not claim a turning cowl, applied to the top of a chimney or flue and having a wind-vane attached to it; but I *claim* arranging the vane so that it shall extend directly across the discharging aperture of the cowl or ventilator and divide such aperture, in manner and for the purpose hereinbefore explained.

Also, constructing the vane of two wings flaring from one another as they extend from the cowl, as specified, the same being for the object or objects as hereinbefore stated.

Also, arranging each of the wings so that it shall extend down below the discharging aperture of the cowl, and from and around the external surface of the cowl, substantially as described.

No. 16,246.—PATRICK MIHAN.—*Improved Chimney Cows.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

The inventor says: I do not claim surrounding the main flue of a chimney with an air flue, whereby air may be thrown upward between the two, and over or above the discharging or upper end of the smoke flue, in order to promote the draught. Nor do I claim arranging an inverted cone in or above the discharging end of a smoke flue.

I *claim* the arrangement of hollow frusta B C with respect to each other a smoke flue A, and an inverted cone deflector D, placed at and in the upper end of said smoke flue A, as set forth.

I also claim arranging on the flat top surface of the deflector D, as described, an enclosing deflecting guard E and a discharge spout F, the same being disposed so as not only to gather the water which may fall on the top of the cone and discharge it in one stream upon the inner surface of the upper external frustum B, but so that the guard may serve to deflect, as described, a current of air, which may strike on the top of the cone D.

I do not claim providing a ventilator or chimney cap, with a cap plate, elevated on columns or rods extending above the rest of the cap or ventilator.

I claim providing the cap plate G, when it is directly over the conical deflector, with an opening, while the remainder of the cap plate may extend over the opening between the cone D and the outer cone B, as described, the same being to allow air to pass through the cap plate and impinge on the top surface of the cone D, in manner and for the purpose as described.

No. 15,458.—THEODORE F. ENGLEBRECHT, assignor to himself and THOMAS C. NYE.—*Improvement in Chimney Dampers*.—Patented July 29, 1856.

The nature of this invention consists in suspending conical deflectors centrally in the perforations of perforated dampers in fire-places, which will cause a greater share of the heat from the gaseous products to be deflected into the room than would be the case by not using said deflectors.

Claim.—In perforated dampers for anthracite coal grates, the supplemental perforations consisting of the suspended conical deflectors, as set forth.

No. 15,645.—HEZEKIAH CHASE.—*Improved Apparatus for arresting Carbon in Chimneys*.—Patented September 2, 1856.

The pipe D being filled with water from a reservoir, said water passes through box E, and eventually through the jet pipes F, and is thrown in numerous jets into the chimney A. In falling down, the greater part of the water is collected on the deflector C, and runs down from it in a thin circular sheet, and into the reservoir B. The smoke in passing up the chimney strikes against the deflector, comes in contact with the sheet of water running from the deflector, the volatile parts of the smoke are condensed, and the carbon is precipitated into the reservoir B.

The inventor says: I do not claim the introduction of jets of water into a chimney for the purpose of arresting sparks or carbonaceous matter, as I am aware that such has been accomplished before on the chimneys of locomotive engines. My invention is more properly an improvement on that for which letters patent were granted June 19, 1847, to James A. Cutting and George Butterfield, of Boston, Massachusetts. The most essential feature of my improvement, and that which differs from anything in the apparatus of Cutting and Butterfield, being that part of my device whose office is to produce a thin sheet of water close to and surrounding the edge of a meniscus deflector placed over the mouth of the discharging flue within the chimney. Nothing of this kind is found in the invention of Cutting and Butterfield, wherein streams of water only are employed. In my improved smoke-consuming apparatus I use streams and a deflector, as do Cutting and Butterfield; but in addition to the principle common to both, I so arrange the jet pipes that the jets of water may fall on the top of the deflector and be discharged over its edge in a thin sheet.

I *claim* arranging the jet pipes, the deflector, and discharge flue, so that the water may first fall on the top of the deflector and be discharged in a thin sheet over its edge and around the mouth of the discharge flue, as set forth; and this whether the streams fall directly downward from the jet pipes and upon the deflector, or whether they may be first discharged upward, and next be caused to fall back and upon the top of the deflector; and so that such streams may serve not only to arrest carbonaceous matters which may escape or pass by and

rise above the deflector, but to return them and cause them to be thrown into the receiver B after they have fallen with the streams upon the said deflector.

No. 14,650.—JACOB COHEN.—*Improvement in the Arrangement of Grates and Dampers for Chimneys*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I am aware that dampers are of common use in smoke-stacks to furnaces, steam-boilers, and stoves, suspended centrally so that they may entirely cut off the escape passage, or limit that passage equally on both sides of the damper; and I do not, therefore, claim the centrally suspended damper.

I am also aware that dampers are in common use in chimneys where grates for burning anthracite and other coals are used, such dampers being limited, however, to the closing of one portion of the escape passage, or diminishing only the half of that passage; and I do not, therefore, claim arranging dampers in chimneys where grates are used.

But I *claim* the arrangement of the centrally suspended damper C in relation to the grate B and the surfaces of the escape passage into the chimney, as herein set forth.

No. 15,779.—JOSIAH A. ROYCE.—*Self-Regulating Draught for Chimney Tops*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The application to the top of a chimney A, or draught flue, of a frame B, having one or more turning slats or dampers C hung in it; said frame being provided with a rudder F, so as to be always turned to the proper position by the action of the wind; and the dampers being combined with a spring mast D, with sail on top, so as to be closed more or less by the action of the wind, and automatically opened during a calm, substantially as and for the purpose set forth.

No. 15,519.—CYRUS F. KNEELAND.—*Improvement in Coal-Hods*.—Patented August 12, 1856.

This invention consists in covering the wooden bottom E of a coal-hod with sheet metal D, which is turned down at the edges over the wood, and kept from rising from its place by the lugs F fastened to the wood. The bottom is kept in its place upon a clinch by nails H and J passing through the sides of the hod, which are themselves secured from working out by a band I around the joint which covers the heads of said nails.

Claim.—I do not claim the combination of wood and iron or other metal in any construction whatever; but I *claim* a coal-hod with a wood and metal bottom made and secured in its place, substantially in the manner as set forth.

No. 14,828.—GEORGE PIERCE.—*Improvement in Cooking Apparatus.*—Patented May 6, 1856.

The nature of this invention consists in combining the stove, as shown in the engravings, with the roaster *a*, which has been patented by Samuel Pierce, on the 12th day of July, 1838, by which combination the top radiating heat is employed for the purpose of baking.

Claim.—The employment of the double oven, arranged and combined with the roasting apparatus, substantially as herein set forth, and for the purposes described.

No. 16,112.—THOMAS G. CLINTON.—*Improved Alcohol Cooking Apparatus.*—Patented November 25, 1856.

O represents a cup which contains the alcohol chamber A, and the wick chamber I containing the wick. When the latter is lighted a draught of air passes through apertures D and central draught tube K L, at the same time that another current passes through the passage G F, thus producing an intense heat. The flame can be extinguished by closing the apertures D.

The inventor says: I do not confine myself to the arrangement of the parts E D C G, as shown, because these parts may be arranged otherwise to do the very same duties.

I claim an alcohol burner, arranged in its several parts substantially as described and represented, or in any equivalent manner, for the purposes and effects set forth, irrespective of the method by which alcohol is supplied to the chambers A and I.

I also claim the internal pipe B, or its equivalent, arranged as described in relation to the tube H, and for the purpose and effect set forth.

No. 15 156.—EDWARD WHITELEY.—*Improvement in Water-Heaters surrounding Fire-Pots of Cooking Apparatus.*—Patented June 17, 1856.

A diagonal partition O is placed between the openings of the pipes K and L into the heater, whereby the water that enters at the pipe K is forced to traverse round the entire heater in contact with the heated corrugated surface E of the heater before it can escape by the pipe L.

Claim.—1st. The diagonal partition O between the pipes K and L, operating in the manner and for the purpose specified.

2d. The inclined roof of the heater for the purpose of expelling the air therefrom, in the manner substantially as described.

No. 14,622.—EDWARD WHITELEY.—*Improvement in Boilers for Cooking by Steam.*—Patented April 8, 1856.

E is a depression in the bottom of the vessel B, into which rises the tube F, the top of which is surrounded by and covered with the cap G, thus forming a trap which permits the water of condensation to pass,

but not the steam. When the boiler is to be used for the purpose of heating water, the trap G is removed, and the pipe F is closed by the cap I.

Claim.—The trap G and cap I, as arranged and applied to the vessel B, whereby the latter may be employed either as a boiler or a steamer, as set forth.

No. 14,340.—W. W. ALBRO.—*Improved Apparatus for Cooking with Quick-Lime.*—Patented March 4, 1856.

Coffee may be made between the two vessels A C; meat and vegetables are placed within the vessel D; I represents the quick-lime. Water is then poured through tube F, which falls through the perforated tube G in a shower upon the quick-lime, and the heat evolved by the slaking of the lime cooks the articles in vessel D and boils the coffee.

Claim.—The apparatus or device formed of the vessels A C D, constructed or arranged substantially as shown and described for the purpose specified.

No. 14,510.—AZEL S. LYMAN.—*Improved Method of Cooling and Ventilating Rooms, &c.*—Patented March 25, 1856.

The object of this arrangement is the production of a blast or current of cool air without mechanical aid, the air descending in the tube F with a velocity due to the difference of temperature at B and E.

Claim.—The combination of a condensing conduit F, or cold-air flue, with a reservoir D for containing cooling materials, substantially in the manner and for the purposes described.

No. 16,010.—PETER C. GUIOU.—*Improved Cowl or Draught-Accelerator for Steamers.*—Patented November 4, 1856.

The conical tube A is inserted into the horizontal flue C, the jacket B slipping over said flue; when the steamer or locomotive is in motion, a draught of air will pass through the tube A and flue C; this current, as it passes out at the smaller end of tube A, produces a suction and strong draught in the lower upright chimney D, causing a steady draught through the furnace of the steam boiler. When the steamer or locomotive is stationary, the smoke from the perpendicular flue B passes around the conical tube A and out of the opening E.

The inventor says: I do not claim any of the several devices, surfaces, or parts described, separately.

But I claim their combination constructively, in the manner and for the purposes described and shown.

No. 14,181.—SOLOMON BERNHEISEL.—*Improvement in Corn-Dryers.*—Patented February 5, 1856.

This improvement consists in bringing the heated air from the furnace in contact with a stream of shelled corn, passing down pipes fur-

nished with perforations, so that moisture in the grain (in the form of steam) may be passed by pipes exterior and interior to the aforesaid pipes as well as through the stream of corn.

Claim.—The perforated pipes Nos. 2 and 3, in combination with the hopper F, placed above the hot-air chamber A, as described, so as to allow the air to pass between the inner perforated pipe and the smoke-pipe No. 1, while the hot air from chamber D passes up between the outer perforated pipe and the exterior pipe or casing No. 4, substantially in the manner and for the purposes set forth.

No. 14,494.—CHARLES W. DAVIS.—*Improvement in Fruit or Grain Dryers.*—Patented March 25, 1856.

The rim C forms a parabolic curve, in order to carry back the fruit forced up the inclined sides of the rotating earthen cone D. The top or rim C may be taken off by simply unscrewing it. The pipes G G, together with the stove S, keep the cone hot.

The inventor says: I do not claim the separate parts of the above apparatus as my invention; but I believe their combination, as applied for the purpose of drying fruit or grain, to be novel and useful.

I claim the inverted earthen cone D, (fig. 2,) having an adjustable parabolic rim C, with or without the hoop F, operating substantially as described, and for the purposes specified.

No. 16,259.—JOHN C. PEDRICK.—*Improved Apparatus for Drying Grain in the mass.*—Patented December 16, 1856.

In using this apparatus, the lenticular-shaped vessel B¹ is thrust into the midst of that part of the grain which is found to be heating, or which has become wet, and an exhausting apparatus being applied to its mouth, the foul air is abstracted from the grain.

Claim.—The double convex lenticular vessel, or perforated exhaust chamber B¹, or its equivalent, constructed and operated as set forth, for drying grain in bulk, in granaries or in vessels.

No. 14,588.—STEPHEN V. APPLEBY.—*Improvement in Machines for Drying Wet Grain, &c.*—Patented April 8, 1856.

n m n¹ m¹ are plates fastened to the side of the walls W W, and covering the ends of the cylinders partly up for the purpose of preventing in some measure the free passage of cold air through the heated cylinders. *p p¹ p²* are openings, covered with wire gauze, to allow the air and vapor to escape. *g g g¹ g¹ g¹* are gratings to increase the distance the grain has to fall. *h h¹ h²* are gratings to lead the grain into the cylinders. P P¹ are pipes which conduct the cold air into the flues.

Claim.—The application of revolving cylinders A A¹ A² A³, situated in a heated flue X, with their ends projecting into flues Z¹ Z² Z³ Z⁴, into which cold air is forced, and so arranged that grain or other similar substances put into the top cylinder will slide through the same, and then fall into the next cylinder, and so on from one to the other, being,

in its passage, alternately subjected to the action of heat while in the cylinder, and to the action of cold air while falling from one cylinder into the other.

No. 15,331.—SAMUEL M. ECHOLS.—*Improvement in Fire-backs of Fireplaces.*—Patented July 15, 1856.

The nature of this invention consists in the employment of a back-piece B in the fireplace F, said back-piece swelling towards the front, similar to two logs placed one upon the other, for the purpose of throwing out heat and economizing fuel.

Claim.—The arrangement in the chimney before the back plate *a* of the removable double cylinder and plane fire-back B.

No. 15,089.—DAVID RUSSELL.—*Improved Method of Applying Horse Power to Fire Engines.*—Patented June 10, 1856.

Horse power being applied to the end L of shaft J, the latter is rotated by means of the friction between the roller 3 and track A; friction being produced by the weight of fly-wheel M. A reciprocating motion is thus given to the piston rods *r r r r* of the pumps *d d d d* by means of the devices, as clearly shown in the engravings.

The inventor says: I disclaim the several elements composing my engine separately considered. But I claim the arrangement of the series of pumps *d d d d* with the circular trainway A, and the mechanical devices actuating the pistons, substantially as and for the purposes set forth.

No. 14,447.—CALVIN DODGE.—*Improvement in Fireplaces.*—Patented March 18, 1856.

The claim and engraving sufficiently explain the nature of this improvement.

I do not claim the contracting of the vent or throat of the chimney, as that is well known as a device; but I claim the use of a deep recess A B C D, or chamber, placed back of the fire-basket L of the grate, and out of the reach of the draft, in combination with the horizontal covering F over the recess and fire-basket, extending down below the mouth of the chimney, constructed and arranged substantially as hereinbefore described, for the purpose of consuming the smoke and causing the ignition of the gas which would otherwise be lost, and thus increasing the amount of heat thrown into the room, and by the slow combustion of the fire effecting a great saving of fuel.

No. 15,362.—JOHN W. TRUSLOW.—*Improvement in Fenders for Fireplaces.*—Patented July 15, 1856.

A represents a jointed or hinged render, hung upon hinges at B, in a recess D. The spring E is attached to the back wall of the recess for

the purpose of pressing out the fender when wanted, the sliding panel F covers the fender and recess when the panel is down. By this arrangement the fenders are always convenient for use when wanted, and can be secreted so as not to be observed when out of use.

Claim.—The hinged folded screen or fender within the recess in the jambs, in combination with the spring in rear of the screen, and the sliding panel in front of the same.

No. 14,252.—LEA PUSEY.—*Improved Method of Extinguishing Fires.*—Patented February 12, 1856.

The water-spout A, descending from the roof D of a building, is made of sufficient thickness of metal to resist the water pressure, and is furnished at top and bottom, and, if desired, at every story of the building, with coupling-joints for hose attachment. The couplings B at every story are provided with caps to be used when the coupling-joint is not required.

Claim.—The adaptation of the water-spouts of buildings to the purpose by means substantially the same as those herein described.

No. 15,271.—ROBERT B. ARMITAGE.—*Improved Method of Extinguishing Fires.*—Patented July 8, 1856.

A main-pipe A for the supply of water extends from the ground to the top of the building. From this main-pipe, and at right angles to it, at a point level with the ceiling of the room, the branch-pipe B proceeds to a central part of the ceiling. From the terminus of the pipe B the arms C extend across the middle line of the ceiling, and terminate by a series of jets $y^1 y^2 y^3$, &c. The valve D is placed in the branch B and regulated by a weighted lever E, which is supported by a continuous cord $x x^1 x^2 x^3$, &c., running through staples around and across the ceiling, which cord is made of combustible material; and, in case of fire, the cord is easily burned, when the lever E at once falls and opens the valve D, and the water will escape through the jets $y^1 y^2$, &c.

The inventor says: I do not claim the cords and lever or the valve, they having been long in use for other purposes; but I *claim* the arrangement of the main-pipe, with the branch-pipe, the arms, and jets, which, in connexion with the cords and lever combined, operate as a self-acting fire extinguisher, substantially as herein described.

No. 15,688.—ROBERT COURTNEY.—*Improvement in Artificial Fuel.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—The rendering coal dust or screenings into merchantable

artificial fuel, by combining coal dust with clay, lime, and coal tar, or other bituminous or resinous material, and subjecting them to all the parts of the process, in the manner and form set forth and described.

No. 14,063.—JOHN F. MANAHAN.—*Improved Mode of Burning Wet Fuel.*—Patented January 8, 1856; antedated July 8, 1855.

The nature of this invention will be understood by reference to the claim.

Claim.—The method of producing from wet vegetable matter a useful fuel by mixing it with coal tar or other fluid bituminous matter of like character.

No. 14,908.—J. JOSEPH EAGLETON.—*Improvement in Annealing Furnace.*—Patented May 20, 1856.

Within the interior wall of the annular chamber B there is a space C in which an iron cylinder e is placed, resting on a flanch f , and from this flanch extends a projection g , which fits to the cup m . When the cup m is brought up and shuts over the projection g the plate i will be within the cylinder and a double bottom be thus formed. The cup m is supported on a pillar O, by which it is raised and lowered. The cup m receives the wire to be heated and annealed. The cup m is then lowered, the truck is brought into place, and the wire hauled off to cool, while at the same time another charge on a similar disk i is brought upon the cup charged with cold wire coils, and is at once raised into the furnace, which retains its full heat.

Claim.—Charging and discharging an annealing furnace in bulk by the means herein described.

No. 14,008.—PHILO BROWN.—*Improvement in Furnace for Soldering.*—Patented January 1, 1856.

The pipes to be soldered are laid into the brazing chamber i , which is open at each end, as shown in fig. 2, so that the tubes can be inserted at one end and passed through as the brazing progresses. If the seam of a tube is to be brazed on the outside, the soldering is put on the seam and the tube is inserted in the brazing chamber with seam uppermost. The opening l leading to the brazing chamber is then closed and the one g opened which admits the products of combustion into the upper part of the chamber i , and the damper m is pushed to close the apertures $k k$ at the top of the chamber, and the damper o to open the apertures $l l$ at the bottom, thus conducting the heat to that part of the tube only which is to be soldered without overheating any other parts. By a similar change in the position of the valves and dampers the heat can be conducted to the lower part of the soldering chamber without heating the upper part of it.

Claim.—I wish it to be understood that I do not claim broadly the

construction or use of a furnace for brazing or soldering metallic tubes, consisting of a brazing or soldering chamber or passage interposed between the fire-chamber and chimney-flue.

What I claim as my invention and desire to secure by letters patent is, combining the brazing or soldering chamber with the fire chamber, and chimney interposed between the two, when the said brazing or soldering chamber communicates with the fire chamber by means of one or more apertures at or near the top, and one or more apertures at or near the bottom, governed by dampers or equivalents therefor, substantially as and for the purpose specified.

No. 14,153.—GEORGE R. COMSTOCK.—*Improvement in Locomotive Furnace-Grates*.—Patented January 29, 1856.

When the apparatus is not designed to be used, the lever *l* has the position shown in figure 1, and the running of the engine does not communicate motion to the apparatus. But when by the movement of lever *l* the stop *i* is placed in position as in figure 2, then the reciprocation of the side plates *C C'* is produced, causing the rising of grate *B*—(by means of the vertical slots *d* in the frame, and the oblique slots *e* in the side plates, through which slots the grate-rods *c* pass)—see figure 4, and causing the opening of the two cocks of pipes *F* and *G*, and the simultaneous close of the same, with the fall of the grate. The object of the pipes *F* and *G* (the one communicating with the upper, and the other with the bottom part of the boiler *H*) is to admit steam and moisture into the furnace at the time of opening the fuel.

The inventor says: I am aware that grate-frames, with numerous vertically moving fingers to stir and clear the fires of locomotives, have been used by Nichols & Boyes, as shown in their patents of 1850, I therefore make no claim to the device of the moving grate; neither do I claim of themselves the eccentrics or rods by which the slides are moved.

But I *claim* the simultaneous raising of the grate *B* and opening of pipes *F* and *G* at will for aiding the combustion of fuel in the furnace during the running of the engine, by the combination of reciprocating plates *C C'* and stop rod *i*, and parts connected therewith, or devices equivalent thereto.

No. 16,287.—JOHN H. H. PERKINS.—*Improvement in Hot-Air Furnace*.—Patented December 23, 1856.

The coils of pipe *L M N* are enclosed within the hot air chamber *A*; the cold air enters said pipes from outside through the tubes *i* and *k*; the chamber *A* contains a furnace *D*, on which is placed a reservoir of water *e* for generating steam; the steam and hot air in the chamber *A* warm the air in the pipes *L M N*, which then escapes through the pipes *R S T* to the rooms to be warmed.

The inventor says: I do not claim the superheating of steam, as this has been done before for other purposes.

I *claim* the mode of heating air for warming purposes, by passing it through the hot air chamber, in close sub-chambers and pipes, the main chamber being filled with air and steam, commingled and heated by the furnace or stove, substantially in the manner described.

No. 15,832.—RICHARD WELLS. *Improvement in Furnaces*.—Patented September 30, 1856.

This invention consists in placing between the outer surface of the supporting plates *C* and the nuts *b* of the tie-rods *D* strong springs *S*, for the purpose of preventing the pressure against the masonry from being relaxed by expansion of the tie-rods, and for preventing the pressure due to the expansion of masonry from rupturing the supporting plates *C*.

Claim.—In the construction of furnaces, the introduction of springs between the supporting plates and the fastenings of the tie-rods, substantially as and for the purposes set forth.

No. 15,613.—JOHN LIDDLE.—*Improvement in Air-Heating Furnaces*.—Patented August 26, 1856.

The construction of this furnace will be understood by reference to the drawings. The air rising from the sides of the main body *B* of the furnace, which is deflected by the lower surface of the radiator-ring *E*, is warmer than the ring-radiator itself, and would, consequently, lose a part of its caloric. In heating up this ring, if a non-conductor was not interposed, the heat thus taken up would be carried off by the partially cooled products of combustion; for this purpose the radiator *E* is provided with small ledges *H*, which form a receptacle for ashes, soot, &c., and thus this part of the pipe, at its lower angle, becomes a non-conductor of heat.

Claim.—The construction of the main body of the furnace, substantially as described, forming, by plates attached to the internal surface, a series of tubes around its circumference, so as to form the smoke flues without any vertical joints between the interior and exterior, and without the employment of cores in casting, as set forth.

No. 14,812.—ABRAHAM HAGER and YOUNGS ALLYN.—*Improvement in Bagasse Furnaces*.—Patented May 6, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The application to bagasse furnaces of a skeleton arch *i i i*, which will retard the bagasse in falling direct on such portions of the fuel in a state of combustion, or in any other mode substantially the same, which will produce the same effect.

No. 15,481.—SAMUEL H. GILMAN.—*Improvement in Bagasse Furnaces*.—Patented August 5, 1856.

A fire having been lighted on the hearth in front of the draft-door F, the bagasse is dropped into the dome-covered chamber A from the hopper I, and ignites on the hearth around the base of the pile; and as it burns from below, a new supply of bagasse is dropped from the hopper, and is thus dried in a pile by its own fire.

Claim.—The combination of a dome-covered cylindrical chamber A, having a circular base, with a draft-door located at E, an arch-covered second square chamber B, a pit D, a heat conduit or throat K, when constructed, proportioned, located, arranged, and combined, in the manner and for the purpose set forth and described.

Also, the location in a bagasse furnace of the draft-door or opening through which the air is admitted to support combustion, at or near the hearth level or fire-bed, and directly opposite the opening through the products of combustion, leave the first chamber of the furnace, and in the vertical plane passing through the center of the two chambers A and B, and the center of the opening where the two chambers unite, when the hearth of the second chamber is substantially on a level with the hearth which supports the bagasse to be burned.

No. 14,892.—JAMES WILSON.—*Improved Furnace for Heating Soldering Irons*.—Patented May 13, 1856.

C represents a cover, which may be suspended over the top part of the fire-pot A, to prevent radiation of heat.

Claim.—Constructing a furnace, and providing it with any desirable number of cells E E, substantially in the manner described, for the purpose of heating solder irons F with anthracite or other coal.

No. 14,298.—RUSSEL WILDMAN.—*Improvement in Furnaces for Heating Slugs for the Use of Hatters, Tailors, and Others*.—Patented February 19, 1856.

When the fire is to be kindled the plate *h* is raised, and the coal introduced to the fire-box *c*; the door *f* is then to be closed, and the plate left in an elevated position until the coal is sufficiently ignited; the slugs are then placed upon the coals, and the plate *h* closed down: thus the fire is kept at a suitable temperature for heating the slugs without danger of melting them.

Claim.—The plate *k* in combination with the fire-box and lifting arrangement, substantially in the manner and for the purpose herein described and set forth.

No. 15,009.—JACOB GREEN.—*Improvement in Gas-Consuming Furnaces*.—Patented June 3, 1856.

A represents a boiler; B the fire-place; C the mouth of chimney-stack; D a hinged valve, whose movement controls the inlet valves *b*

and *e*; *d* is the main pipe from the blast apparatus. The pipe G terminates in the ash-pit, furnishing air under the grate *h*. On the lever H of valve D is placed a shifting weight K, for the purpose of balancing the weight of the valve D to the pressure of the gas escaping from the burning fuel.

The inventor says: I am aware that the mere introduction of air into furnaces by union pipes, for the purpose of furnishing a portion through the grate bars, and a part to the upper side or behind the fuel, is not new. I therefore do not claim that as the point of novelty.

I am also aware that Elkanah Ingall proposed an improvement in smoke-consuming furnaces, wherein a mere circulation of the smoke or gases from the fire space or flue with the under side of the grate bars is effected by the use of a fan or blower, situated in said circulation pipe; and that he also provided inlet valves to supply a vacuum, if occurring, as well as an exit valve in the smoke-stack for excess of pressure, all of said valves operating independent of and uncontrolled by each other. I therefore do not claim such as my improvement. But I *claim* the mode of regulating the admission of air to furnaces, so that such admission shall be controlled by the furnace itself by means of lever H and valve D, in connexion with the rod *n* and valve *b*, and the rod *o* and valve *e*.

No. 15,830.—SAMUEL WETHERILL.—*Improvement in Furnaces for Zinc White*.—Patented September 30, 1856.

This invention consists in making the bed *n* of a furnace for the manufacture of zinc white so that it can be vibrated on an axis *p*, during the working of the furnace, for the purpose of preventing slag from forming and adhering to said bed.

Claim.—Making the whole or a portion of the bed of the furnace to vibrate, for the purpose and in the manner substantially as described; but this I only claim when the bed is perforated with numerous small holes, and when used in combination with a forced blast of atmospheric air, which passes to the charge of mixed ore and fuel in numerous small forced jets, substantially as and for the purpose specified.

No. 15,018.—SAMUEL RICHARDS.—*Improvement in Glass Furnaces*.—Patented June 3, 1856.

The nature of this invention consists in constructing and arranging shelves within the cone of an ordinary glass furnace for the purpose of containing the batch or raw material, in order to heat the same to a high temperature before it is introduced into the furnaces.

Claim.—1st. The preparatory deposit of the batch in the cone of an ordinary glass furnace for utilizing the waste heat.

2d. The car P Q arranged and used in combination with the shelves R S T and R' S' T'.

3d. The moveable spout *w* for conveying the heated batch from the heating shelves into the crucibles.

No. 15,389.—SAMUEL RICHARDS.—*Improvement in Glass Furnaces*.—Patented July 22, 1856.

The batch or raw material is introduced into the shelves R S, there it remains exposed to the heat of the furnace for twenty-four hours or longer, and whenever it is desired to charge the pots P the valves at the top of the tubes $h h^1$ are opened and the pulverized mass is suffered to pass or flow slowly through the pipes $h h^1$ and falls down through the intensely heated upper part of the furnace into the pots P. In order to keep up a constant flow of the pulverized batch into the tubes $h h^1$ a series of agitators is introduced, one of which is represented at J.

Claim.—1st. The employment of a series of interior tubes $h h^1$, arranged and operating as described.

2d. The employment in connexion with said tubes of vibrating or rotating agitators, J J.

No. 14,196.—SAMUEL MACFERRAN.—*Improvement in Hot-Air Furnaces*.—Patented February 5, 1856.

The nature of this improvement is clearly set forth in the claim.

Claim.—1st. Connecting with the inner end of the bottom-plate O of the space for supplying the furnace with fuel a ring N for supporting and holding together the segmental plates of the fire-pot, so as to enable said ring to be held firmly by its connexion with the plate O, which is secured to the front part of the furnace, as herein described.

2d. Arranging the adjustable horizontal plate k , having spaces in its edges in which the heating pipes fit, above the fire-pot and capable of being raised and lowered for the double purpose of diverging the heat entirely around the said heating pipes, and in contact with the sheet iron radiating casing, and regulating the draught of the furnace and, in fact, converting it into an air-tight heater if desired, substantially as before described.

No. 16,055.—SAMUEL L. HAY and HENRY B. OSGOOD.—*Improved Method of Regulating the Draft of House Furnaces*.—Patented November 11, 1856.

The two-winged valve a is pivoted at b near the top of the supply-pipe C, and when the pressure of air which enters the pipe C in the direction of the arrow is heavier than required, it closes the valve a ; the spring d retains the valve open when the pressure of air upon valve a is not stronger than required for constant use.

Claim.—The compound valve A with the spring d or its equivalent, and equipoise K, in combination with the pipe C, substantially as described, and for the purposes of a compound self-acting regulator, as set forth.

No. 16,317.—JOHN CASE and ISAAC SOULES.—*Improvement in Smoke-Consuming Furnaces*.—Patented December 23, 1856.

As soon as the fire has been kindled, and has generated gas enough to work the engine, the draft doors are closed, and the air for the support

of the combustion is forced into the furnace through pipes J. The heated gases pass from the fire box through flues E into the smoke box C, heating, in their passage, the water in the boiler; and such portion of the gas as has been saturated with oxygen, and thus cooled, becomes so heavy that it readily descends to the bottom of smoke box C and escapes at the waste pipe h , while the unoxymated gases are drawn by fan H into the case, and forced through the return tubes F back to the fire chamber to be again heated.

Claim.—1st. The arrangement of the fire and smoke chambers, the direct and the return flues, the gas and the air pump, the pipes to supply air above and below the grate, and the waste pipes for the spent gases, substantially as described.

2d. The combination with the smoke chamber and direct and return flues of the diaphragms, to direct the gases downward and backward as they enter the smoke chamber, and to facilitate the precipitation of the sparks and thoroughly oxydized gases from those gases which are but partially burnt, and require for the completion of their combustion to be returned to the fire chamber.

3d. The arrangement, at or near the bottom of the smoke chamber, of an open orifice for the free and constant escape of the waste gases, in combination with the smoke chamber and direct and return flues, substantially as set forth.

4th. In combination with the smoke chamber, arranging the hot gas and cold air pumps, substantially as described.

No. 14,601.—ROBERT B. FELLOWS.—*Improved Tempering Furnace*.—Patented April 8, 1856.

H is a receptacle for coal, G is the grate, and B the blast pipe. The articles to be tempered are placed within the tubes T and C, where they are heated for the hardening. They are then laid upon the sand on plate P for the purpose of drawing. The tubes T are open at both sides, one being exterior, the other within the furnace.

The inventor says: I do not claim the hardening or the plate P for drawing when accomplished or employed separately by separate fires, nor do I claim the use of the tubes or the plate before mentioned except when combined and arranged as described. But I *claim* the combination of the plate P and tubes T, or their equivalents, with a single fire, in the manner and for the purposes substantially as set forth.

No. 15,791.—WILLIAM M. WRIGHT.—*Improvement in Warm-Air Furnaces*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim radiating or projecting surfaces which are cast with the fire-pot or upper section of the furnace, as used in James Miller's patent of October 16, 1838.

But I *claim*, 1st, the manner of increasing the radiating surface by

the use of the movable plates, all in the manner and for the purpose set forth.

2d. The manner of constructing the ash box, with its rim *m* to receive the fire-pot, and projecting arms or supports *o o o o*, substantially in the manner and for the purpose specified.

No. 14,674.—ALEXANDER McDONALD SPRAGUE.—*Improved Apparatus for Feeding Furnaces with Fuel*.—Patented April 15, 1856.

This apparatus is intended for feeding the fires, without admitting to the fires such quantities of cold air as materially to check combustion, and without exposing the fireman to the heat of the furnace.

The operation will be understood from the claim and the engravings.

Claim.—The furnace feeding apparatus, composed of a cylinder C, or box of other form, sliding through an opening in the furnace front, having its inner end closed, and an opening *a* in the bottom being fitted with a door C at its outer end, and with a piston D, and a sliding shutter *b*, all arranged and operating substantially as herein described.

No. 14,233.—JOHN A. GALLAHER, jr.—*Improvement in Gas and Steam Cooking Apparatus*.—Patented February 12, 1856.

The nature of this improvement is sufficiently indicated in the claims and engravings.

Claim.—1st. The construction of a gas-cooking apparatus formed of skeleton frame plates *a a*, having ventilating slots or equivalents *b b*, and the arrangement therewith of series of longitudinal and transverse jet tubes or pipes in tiers, as in fig. 2 *m m*, together with the compound tubular valve-pipes fig. 7, and the combination of the above devices with detachable drawer-like ovens or baking apartments *g g g g*⁵, *g*²¹, and fig. 5, substantially as set forth.

2d. The construction of the central reservoir heater *d*¹, *d*¹, *d*², *d*², and the steam-boiler chest device *e e*, *f f f f*, *g g g*, fig. 6, as described and in application and use as set forth.

3d. The compound suspension griddle fig. 3, and the ventilating diaphragm vessels figures 4 and 5, substantially as described, and used for the purposes set forth.

4th. The air-supply bellows or pump device fig. 8, and the application and use of the same, as described, and for the purpose set forth.

No. 14,091.—CHARLES A. CUMMINGS and CORTLAND DOUGLASS.—*Improvement in Gas-Burners*.—Patented January 15, 1856.

The two jets of gas issuing from the orifices *a a* strike the plate *b* on opposite sides and are spread into a broad sheet. The plate becomes highly heated, and serves as a heat reservoir, by which the gas is heated, so as to produce a more perfect combustion.

Claim.—The interposition between two jets or streams of gas issuing from the same burner of a plate *b*, substantially as and for the purposes herein set forth.

No. 14,737.—WILLIAM F. SHAW.—*Improvement in Gas-Burners*.—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The interposition of an imperfectly conducting body *c* between the tip *a* and base *b* of gas-burners, for the purpose of preventing the conduction of heat away from the point where the gas is burned.

No. 14,822.—JAMES NEAL.—*Improvement in Gas-Burners*.—Patented May 6, 1856.

The gas in its passage through the sand keeps the particles thereof in motion, and the deposited coal-tar will thus be prevented from choking the filtering medium.

The inventor says: I do not claim providing a gas-burner with a filter or strainer arranged within it, nor the application of felt cloth or other fibrous material or fabric as a strainer.

But I *claim* constructing the burner not only with a covered cup or sand reservoir C, and a discharging pipe *h* extending into said reservoir, but with one or more passages *b b i i* for the gas to flow around and into the cup C and through its loose sand or straining contents; my improvement enabling me to employ powdered quartz or a loose mineral matter or substance as a filter or strainer, and thereby attain advantages as herein before stated.

No. 16,176.—JOB CORNELL and BARNETT McDUGALL.—*Gas-Burner*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Increasing the width of the slit of the burner towards the centre, and bringing it to a sharp point, or nearly so, at the extremities, in the manner substantially as represented and described.

No. 15,614.—AUGUSTUS R. MARSHALL.—*Automatic Attachment to Gas-Burners*.—Patented August 26, 1856.

The catch *n* consists of a pin secured to a small bar *n*¹ which stands below the disk *p*, where it is hinged at one end to a stand *n*² within the box G, and supported at the other end by a spring *r* resting on the bottom of the box in such a manner that before the gas is lighted and the disk *p* distended the catch-pin *n* is held up clear of the lever *h* and

standing immediately above the catch *j*; but that when the disk *p* becomes distended by the expansion of the air in the air chamber, it presses down the bar *n*¹ and causes the pin *n* to press down the catch *j* and to stop and lock the lever *h*. The catch *n* continues in operation till the gas light is extinguished, when, by the cooling of the air in the chamber *I* and its consequent contraction, the disk *p* is caused to rise, and thus allow the catch *n* to rise clear of the lever *h* and liberate it, thus liberating the lever *H* and leaving the rod *b* free to move upward, and by that means allowing the valve *D* to be closed by the spring *a*.

Claim.—1st. The combination with the thermostat *p* and valve *D* of the catch *n* on the bar *n*¹, and the system of levers *h* *H* for the locking and unlocking of the valve, in the manner and for the purposes specified.

2d. Combining with the locking-catch *n*, or its equivalent, which is acted upon by the thermostat *p*, another catch *j*, so arranged as to lock the valve open until the catch *n* is set in operation by the action of the thermostat, and then to be moved out of the way by the catch *n*, substantially as described.

No. 15,219.—HENRY A. CHAPIN.—*Improved Machine for Reaming and Tapping Gas-Fittings.*—Patented July 1, 1856.

The fitting being clamped in the position shown in figure 1, the holder *L* is turned so as to bring the large rimmer *f* in line with the centre of the fitting; the shaft *M* is then revolved, and the rimmer is brought up to its work by the lever *P*. After the opening in the fitting is suitably enlarged, the holder is revolved, and the large tap *g* is brought up, by which one of the female screws in the run is formed. The fitting is then revolved 180°, so as to bring its opposite end into position to be operated upon by the same tools. The fitting is then turned, so as to bring the outlet *h* opposite to the tool-holder, and the small rimmer *i* is brought up, then the corresponding tap *m*, and the three screws are completed.

Claim.—The rotating tool-holder in combination with the revolving chuck or clamp for holding the fitting.

No. 14,325.—WILLIAM F. SHAW.—*Improved Apparatus for Heating by Gas.*—Patented February 26, 1856.

The nature of this improvement will be understood from the claims and engraving.

The gas enters through the conduit pipes *e*.

Claim.—The combination and arrangement, substantially as described, of air and gas-burners or distributors, chambers *A*¹ and *B*¹, and their flue and air-supply conductors *F* *C* *C*, the whole being made to operate together essentially as specified. Also in combination with the gas-burner the open top and closed bottom wire-gauze tube *g*, operating as specified.

No. 14,414.—WILLIAM F. SHAW.—*Improvement in Apparatus for Heating or Cooking by Gas.*—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I am aware that perforated cones have been used for admitting atmospheric air to ordinary fuel for promoting combustion. This I do not claim. But I *claim* the application of a cone or dome formed of wire gauze or pierced metal to an ordinary wire-gauze gas-burner, for burning mixed gases and air, in combination with an outer cylinder of wire gauze or pierced metal, for the supply of atmospheric air, divided into jets, substantially as herein described.

No. 16,031.—WILLIAM F. SHAW.—*Apparatus for Heating and Cooking by Gas.*—Patented November 4, 1856.

This apparatus is an improvement on a similar apparatus of W. F. Shaw, patented 26th February, 1856, and the nature of this invention will be understood by reference to the claim and engravings; the object of the concentrator or guide is to facilitate the action of the perforated tube *D*, by bringing into contact with it a greater amount of air than would naturally strike against it, provided the concentrator were removed from it.

Claim.—Combining with the wire-gauze or perforated tube *D*, and the air and gas-burner *A*, an air-guide or concentrator *G*, applied thereto, substantially in the manner and for the purpose specified.

No. 14,770.—WILLIAM LYON and CHARLES W. DICKINSON.—*Improvement in the Construction of Dry Gas Meters.*—Patented April 29, 1856.

Gas is admitted through the pipe *F* into the small gas channel *G*; from thence it passes under the slide valves *V* *W*, through the openings *cc*, and alternately through the openings *ii* and *jj*, and alike alternately into the bellows, and surrounding it on the outside as the valves are operated, permitting it to pass through *I*¹ *I*¹ or *J*¹ *J*¹ to the openings above named *ii* and *jj*, which communicate with the inside and outside of the bellows of each compartment *C* *D*. The bellows being inflated expand and move the valves by means of the swing levers *H*, which turn the rods *I* *I* back and forward. This motion of the valves opens the apertures by which the gas within the bellows is permitted to escape into the upper chamber and pass through *E*² to the gas burner; at the same instant the slide valves open the apertures which permit the gas from the channel *O* to pass into the inferior chamber. The pressure thus operates in an opposite direction and causes a contraction of the bellows, carrying the levers *H* in an opposite direction, thus causing a revolution of the wheel *P*, and a continued operation of the valves.

The varying action of the springs *F*¹ *F*¹ counterbalances the unequal tension of the bellows.

Claim.—So constructing the metallic bellows for the measurement of gas, that the spring or bend of the metal may form chambers of varying dimensions and of definite capacities for receiving and measuring the gas.

2d. We claim giving motion to the registering wheel A^1 by the impinging lever 2 operated by the wheel P, and the levers and connixions communicating with the bellows.

No. 16,073.—W. G. STERLING.—*Gas Regulator*.—Patented November 11, 1856.

This apparatus consists of a drum into which a balance D is fitted loosely so as to be able to vibrate on the inner circumference of said drum. The stationary partition B reaches down into a groove of the balance D, which is filled with mercury, so as to divide the interior into two chambers. The head, fig. 2, being fitted to the drum, the apparatus operates as follows: The gas enters the pipe I through the valve G, and passes through pipe L to the burner; it also passes through aperture M into one of the chambers of the drum, and, if under a heavy pressure, depresses one side of the balance D, operates crank E, and closes valve G.

The inventor says: I am aware that two chambers connected at the bottom have been used by means of a float in one chamber attached to a valve as a regulator; and while mercury has been found too heavy, other fluids, by their evaporation, constantly derange the operation of the machine; but by means of the vibrating balance in both chambers, my apparatus is extremely sensitive to the slightest pressure, and not subject to this difficulty.

I claim the vibrating balance D, with the partition B, forming two chambers and extending into said balance D, which is so adjusted that it vibrates in the two chambers, and is connected with a valve in any suitable form, as described, or any other mode equivalent thereto.

No. 14,893.—HENRY WATERMAN.—*Improvement in Gas Regulators*.—Patented May 13, 1856.

The inventor says: The parts $g g i$ and k , which form what I call the valve, I make in such a manner, as to proportions of weight, that the point of connexion with the link h shall be, as near as possible, the centre of gravity of the valve, so that when the level of the apparatus is disturbed by change of position of the metre to which it is usually attached, it will not require increased force from the floatings d and consequent increased pressure in the branch to raise the valve against the seat.

Claim.—The construction of the valve $g g$ of the gas regulator in the annular or ring form, with two faces or leats of different diameter, one at the outer and one at the inner periphery or edge, so as to produce greater circumferential capacity or opening for discharge of gas, with a limited area of valve relatively.

No. 15,028.—MARSHALL WHEELER.—*Improvement in Gas Regulators*.—Patented June 3, 1856.

The line $x x$ indicates the water-level in the gas regulator. If there is a great pressure of gas in the street main, the gasometer E of the regulator will rise, and thereby diminish the exposed portion of the aperture m in the end of the goose-neck d , at which the gas enters, and so on. The quantity of gas that can enter will therefore depend upon the position of weight j . The force of the gas in the street main will exert no effect upon the gas regulator unless it should fall below that at which the regulator is gauged for, and in that case the gasometer will sink and allow the gas to flow at its reduced force through the regulator to the burners.

Claim.—The combination of the gasometer E and its goose-neck d , with the fluid receptacle and with the graduated lever i , and the weighing poise j .

No. 14,437.—JAMES B. BLAKE.—*Improved Apparatus for Roasting and Broiling by Gas*.—Patented March 18, 1856.

In the sockets B B (which are connected with the main pipe A) revolve the vertical pipes C, with their branch-pipes D, provided with the burners c . When used as a roaster, the branch-pipes are set in the position as seen in figs. 1 and 2. The dotted lines indicate the position when used for the purpose of broiling.

Claim.—The within described roaster and broiler, constructed and operating in the manner substantially as herein set forth.

No. 14,142.—JOHN T. OSBORN.—*Improvement in Grate Bars*.—Patented January 22, 1856.

The object of this improvement is to let the cold air enter to the opening b in the boiler wall K, and circulate through the hollow spaces a , formed by the concave sides $c c$ of the bars.

The inventor says: I claim increasing the height of ordinary grate bars of furnaces, by an addition to their top of a piece having its sides concave, and without any jogs in its entire length, substantially as described and for the purposes set forth; and I distinctly disclaim all other features of the grate bar described, except what I have specifically claimed.

No. 14,642.—JOHN SAWYER, assignor to Himself and THOMAS HALE.—*Improved Apparatus for Heating and Ventilating Buildings*.—Patented April 8, 1856.

In the application of this apparatus to a building, the air-heating chamber A is to be placed in the lowest story, while the ventilating chamber G extends into each of the other stories. Separate stories are ventilated by means of pipes I K. Should it be desirable to heat any

of the rooms by means of separate stoves, they may be made to communicate with the main smoke-flue B by lateral pipes L M.

The inventor says: I am aware that a smoke-pipe has been enclosed in a casing so as to leave a space around the said pipe for the reception and heating of external air and carrying the same into one or more apartments of a building. Therefore, I do not claim such; but having made a peculiar combination and arrangement of the smoke-pipe, air-heating chamber, hot air flue, and ventilating chamber, my invention rests there, and consequently, what I *claim* is—

The arrangement of the ventilating chamber G with the main hot air flue F, the smoke flue B, and air-heating chamber A, the ventilating chamber and hot air flue having valves *c c*, *d d*, and *e e*, applied to them; the whole being capable of being used in heating and ventilating the apartments or stories of a building.

No. 14,743.—GEORGE S. G. SPENCE.—*Improved Pressure-regulating Apparatus for Steam-heating Boilers*.—Patented April 22, 1856.

The inventor says: I am aware that it is not new to apply to the boiler and the cylinder or valve-chest of a steam engine a refrigerating apparatus or condenser, for the purpose of condensing the waste steam, the water of its condensation being subsequently returned to the boiler. I am also aware that a safety-valve is no new contrivance as applied to a steam-boiler. Therefore I do not claim such, separately considered. My invention has reference particularly to an apparatus for heating buildings by the condensation of steam through pipes, radiating vessels, or chamber, so connected with a boiler or steam generator, that the steam, after having imparted heat to and been condensed in said radiators, shall be returned to the boiler in the form of water. To such an apparatus or to its boiler I apply my improvement; and it should be borne in mind that the water condensed in the radiators *does not return through my apparatus* to the boiler. It is only the steam which may be condensed in the receiving chamber F of the safety apparatus that returns to the boiler through the stand pipe H. While the stand pipe H and the chamber or vessel F, in connexion with the safety-valve, serve to regulate the pressure, the chamber F, its cover M, and the refrigerating cistern G perform, besides other important functions, that of receiving any amount of steam which may be suddenly blown through the pipe I, and condensing it so that it may be returned into the boiler by means of the pipe H. Thus while we insure safety to the boiler and heating apparatus and regulate the pressure of the steam, we prevent the steam from being wasted and condense and return it to the boiler.

What, therefore, I *claim* is, the above described peculiar arrangement of the steam generator or boiler B, the stand-pipe H, the condensing apparatus (composed of the receiver F, the cover M, and the refrigerating vessel G), the safety-valve, and its pipe I.

No. 14,158.—STEPHEN J. GOLD.—*Improvement in Apparatus for Heating Buildings by Steam*.—Patented January 29, 1856.

When from the temperature of the external air the condensation in the radiators is slow, or but a portion of the radiators is brought into action, there will be an increased pressure of steam on the surface of the water in the boiler, causing it to rise through pipe C into box D. This rise of water in the box gradually diminishes the draught-passage until, by the continued rise, the mouth of chamber E is reached and the hydraulic seal is established, entirely shutting off the draught, which is represented by the arrows; this, of course, deadens the fire. But should the pressure still continue, the water will pass into chamber E and lift float *f*, thereby raising the conical valve *a* and permitting the entrance of cold air into the boiler flue. Cold air let in at this opening takes the place of the heated air there existing when the flue is closed, and causes the steam instantly to condense. This removes the pressure and permits the water to return to the boiler, letting down valve *a* and gradually removing the hydraulic seal, when the draught is reinstated.

Claim.—The automatic governing of the draught and the shutting off of the same, by the forcing of water from the boiler by pressure of steam, under the circumstances and substantially as specified; or, in other words, establishing the hydraulic seal.

Also, the automatic government of the valve *a* by the forcing of water from the boiler by the pressure of steam, under the circumstances and substantially as set forth.

The governing of draught-valves by expansion of water being expressly disclaimed, as constituting no part of the invention.

No. 14,392.—CHARLES DAVENPORT.—*Improved Apparatus for Heating Buildings by Steam*.—Patented March 11, 1856.

The cock *h* being opened and water being admitted into the supply cistern P until it reaches the required level within the boiler, and the fire being kindled, the steam rises through the pipe U into the heater T, there being one or more of these heaters in each of the apartments to be heated. The chains M and L are then adjusted to each other, according to the temperature of the weather and the pressure required. If the steam be shut off from one or more of the heaters, the pressure within the boiler will be increased, and the float I will rise and close the dampers *e* and *l*, checking the fire until the pressure is reduced to the point at which the chains M L are adjusted. Should the cold become severer, the chain M is hooked lower down upon the chain L, and the float will then rise higher before the dampers are affected.

Claim.—So connecting the float with the dampers of both the draught and smoke flues by means of the chains M and L, or their equivalents, that the pressure of the steam within the boiler may be graduated to the temperature of the atmosphere and the degree of heat required within the building, as set forth.

2d. So connecting the float which actuates the dampers of the draught

and smoke flues with the cock X, which admits water from the supply cistern to the boiler by means of the lever Q, or its equivalent, that while the float is left free to rise to any required distance, it will open the cock whenever the water falls below its level, as described.

No. 14,885.—A. S. PELTON.—*Improvement in Apparatus for Heating Buildings by Steam*.—Patented May 13, 1856.

Before the generation of steam, the air in chamber D becomes heated, and rises through pipe *e* to the radiator, gradually warming the same. This warming of the radiators by hot air causes the effect of the furnace to be felt sooner than it would be felt were the generation of steam waited for, and causes the radiator to fill with steam much quicker than when the steam has to enter cold radiators. When the steam is generated, it passes, as shown, by arrows through chamber D to the radiator, and is superheated thereby.

Claim.—The construction of the apparatus with an annular chamber D around the fire pot, and constituting a portion of the channel from the boiler to the radiator C, for warming the air in the radiators previous to the generation of steam. The employment of the chamber as a more superheater of the steam not being claimed as my invention.

No. 14,360.—CHARLES H. JOHNSON.—*Improvement in the Apparatus for Heating Buildings by the Combination of and Burning Gas, Air, and Steam*.—Patented March 4, 1856.

The perforated diaphragms *b* have their upper surfaces covered with loose pumice stone, or other proper straining material, for the purpose of mixing the air and gas, as well as straining such before they impinge against diaphragms *a*.

The inventor says: I am aware that a single air and gas burner has been provided with a perforated diaphragm, arranged below that on which the gas is burned and in the gas receiving chamber, the same being for the purpose of commingling the currents of air and gas before they might reach the perforated diaphragm on which they are enflamed; therefore I do not claim such. But I do *claim* the combination and arrangement of an air divider (a closed box H, having a perforated diaphragm *c* extending across it, and receiving air from a pipe as described) with one or more gas receiving chambers D D D, and the air and gas mixers *b b b* of the burner diaphragm *a a* of the same as described, such being for the purpose or purposes as herein before specified.

No. 14,348.—ROBERT CORNELIUS.—*Improved Arrangement of Steam Tubing for Regulating the Heating of Buildings*.—Patented March 4, 1856.

The end of tube A B is fastened to the wall, the end of tube J S is also fastened to the wall. The end J of tube J S is perforated at its

sides (see holes *i*.) When the tubes expand, the end J of tube J K (the latter sliding within the packing-box L) will approach the open end B of tube A B, and thus the space O will be diminished, through which the steam escapes from J into tube B; thus the heat in the building will be regulated.

Claim.—The arrangement of one section of the steam tubing within another section, whereby the steam tube itself is made to serve as a regulator and controller of the heat of the building.

No. 14,317.—WILLIAM M. KIMBALL.—*Improvement in Lamps*.—Patented February 26, 1856.

The annular recess C formed in the movable top B prevents the capillary attraction which would otherwise cause the oil to rise between the outer case and the movable top. W represents the wick.

Claim.—The recess C, operating in the manner and for the purpose substantially as described.

No. 15,636.—PETER C. GUIOU and PAUL K. WOMBAUGH, assignors to PAUL K. WOMBAUGH.—*Improvement in Lamps*.—Patented August 26, 1856.

The operation of this lamp is as follows: The burner being removed, the whole interior of the bowl *e*, stem *d*, and bulb *f* is filled with combustible liquid, the valve *h* being temporarily opened by pressing against its stem to allow the entering liquid to drive out the air from the bulb *f*. When the lamp has been some time in action, and it is desired to replenish the bowl *e*, it can be accomplished by pressing against the outside of bulb *f*, and thus forcing the liquid to flow up through the opening *c* into the stem *d* and bowl *e*. By releasing the bulb *f*, it will resume its former shape, and in so doing will draw a fresh supply of air through the air duct G, which will prevent the liquid from returning downwards.

Claim.—The elastic bulb or receiver *f*, surrounding and communicating at the bottom with a hollow stem *b c d*, which supports and opens into the bowl in the described combination with the air duct *g*, having an inwardly opening valve *h*, affording the described means of communication from the external atmosphere to the upper part of the bulb, or equivalent devices, for the purposes explained.

No. 14,478.—ISAAC VAN BUNSCHOTEN.—*Improvement in Argand Lamps for Burning Rosin-Oil*.—Patented March 18, 1856.

Conical chimneys are liable to break on account of their unequal expansion. The separate glass cone *e* obviates this difficulty.

The interior sleeve or cylinder 8 encloses the openings 7, so as to prevent the wick from catching fire at the openings 9. It will also collect all that overflows from the wick, which would otherwise run down the wick tube 3.

The inventor says: I do not claim a conical glass chimney or a

No. 15,724.—SALMON BIDWELL.—*Improvement in Lamps for Burning*

The inventor says: I do not claim a conical glass chimney or a conical end to a glass chimney, as these are well known and in general use; neither do I claim a metallic cone; but I am not aware of any separate glass cone ever having before been made use of, similar to that set forth herein.

I claim, 1st. Deflecting a portion of any passing draught or current of air up the exterior air tube, by means of the wings *f f*, or their equivalents, to counteract the suction or partial vacuum produced at the other portions of the lamp by said passing draught, or current of air, as specified.

2d. I claim the wings *f f*, or their equivalents, applied around the wick tube 3 to cause any sudden draught or current of air to be deflected with equal force up into the cone 2 and external draught, and down into the drip cup *e* and internal draught, in the manner and for the purposes specified.

3d. I claim the separate transparent cone *e* within the chimney *d*, rising only to about the height of the button 7, for the purposes and as specified.

4th. I claim the sleeve or cup *S*, combined with the perforated wick tube, and enclosing said perforations in the manner and for the purposes specified.

No. 14,248.—CHRISTOPHER MOELLER.—*Improvement in Wick-Holders for Argand Lamps*.—Patented February 12, 1856.

The wick *w* is put upon wick-holder *a* with great facility, by compressing its fingers, inserting them within the end of the wick, and then suffering the fingers to expand by their elasticity. The wick is thus held securely, and the friction of the wick and fingers upon the tubes *f* and *g* is such that the rack cannot fall by any sudden jarring of the lamp, and draw the wick down with it.

The inventor says: I do not claim a spring clasp for embracing the wicks of lamps; but I claim the peculiar mode herein above set forth of holding the wick and pressing it outwardly against the wick tube, in the manner and for the purposes herein set forth.

No. 14,492.—ABRAHAM COATES.—*Improvement in Regulating the Flow of Oil to the Wick in Carcel Lamps*.—Patented March 25, 1856.

If the oil should flow too fast it will fill the drip cup *k* faster than it can escape through *m*, and the increased weight will cause the lever *h* to descend and diminish the valve opening in the space *e* of the syphon tube *d*. The cup will then empty itself to the proper level, return to its proper position, and thus regulate the flow of oil.

Claim.—What I claim as my invention in lamps in which the oil is forced to the wick so as to overflow is, regulating the supply of oil in the burner by means of the self-emptying drip cup operating upon the supply valve, as herein set forth.

No. 15,724.—SALMON BIDWELL.—*Improvement in Lamps for Burning Fluids*.—Patented September 9, 1856.

The wick is inserted into the conical space between the outer cylinder *B* and the inner cylinder *E*, and can be compressed between this cylinder by means of the screw *a* operated upon from the thumb plate *H*. The object of this arrangement is explained in the accompanying claim.

Claim.—The mode of compressing the wick in the manner described, so as to prevent any change in the light caused by the jar of the lamp, and to prevent the escape of the burning fluid faster than is desired, and to secure the gas generated from the same, and to enable the use of any desirable fluid for lamp purposes.

No. 14,369.—PRENTICE SARGENT.—*Improvement in Lamps for Burning Rosin Oil*.—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

D represents the outer wick tube, *E* the wick.

Claim.—The annular air reservoir *P*, in combination with the entry space *T* and inwardly projecting lips *o p*, substantially as described, for the purpose of rendering the outer draught sufficiently constant to prevent the smoking of the lamp by any gusts of air or sudden movement to which the lamp may ordinarily be subjected.

Also, the fine apertures or meshes *n n*, opening into an outer chamber *S*, in combination with said chamber, and with an inner perforated or reticular partition *r* separating said chamber from the inner draught tube *G*, substantially in the manner and for the purposes herein specified.

No. 15,686.—WILLIAM B. CARPENTER.—*Extinguisher for Fluid Lamps*.—Patented September 9, 1856.

The extinguishers *A* are attached to springs *D*, which latter are attached to a ring on the burner *B*; the ring and extinguisher may be made to slide up or down on the burner *D* as represented in the illustration. This arrangement dispenses with the chain used heretofore to connect the extinguisher to the lamp.

Claim.—The divided cap or extinguisher *A A*, in combination with the springs *D D* and the ring *c*, the whole operating substantially as described.

No. 15,198.—NICOLAUS LINDEN.—*Improvement in Fountain Lam*.—Patented June 24, 1856.

The reservoir is filled by turning the inner cylinder *E*, by means of handle *G*, till the openings *b* and *f* coincide. The cylinder is then filed through the openings *f* and *b*, the valve *c* being open in consequence of the upper projection *e* bearing downwards the springs *d*

The cylinder is then turned again till *b* is over the orifice of the tube *F*, the valve at this point being opened by the lower projection *e*, and the oil passes down into the wick-tube.

Claim.—Constructing the reservoir *C* of two cylinders *D E*, one placed within the other, the inner cylinder *E* being provided with a valve *c* attached to spring *d d*; said valve being opened at the proper points by the projections *e e* on the inner side of the cylinder *D*.

No. 14,994.—SOLOMON ANDREWS.—*Improvement in Gas-Burning Lamps*.—Patented June 3, 1856.

The nature of this invention consists in surrounding the wick-tube *b* with an outer cylinder *a*, thereby avoiding partly the danger of explosion by preventing the fluid from coming in contact with the heated portion of the lamp.

Claim.—The wick-tubes surrounded by an outer tube or cylinder, in the manner and for the purpose specified.

No. 14,727.—ALONZO M. MACE.—*Improvement in Hydro-Carbon Vapor Lamps*.—Patented April 22, 1856.

The nature of this invention will be understood from the claims and the engraving.

The inventor says: I am aware that it is not new to provide a wick-tube with a retort, and to heat such by a separate burner or a separate wick-tube; and I am aware that it is not new to provide the wick-tube with a bulb or retort to extend the wick into it so as to fill it, and to have jets or holes made in the tube or bottom of the retort or bulb so that the flame thereof would only impinge against the bottom of the retort, the same being described in a patent granted August 27, 1850, to Clayton and Bailly.

I do not claim any of such devices.

But I *claim* the particular arrangement of the bottom of the retort *F* and the jet holes *e e* with respect to the wick-tube *B*, whereby the inflamed jets of vapor issuing from the jet holes *e e* are driven downward against the wick-tube, and their currents of heat made to ascend against the concave bottom of the retort, the same serving to greatly facilitate the generation of vapor as well as the heating of the same.

I also claim combining with the retort the bell-shaped cap or heat-retainer *G*, made of transparent or other proper material, the same being arranged substantially in manner and for the purposes as shown.

No. 15,829.—THOMAS VARNEY.—*Improvement in Hydro-Carbon Vapor Lamps*.—Patented September 30, 1856.

The liquor to be vaporized is contained in the vaporizer *C*; the air is forced with a gentle pressure into the vaporizer through the pipe *D*, and, circulating through the passage *h*, takes up the vapor from

the liquid, and passes up the pipe *g* to the burner. The liquid is supplied from the reservoir *B* to the vaporizer *C* just as fast as it vaporizes and is consumed, by the escape of air up the tube *c*, as the level of the body of liquid at the bottom of the vaporizer falls below the tube *c*, and therefore the quantity of liquid in the vaporizer remains the same.

The inventor says: I do not confine myself particularly to the convolute arrangement of the passage *h h* in the vaporizer, as there are other forms in which a passage or passages may be arranged to cause the air to take a circuitous route through the liquid.

But I *claim* the combination of the reservoir *B*, by means of a seal-pipe *C*, with the stationary vaporizer *C*, containing a circuitous passage, under any arrangement, substantially as described.

No. 14,806.—SAMUEL DAVIS.—*Improvement in Lard Lamps*.—Patented May 6, 1856.

The aperture *F* admits air to pass up through the stem *E* and tube *D*, whereby the light is caused to burn with increased flame and brilliancy. The light can be extinguished by pressing the thumb against the aperture *F*. The slots *B* are for the purpose of allowing the wick to be raised or lowered by a pin or wire.

The inventor says: I do not claim a tube or a feeder with apertures.

But I *claim* a tube with a cone-shaped feeder *A A*, lard heater in two segments, (to admit of a double wick,) with its apertures, and the aperture *F* in the stem *E*, all in combination.

No. 15,364.—JEREMIAH S. SENSENY, assignor to Himself and Geo. H. MERKLEIN.—*Improvement in Lard Lamps*.—Patented July 15, 1856.

The lard is heated to a liquid state and poured into the reservoir *C*, whence, by turning the spigot *k*, it can be let into the burner *h*. After the lamp is once filled, it can be refilled at any time without liquifying the lard, which is the principal feature of this invention.

The inventor says: I *claim* the arrangement and construction of a lamp, as herein described and for the purposes set forth.

No. 15,172.—SAMUEL E. CLEVELAND and HENRY B. CLEVELAND.—*Improvement in Locomotive Lamps*.—Patented June 24, 1856.

When the can is to be filled with oil, the plunger *B* is near the bottom of the can, the oil being above. When the plunger *B* is raised, a portion of the oil passes through the valve *A* and below the plunger, and then the power and pressure of the spring *D* is exerted upon the plunger, whereby the oil is forced up on the outside of the tapering tube *C* until it flows over into the tube, and down into the feeding tube *R*. To compensate for the less power exerted by the spring, the tube *C* is made tapering, so that there is greater room or space for the

oil to pass through the mouth of the tube X when the pressure of the spring is least, the smaller end of the tube being connected to the plunger.

Claim.—The arrangement and combination of the valve A with the plunger B and spring D D, for the purpose of forcing the oil from the can or reservoir to the burner or wick.

No. 14,942.—JOHN STUBER, assignor to JOHN CARTON.—*Improvement in Locomotive and Railroad Lamps.*—Patented May 20, 1856.

To regulate the flow of oil through the tube *u* the screw rod *z* is introduced, which, by reason of the thread A, furnishes a spiral passage for the oil.

The usual circular passage around the burner cylinders for the ascent of the air is closed up near its bottom, leaving holes to admit the lower ends of the short tubes 5, 6, 7. The structure A¹ is dropped in around the burner cylinder before the cap is put upon the cylinder, in such a manner as to insert the lower end of the short tubes in these holes. This forces the air in ascending around the outside of the burner to rise through the tubes 5, 6, 7, and issue around the flame of the lamp through the apertures *c*¹ *d*¹ *e*¹ in the circular hollow ring B¹. The tube D is also introduced for the purpose of furnishing a more abundant supply of air to the flame, in the manner as shown.

The inventor says: I do not herein claim as new, generally, the forcing of the oil from the oil chamber into the burner by means of the spiral spring and valve, nor the operating of the valve by means of the ratchet bar and key; as these devices have heretofore been used.

But I *claim* the tubed structure A¹ (figure 2) as combined with the burner to regulate the flow of air to the exterior of the flame of the lamp.

I also claim the arrangement of the feeding cup *t* and the tube *u* provided with the regulating spirally grooved fillet A.

No. 15,305.—FREDERICK J. SEYMOUR.—*Improvement in Locomotive Reflector Lamps.*—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claims and illustration. The air is admitted near the front edge at *m* and the chimney *l* is placed to the rear of the vertical line above the burner, so that the rush of air through the reflector, passing in nearly a straight line from one opening to the other, as indicated by the arrows, will take the top of the flame and carry it backwards and up the chimney *l*, preventing smoke from being deposited in the reflector.

The inventor says: I do not claim regulating the amount of fluid or burning material supplied to a wick and burner by means of a cock, as this has been done, but I am not aware that the wick itself has ever before been passed through the cock, and the flow of burning material, regulated by the compression thereof on the wick, whereby the cock

can be placed near the burner and the wick be allowed to extend below said cock to any desired point under circumstances that would prevent the use of a cock to regulate the supply to the wick; and this arrangement becomes indispensable with my reflector lantern, because it is required that the oil from the reservoir may be burned up, and also that the wick be prevented from overflowing in filling said reservoir.

I *claim* constructing the reservoir of locomotive lamps so that the reflector becomes one side of said reservoir, for the purpose of heating the contents thereof and rendering the same liquid and limpid.

I also claim constructing the reservoir of locomotive lanterns by means of a case surrounding the whole reflector and provided with the air-tight screws *i k*, so as to cause said reservoir to become a self-supplying fountain to the burner tube *f*.

I also claim regulating the supply of oil or other burning material to the flame of a lamp, or shutting off said supply by means of compression on the wick by the cock *g*.

I also claim placing the chimney *l* to the rear of the vertical line over the flame, when the draft is supplied at or near the front of the reflector.

No. 16,180.—HORACE L. HERVEY.—*Improvement in Pocket Lamps.*—Patented December 9, 1856.

By pressing inward the catch G the revolving match holder C is set free and caused to revolve a portion of the way around by the action of spring Q upon it; and in this manner it brings one of the matches J in contact with the sand-paper I, which thus ignites the match, and as the latter passes over wick *k* it ignites the same.

Claim.—The combination of the revolving match-holder with the pawls E, spring F, catch G, and extinguisher L, for the purposes of a portable pocket-lamp, as set forth.

No. 15,547.—SAMUEL WHITMARSH, assignor to WILLIAM J. DEMOREST.—*Improved Vapor-burning Lamps.*—Patented August 12, 1856.

The reservoir A being filled, and the cock C opened, the alcohol passes through pipe B to the space E of the burner D, and is dispensed through the annular space E by the gravel filling. A small amount of alcohol, being poured upon the wire gauze F and lighted, heats the gauze sufficiently to vaporize the alcohol contained in the space E. The flame created by the combustion of the vapor is intensified by the oxygen of the atmospheric air, which is admitted through the air holes G. The flame rising against the outside of cylinder H heats the latter, and causes the air inside of it to expand and rise through the tube I, and against the cover J, whence it is deflected towards the inside of the cylinder H, where it escapes through a series of holes in said cylinder, and supplies the flame with a further portion of oxygen to yet increase its intensity.

The inventor says: I do not claim the principle of increasing the intensity of combustion or flame by an admixture of atmospheric air, as that has long been known and used.

But I *claim* the method of heating the air supplied through the air-holes in the outer cylinder R, in the space between the cylinders H and I.

No. 14,201.—FRANCIS MORANDI.—*Improvement in Lanterns*.—Patented February 5, 1856.

This lantern is used for lighting street gas-lamps without opening the lantern. The funnel D being held over the gas-burner E, as represented in the engraving, and the cock being turned, a portion of the gas is drawn towards the flame in the lantern and is at once ignited.

Claim.—The funnel D applied to the lantern, in the manner and for the purpose substantially as herein set forth.

No. 15,782.—SINCLAIR SHANNON.—*Improvement in Lanterns*.—Patented September 23, 1856.

The nature of this invention consists in attaching the bail B to the lamp-pot C, said bail passing through loops *a* of the lantern, thus preventing the lamp-pot from becoming detached from the lantern, when the latter is carried about.

Claim.—Connecting the lamp-pot to the main body of the lantern, by the bail, substantially as set forth.

No. 14,087.—HEZEKIAH CROUT.—*Improvement in removable Flange Bars for securing the Glasses of Lanterns*.—Patented January 15, 1856.

The bar L is removable, so as to allow the glass K to be taken out or to be inserted. The glass having been inserted, the wire M at the upper end of the bar is slipped into a hole in the flange F of the frame of the lantern. Then the bar is pressed against the corner of the lantern and glass, and slipped down so as to insert the lower wire N into a hole in a little flange at the bottom of the lantern. T is a wire-handle which serves in removing the bar. The engraving represents only the lower half of the lantern.

Claim.—The application of the flanged removable bar for the purpose specified.

No. 14,741.—EMILE SIRRET & WILLIAM H. SCOTT.—*Improvement in the Method of Fastening Lamps to Lanterns*.—Patented April 22, 1856.

The nature of this invention consists in fastening a lamp B, by means of its base A, to the lamp casing E in such a manner that it shall not be liable to fall out of said casing by any sudden jerks, and this is effected by means of revolving the lamp, fastened to an axis on top of the base of the lantern, in such manner that the extending rim A of the lamp-slides over two shoulders F F inside, near the bottom of the lamp-casing.

Claim.—Constructing the lamp with the bottom extending so as to form an annular flange, which may be revolved with the lamp independently of the base of the lantern for the purpose of attaching the lamp to the lantern.

No. 14,608.—CHARLES M. GOULD and CHARLES B. LAMB.—*Improvement in Submarine Lanterns*.—Patented April 8, 1856.

The annular space T between the cylinders B B serves as a reservoir of air, to prevent by its non-conducting properties the condensation of the air passing through the lamp.

The air is forced down through the feed tube F¹ into the chamber J, wherefrom it passes into the house B through the perforations H H and sub-chamber Y, then passing off through the space between the arched shield *x* and sides of chamber A into the escape pipe F, and carrying out the gasses evolved by the combustion of the flame. The spring valves serve to equalize the air currents in their passage through the chamber, and the shield *x* to prevent the flame from being tapered out by the draught.

Claim.—1st. The two concentrically arranged glass cylinders having an air space between them.

2d. The air-chamber, J and Y with the communicating perforations H H and spring valves J J, in combination with the feed and escape pipes F F, constructed substantially in the manner and for the purpose herein described.

No. 14,229.—LEVI S. ENOS.—*Improvement in Oil Cans*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The compact arrangement with each other of the air tube *a*, the discharging tube *e*, the thumb piece *f*, the spring *g*, the valve rod *b*, and the removable cover of the can, which enables the said operating parts to be easily withdrawn from the can for examination and repairs, and as easily replaced again for service, substantially as herein set forth.

No. 14,825.—JESSE OHMERT.—*Improvement in Ovens*.—Patented May 6, 1856.

When the dampers *i* are closed, the heat, smoke, &c., from the fire chamber C of the furnace A will pass through the apertures *b b* and the flues *a a*, thence upwards through the apertures *g g* into the flues *e e* of the upper compartment of the furnace; the heat passing through the aperture *f* into the chamber D, and heating the bottom of the oven, and then passing upward through the apertures *k k* into the space *l* around the oven; the smoke escaping into the pipe F. The heat is

thus made to pass entirely around the oven, with the exception of its front end.

Claim.—The arrangement of the flues *a a*, *e e*, and space *l*, relatively, with the fire chamber *C*, and oven *F*, as herein described for the purpose specified.

No. 15,753.—HOSEA BALL.—*Improvement in Ovens.*—Patented September 23, 1856.

The hot air enters the oven from the fire-place *A* through the flues *d* and apertures *a* and *e*, and the bread to be baked is placed upon the swinging platforms *h*, suspended on reel *f*, which can be turned on shaft *D*. When the bread is baked the platforms *h*, by turning the reel, will come in contact with the guides *k*, and the bread is discharged into the chute *g*.

Claim.—The perforated interior chamber, in combination with the rotary reel and the swinging platforms thereon, self-discharging, substantially as set forth.

No. 16,143.—JOHN P. HAYES.—*Improvement in Ovens.*—Patented December 2, 1856.

The vertical partition plate *f*, which heretofore produced the dumb flue, is set behind the oven, with an oblong opening *g* through it, on the side next to the oven, of such a capacity as will cause the direct draught *C* from the fire-range to be divided into two currents, one passing beneath the oven and up on the side *C*¹, the other alongside *B* and through *g*, where it joins current *C*¹, and then passes up between ovens *A* and *A*¹ to escape-flue *D*.

Claim.—1st. Making an oblong opening *g* through the plate *f*, which is fixed to the back of each of the ovens, substantially and for the purpose set forth and described.

2d. The arrangement of the soot-catching trough *h* at the back part of each of the said ovens, substantially as and for the purpose set forth.

No. 15,422.—JOHN P. HAYES.—*Improvement in Bake-Ovens.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Heating the flues *B B*, arranged so as to cause the products of combustion to pass from the fire chamber *A*, first into the lower flue *B* at 1, thence behind its partition *f*, and out at 1¹; thence into the next flue *B*, above at 2, and out at 2¹, and so on, as shown by the arrows through the successive flues which may be above to the escape flue *C*; the said flues being arranged on the two sides of the casing, as described, and divided by the partition *e*, and the products of combustion being directed thereby, together with the partition plates *f* and *g* in the wall, substantially as described.

No. 14,895.—JACOB S. WILLIAMS.—*Improvement in Ovens of Cooking Ranges.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The employment of removable ovens *B C* provided with unconnected compartments *c c*, of various sizes and forms, and arranged so that said ovens may be substituted one for another, or be inserted in different positions, for the purpose of subjecting their compartments to different intensities of heat, according to the nature of the viands to be cooked therein.

No. 14,200.—GEORGE R. MOORE.—*Improvement in Fire-Pokers.*—Patented February 5, 1856.

The object of this improvement to make it practicable to poke coal-fires without the escape of ashes and dust into the room. Figures, 1 and 2 represent the poker in its backward and forward position in the ashbat, beneath the grate, which is indicated by dotted lines; figure 3 represents the upward and downward motion of the poker. The leverage of the handle *A* can be increased by drawing it out, as represented in figure 2. For this purpose it is made to slide in the tube *B*.

Claim.—The arrangements, or any of their equivalents, by which the several motions of the poker are obtained. Also the arrangement, or its equivalent, for contracting the handle of the poker at pleasure.

No. 14,591.—JOHN PLANT and CHARLES G. BALL.—*Improvement in Cooking-Ranges.*—Patented April 8, 1856.

While the whole heat from the fire-chamber on the right or left of the range passes by its diving-flue *F*, only the one half of the heat from the adjoining fire-chamber No. 2 passes by the diving-flue on the right side of the bridge, while the other portion of the heat from No. 2 passes to the next oven by its diving-flue *F*, and so in succession to each oven, all receiving a portion of heat from two fires.

The inventors say: We do not claim the alternate arrangement of a series of furnaces and ovens.

But we claim the arrangement of the fire-chambers *A*, ovens *B*, and front plate *d*, in such relation to each other as to admit the products of combustion to pass through the flue *X* over the top plate of the oven, and thence down through the flue *F* in front of the fire-chamber to the flue *G* beneath the oven, substantially in the manner described for the purposes specified.

No. 15,093.—E. A. TUTTLE.—*Improvement in Registers and Ventilators.*—Patented June 10, 1856.

On the valves *B B* is suspended the vibrating scroll front plate *F F*, having its axis directly over the contiguous axes of the valves. Pins

s s, projecting from the back side of *F*, operate upon the projections *P P* raised upon the valves, as shown. By turning the vibratory front, the projections *s s* and *P P*, which are constantly in contact, operate upon each other, and throw open the valves.

Claim.—The combination of the vibrating or revolving scroll front plate *F F* and the wing valves *B B*, operating in contact by means of cast or fast projections upon each at the points of connexion, without the use of any intervening parts or pieces, and substantially as described.

No. 14,754.—SAMUEL HUFFMAN, assignor to Himself and JAMES D. BROWNE.—*Combined Shovel and Tongs*.—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The flange *b* and the plate *a* when combined with a pair of tongs, for the purpose of forming an instrument capable of being used either as a shovel or tongs.

No. 14,505.—CHARLES JONES.—*Improvement in Ash-Sifters*.—Patented March 25, 1856.

The object of this arrangement is to cause the sifter to vibrate with a compound motion.

Claim.—The use of the sieve *H*, in combination with the double-acting cranks *G* and rods *J* for suspending the sieve, for the purposes and in the manner of arrangement of parts in any suitable ash-box *A*, substantially as herein set forth.

No. 14,609.—SAMUEL HARRIS.—*Improvement in Machines for Sifting Coal and other articles*.—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The providing of the pins *a a a*, on the underside of the cover *A* of the sifting-box *B*, in such relation to the bottom of the vibrating sieve *C*, that when the top of the box is closed and the sieve vibrated back and forth, they shall separate the material being sifted, and thus improve and facilitate the sifting operation; and when the top of the box is opened, they shall be out of the way and thus allow for the convenient removal and replacement of the sieve.

No. 14,567.—STIMMEL LUTZ.—*Improvement in Spark Arresters*.—Patented April 1, 1856.

The smoke together with the sparks ascending the smoke-pipe *A* strike and heat the plate *D*, and are deflected through the branch pipes

B B, from which they pass into the reservoir *C*; the sparks are here, by means of cavity *G*, in a great measure precipitated upon plate *D* and consumed. The remaining cinders pass with the smoke into the annular space *E*, where they are extinguished by the vapor of condensed steam issuing from the exhaust pipes *N N*. The conical space *P* receives the moistened ashes and cinders, while the smoke proceeds upwards. Any cinders which may be carried up are arrested by the partition *M*.

The inventor says: I do not claim simply a cap or deflector for arresting the sparks while the smoke proceeds onward, nor do I claim partitions or caps of wire gauze, or perforated sheets of metal alone.

But I *claim* the combination of the plate *D*, branch-pipes *B B*, and the cap or reservoir *C*, provided with a central cavity *G*, or its equivalent, in its upper end, arranged in the manner and for the purposes set forth.

No. 14,398.—PETER C. GUIOU.—*Improvement in Spark Conductors for Locomotive Trains*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not confine myself to any exact form or dimensions; I do not claim the smoke pipe, or funnel, or frame, or the yoke, or the springs, either of them by themselves.

But I do *claim* the yoke *Y* with the springs *S S* and the frame *F*, as arranged, so that the pipe shall have free space and liberty to play, by the yielding of the spring to accommodate the rocking motion of the cars, or the up and down motion without cramping or injuring the pipe, and also to give room for the back and forward motion allowed by the car coupling, for the purpose and in the manner as above set forth.

No. 14,318.—JAMES T. KING.—*Improvement in Domestic Steam Generators*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The combination of a water tank *C*, steam chamber *D*, and steam generator *B*, connected together in the manner and for the purpose specified, so that the height of water in the water tank above the orifice of the pipe leading to the steam chamber shall always regulate the pressure of the steam, while there will be a free escape of steam as soon as the water in the water tank falls below said orifice.

No. 14,312.—STEPHEN J. GOLD.—*Improved Air Cock for Steam Heating Apparatus*.—Patented February 26, 1856.

The channel *b* being open for the passage of air from the radiator, (see letters patent obtained by the inventor in 1854 and 1856,) the radiator will fill with steam and the air escape from perforation *e*.

When the radiator is entirely full, steam will issue from channel *b*, and coming in contact with the bottom of cup *c* will at once vaporize the fluid contained therein, causing it by expansion to lift the centre of the flexible cover *i*, and force it against the inner face of the cap *d*, so as entirely to close the perforation *e* and prevent the escape of steam; the radiator is thus permitted to fill with steam, and the air-opening automatically closed. The cooling of the apparatus reopens the cock.

Claim.—The automatic regulation of the air cock by the secondary action of a fluid which vaporizes at a low temperature, substantially as set forth.

No. 15,495.—JOHN SHOPLAND.—*Improved Combined Steam and Hot-Air Cooking Stove.*—Patented August 5, 1856.

The nature of this invention consists in the introduction of steam into ovens whose sides are formed of metallic plates, for the purpose of creating in the same a certain degree of moisture, which prevents the sudden formation of a crust upon the articles to be baked. In the illustration *a* represents the oven, *b* the steam boiler, and *c* the conducting pipe.

The inventor says: I am aware that a pan of water has been placed in an oven for moistening the air therein, and that steam has been introduced into a chamber for steaming meats and vegetables. These I do not claim; but I *claim* the arrangement of the boiler outside and independent of the oven, so as to have the hot air and steam at variable temperatures, and mix them at pleasure, or as the character of the cooking may require.

No. 14,461.—JAMES B. MABURY.—*Improvement in Stoves.*—Patented March 18, 1856.

The engravings and the claim fully explain the nature of this invention.

Claim.—The surrounding the fire-place of a stove of any size or form with at least two or more air-jackets *o* and *n*, standing in no communication with each other, admitting no currents of heated air to circulate through them, and each of them provided with only one valve *f* and *g*, constructed and operated as described, for the purpose of controlling the radiation of heat from the outermost shell of the stove, without interfering with the fire in the interior thereof.

No. 15,984.—S. T. SAVAGE.—*Improvement in Stoves and Furnaces.*—Patented October 28, 1856.

The combustible gases evolved from the coal in the fire chamber *a* will fill the upper part of said fire chamber. The atmospheric air supplied to the air chamber *j* through the apertures *o* becomes heated in said chamber, passes through the small apertures of the cylinder *n*, descends into the chamber *h*, and thence through the apertures in the

plate *i* to the upper part of the fire chamber, and there mingling with the heated combustible gases evolved from the coal, inflames them, producing an intense heat in the upper part of the fire chamber.

The inventor says: I am aware that many stoves and furnaces have spheric air above or beyond the coal, to inflame the combustible gases been made with a view to economize fuel, by the admission of atmosphere evolved from the coal under combustion.

I do not wish to be understood as making claim broadly to the use of an air chamber to supply air to the combustible gases above or beyond the coal or other fuel.

Nor making claim to the combination of a throat or narrow aperture in the flue space supplied with air for the combustion of the inflammable gases.

I *claim* the use of the throat aperture or passage surrounded by an air chamber and pierced with numerous small holes, through which atmospheric air passes in numerous small jets to the said throat, substantially as described, when the said throat is located between the fire chamber and a flue chamber leading to the exit pipe or chimney, and combined with a perforated plate interposed between the said throat and the fire, substantially as and for the purpose specified.

No. 16,268.—THEODORE COOK.—*Improvement in Stoves and Furnaces.*—Patented December 23, 1856.

The heat from the fire-chamber *A* passes up through the pipe *e'* into the part *c* of the chamber *C*, and thence through the passages *J* into the case *E*, and then into the pipe *h*; but when a direct draught is required, the heat passes up through the pipe *e* direct into the upper part of the case *E*. The cold air to be heated passes up through the pipes *G* into the part *a* of the chamber *C*, and through the pipes *f* into the case *D*, thence upward through the pipe *g*. Cold air also passes directly into the case *D* through openings *K*. The heated air is conveyed through pipe *G* to the desired apartments.

Claim.—The fire-chamber or pot *A*, chamber *C*, and cases *D* *E*, provided with the necessary pipes and arranged relatively with each other, as shown and described for the purpose specified.

No. 14,362.—DENNIS G. LITTLEFIELD.—*Improvement in Stoves and Furnaces for Railroad Cars and other purposes.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

The grate is arranged around a solid centre *N*, for the purpose of burning the coal around the edge or in the enlargements *E* of the furnace, and not in the centre. The central cylinder *R* is to be filled with coal through the top of the stove, after removing cover *U*¹, which latter is again to be put in its place as soon as the cylinder has been filled.

Claim.—A fire-pot or furnace, provided with a series of enlargements or projections on its side or sides, commencing at and extending upwards from the grate, to contain the fuel while it is being burned, or during its consumption, substantially as described, open or provided with openings at the top for the escape of the gaseous products of combustion.

Also a grate made around a solid centre or disk, substantially as described, for the purposes set forth.

Also a supplying cylinder in combination with the above described fire-pot or furnace and grate, or either of them.

No. 14,467.—MERRITT PECKHAM.—*Improvement in Sectional Fire-Pots for Stoves and Furnaces.*—Patented March 18, 1856.

The sections A are fitted together at their inner parts *b* by means of the projections *d*, which fit into the recesses *c*. An iron ring B is fitted into the annular groove formed by the recesses *e* in the upper edges of the sections A. The projection *f* of the base C fits into similar recesses at the lower end of the sections.

The inventor says: I do not claim forming a fire-pot of sections or parts, irrespective of the construction and arrangement as herein shown.

But I *claim* forming the fire-pots of stoves, furnaces, &c., of sections A, when said sections are constructed and secured together, substantially as herein shown and described.

No. 14,648.—WILLIAM W. BINNY.—*Improvement in Coal Stoves.*—Patented April 15, 1856.

By closing the register B, and opening the damper H and the draught-door F¹ of the ash-drawer, a direct draught is obtained, as indicated by the dotted arrows. By closing the damper H, the draught will take the course indicated by the arrows. By closing the draught-door F¹ in the ash-drawer F, and opening the register B, the combustion will be slow, as the fire will be supplied with air at its upper surface only.

Claim.—The partition G placed within the cylinder C and provided with a damper H; the vertical tube or pipe K, also within the cylinder C; and the hollow base A, provided with a register B; when the above parts are arranged as herein shown and described for the purposes specified.

No. 14,278.—ABNER BURNHARN.—*Improvement in Cooking Stoves.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the placing of an air-chamber or air-flues around the fire-chamber, or over the upper fire-flues of toves, nor the carrying of an air-passage or radiator through the

smoke-pipe or chimney, as separate and distinct parts of the apparatus, as each of them may be found in some existing stoves.

I *claim* the combination of an air-chamber G, surrounding the fire-chamber F, having inlets *d* and *f* for the admission of air from without, with an air-flue lying between the top C of the fire-chamber with its flue and the top plate B of the stove, together with an outlet from the same by a pipe or radiator placed within the smoke-pipe or flues, substantially as set forth in the above specifications.

No. 15,023.—WILLIAM B. TREADWELL.—*Improvement in Cooking Stoves.*—Patented June 3, 1856.

The under side of the flues *l l* forms part of the oven-top, so that when the damper *e* is closed, and the draught passes entirely around the oven, its upper part is heated by the products of combustion passing over the plate *d* and also through the tubes *l l*, after passing entirely around the oven; but when the damper is open, the oven will be heated by radiation through plate *d* all around the tubes *l l*.

Claim.—Connecting the flue in front of the oven *b* with the exit-pipe at *m m* by means of a tubular flue or flues *l l*, at the top, and forming part of the top of the oven, substantially as specified, in combination with the plate which forms the residue of the top of the oven.

No. 15,318.—HENRY S. GEORGE, assignor to Himself and GEORGE GRATTON.—*Improvement in Cooking Stoves.*—Patented July 8, 1856.

Cold air passes upward through the side flues 2 and centre flue 18; when it comes in contact with the heated surface of the fire-plates, it becomes highly heated and passes through the chamber 5, over and around the fire, and also through the elbow on the top of the centre flue. The dampers 8 and 9 serve for the purpose of turning the current of hot air either over or under the oven; by closing both these dampers and closing the cold air fire-draught, it is obvious the fire-draught will then be supplied through the flues 2 and 18 with heated air.

The inventor says: I disclaim, when separately considered, the passing of hot air between the oven plates, and the passage for the products of combustion; also the placing of the air-flues through and around the fire-chamber, and the supplying of the fire-draught with heated air.

But I *claim* the arrangement, substantially as herein set forth, of the air flues through and around the fire-chamber, and the hot-air channel 6, between the oven plates and the passage for the products of combustion, with the dampers 8 and 9, for supplying the fire-draught with hot air.

No. 15,952.—SAMUEL PIERCE.—*Improvement in Cooking-Stoves.*—Patented October 21, 1856.

The operation of this apparatus is as follows: As soon as the plates of the fire-box and upper flue become heated, they communicate their

caloric by means of slats *x* to the cold air of the air-chamber lying next to them in A and B, which rises to the top of the chamber. As the caloric of the air thus warmed is absorbed by the plates of the oven, the cooled air descends, taking the coolest passage C, and so drops down into D and thence into E, the lowest and coolest chamber, whence it rises to take the place of the air which, having been rarified, has passed up through A to B.

Claim.—The flanges or slats *x x x*, for the purpose and in manner and form as described and set forth.

Also, the method of constructing the ash-pit and lower oven bottom plate in one piece, with holes *y y y*, for the passage of air, in manner and form as set forth, for the purpose of communicating a greater degree of caloric to the air in the air-chamber surrounding the oven.

Also, the employment of the dumb-flue M, lying within the upper fire-flue, and forming a part of its lower plate, and communicating with the elevated oven by a passage opening into its bottom, substantially as set forth.

No. 15,971.—JOHN W. H. DOUBLER.—*Improvement in Cooking Stoves.*—Patented October 28, 1856.

The engraving represents a front view of a stove, with the improvements relating to the invention as described in the claim, from which the nature of this invention will be understood.

The inventor says: I do not claim as new the sliding grate, nor yet the method of elevating or lowering it by means of rack and pinion, or equivalent devices.

Neither do I claim the mere use of a draught slide or damper to a stove door.

But I *claim* the arrangement of the upper stationary doors A, set back as described, and lower set of doors B, the latter being attached to the rising and falling grate, and hung and arranged so as to slide upwards over or against the upper doors when elevating the grate to raise or reduce the size of the fire, said lower sliding doors being provided with a damper or slide *m*; whereby the same relative position of front draught opening to the fire is maintained, whatever the varied set in altitude of the sliding grate, and whereby, while a large amount of door surface is provided the furnace or stove, but a portion only of the weight of said doors has to be lifted in elevating the sliding grate.

No. 14,720.—WILLIAM E. HAYES.—*Improvement in the Arrangement of Dampers for Cooking-Stoves.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The damper J and K, connected and operated by the lever N and damper-rod M, in the manner and for the purposes specified.

No. 14,356.—B. F. FOERING.—*Improvement in Supplementary Grating for Stoves, Furnaces, &c.*—Patented March 4, 1856.

After the supplementary grate D has been inserted, the usual grating C may be removed, cleaned, and reinserted.

Claim.—Cleaning or removing foreign substances, such as slate, cinders, clinkers, &c., from stoves, furnaces, or other heating devices, in which anthracite coal is burned, by means of the supplementary grating D, applied to the stove or furnace or inserted within it, substantially as herein shown and described.

No. 14,888.—JOHN STARRETT and NEWTON J. WIER.—*Improvement in Gas-Stoves.*—Patented May 13, 1856.

The distributor plate D is composed of three round plates, leaving a narrow space between its outer edge and the sides of the chamber. This plate has also a hole in its centre, through which the gas is intended to pass. G represents a fine wire-netting. The mixed gas and air passing through this is to be ignited on the top, when a flame will spread itself very evenly over the whole surface of G, consuming the gas very effectually.

The inventors say: We do not claim the chamber C, with its wire-covering, for the purpose of mixing air with gas previous to burning, nor their combination with the outer case A, as these devices are already known.

The plate D reflects the heat that strikes upon it, and thus concentrates it all upon the utensil which is being heated over the surface of combustion.

Claim.—1st. The distributor plate D.

2d. The combination of the distributor plate D, the chamber C with its net-work covering, and the exterior cases A and B.

3d. The combination of the plates or registers H H with the net-work covering of the chamber C, for the purpose of varying the surface of combustion to suit the various utensils to be heated.

No. 14,064.—HIRAM B. MUSGRAVE.—*Improvement in Gas-Cooking Stoves.*—Patented January 8, 1856.

The funnels *b* and *c*, being open at bottom, admit a nozzle *e* of a gas-burner. This nozzle has its vents *f* arranged around its sides; the pipe *g* bearing the nozzle is hinged at *h*, so as to be capable of being raised or lowered at will. When it is desired to have an annular flame, the nozzle is lowered so as to bring the vents between the funnels *b* and *c*. If a concentrated flame is required, it is raised, and the vents are brought inside the funnel *e*. A wire gauze *d* is stretched across the double-funnel for the gas to pass through.

Claim.—In combination with the concentrically arranged gas deflector *b* and *c*, the gas-burner, with lateral vents, and capable of vertical adjustment or equivalent devices, for the purposes specified.

No. 14,940.—JOHN MAGEE, assignor to Himself and WILLIAM J. TOWNE.—*Improvement in Ventilating Registers and Dampers for Stores.*—Patented May 20, 1856.

The more the valve *d* is opened the greater will be the passage for the admission of air into the pipe, and the more will it shut off or diminish the flow of the products of combustion through the pipe *I*, thereby not only aiding in checking the draught, but also increasing the ventilation of the room and supplying air to the flue pipe.

The inventor says: I lay no claim to the invention of having an air passage leading into the downward draught flue, and provided with a door opening outward; nor do I claim the principle of applying a damper so that it may be common to two or more openings or flues.

But I *claim* combining with or arranging in the flue-pipe *I*, when the stove is constructed with two discharge pipes *H I*, a rectangular box or chamber *b*, formed with an opening *c*, and so as to receive within it, and permit to operate, a rectangular valve or damper *d*.

VI.—STEAM AND GAS ENGINES.

No. 15,742.—WILLIAM P. PARROTT.—*Improvement in Locomotive and Steam Boiler Furnace.*—Patented September 16, 1856.

A represents the fire-box; B a recess within the boiler, in which is placed the cone C. Through this cone are passed the tubes *a*, through which the smoke and gases from the fire-box pass. The interior of the cone is supplied with air through the pipe D; through the surface of the cone, at the points *a'* where the tubes *a* pass through the cone, there are openings concentric with the tubes, through which the heated air is permitted to pass from the cone to the recess in front of the tube plates. This heated air enters the recess in finely divided streams and in immediate contact with the currents of smoke and gas passing through the tubes *a*, which are thus consumed directly in front of the tube plate.

The inventor says: I am aware that perforated plates for the admission of air have been used in connexion with hollow bridges; but in working with a rapid draught the smoke and gases in the fire-box or furnace are not properly mixed with the air so as to complete the combustion. I do not, therefore, claim any such combination or arrangement of parts; but I *claim* the hollow box or cone, having tubes for the passage of the smoke and gas, and apertures for the admission of heated air, so arranged, in the manner substantially as set forth, as intimately to mix the two for the purpose described.

No. 14,230.—WILLIAM E. EVERETT and M. MINTHORN THOMPSON.—*Improvement in Devices for Removing Incrustations of Boilers.*—Patented February 12, 1856.

When the boiler is out of use and emptied of the water, all the passages leading to and from the boiler are to be closed, except one or more, through which steam, furnished by a supplementary boiler, is introduced. This steam fills the boiler and condenses upon the surfaces thereof and on the scale deposited upon them, and after a greater or less time softens the scale, and, as the inventor states, often loosens it so completely that it falls to the lower part of the boiler, whence it may be removed afterwards. The inventor has found that steam of about one atmosphere pressure had to be employed eighteen hours to soften sufficiently an ordinary marine boiler scale of a quarter of an inch in thickness.

Claim.—The herein described method of softening or softening and removing the deposit upon boilers, commonly known as "scale;" namely, by exposing the same to the action of steam, substantially in the manner as herein specified.

No. 14,408.—LEONARD PHLEGER.—*Improvement in Steam Boilers.*—Patented March 11, 1856.

By the combined action of the arched water space *a b c*, the water space M N, and the water table L L', the flame and particles of fuel and ashes from the furnace are reverberated down upon the water table L L', instead of being thrown against the mouth of the tubes T.

Claim.—1st. The arrangement of the arched water space *a b c*, so that the boiler may be suspended near to the track, in the manner and for the purposes substantially as hereinbefore mentioned.

2d. The arrangement of the arched water space *a b c*, the water space N and M, and the water table L L', in combination, so that the flame and heat will be reverberated in the manner and for the purpose substantially as herein before described.

No. 14,523.—O. M. STILLMAN and STEPHEN WILCOX, jr.—*Improvements in Steam Boilers.*—Patented March 25, 1856.

The reservoir being filled with water to the line *x*, the coils *e* and *e'* will also be filled to the top; the draught ascends between the reservoir and inner coil, and passes down the annular spaces between the coils to the outlets *s s*. The steam and particles of water pass into the steam space of the reservoir C, above *x*. One of the coils *e* terminates so as to discharge through the expanded mouth of *p*, and in doing so forms a partial vacuum behind. Thus, *p* will be exhausted and the steam forced through the coil *e''*. When the engine is at work the steam passes off with such velocity that it escapes through the shortest passage *p*, when the valve *r* closes and compels all the steam to pass through the coil. The steam is separated from the water by the spiral passage *i*; the water accumulated in *k* flows out through pipe *o*.

Claim.—1st. Such arrangement of a series of vertical coils e e^1 e^2 , &c., of different diameters, that, when placed one within the other, spaces shall be left between, thereby forming flues which allow the fire to act upon each of the said coils as described.

2d. The arrangement, in combination with the coils, of a reservoir or boiler placed within the inner coil in such a manner that the greatest effect of the heat upon both will be obtained, as set forth.

No. 14,555.—F. P. DIMPFEL.—*Improvement in Steam Boilers.*—Patented April 1, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—The arrangement of the tubes and the connexion of a receptacle t , as herein described, for consuming the fine particles of coal which are carried by the force of the blast or draught from the fire chamber into the flues, the said receptacle being placed below the bottom of the main flue, and communicating therewith, and between the fire chamber and a check or deflector r in the main flue to check the momentum of the particles of coal, and cause them to drop into the receptacle, to be consumed as described.

2d. Forming a single flue in the middle for the passage of the products of combustion from the main flue f , surrounding the water tubes a to the smoke-box g , by securing the rear ends of the water tubes to two tube shuts d and d^1 , one-half to each of said tube shuts, and leaving a space e between the two tube shuts for the passage of the said middle flue, when this is connected with a check or deflector g^1 , placed in the main flue among the water tubes, and in front of the said middle flue, as described, to prevent the products of combustion from taking a direct course to the said middle flue.

3d. Arranging the bent up ends of the water tubes, where they are connected with the crown shut b of the furnace, in a series of double longitudinal rows, and leaving spaces between the double rows of greater width than the external diameter of the water tubes, as described, to admit of taking out and inserting the tubes, whilst in other respects the said tubes may be placed as near to each other as may be desired.

No. 14,721.—C. B. HOARD.—*Improvement in Steam Boilers.*—Patented April 22, 1856.

The flue F is fitted into the groove H , in the head A^1 , around the opening D^1 , and held therein by means of screw brackets I . The other end of the flue is provided with a flange G , which is fitted to the head A , and fastened by screws or bolts.

Claim.—Closing the openings or man-holes in one or both heads A A^1 of the boilers, by the insertion of a flue F , which may be conveniently removed and replaced, substantially as described.

No. 15,803.—DAVID H. FOWLER.—*Improvement in Steam-Boilers.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the central flue k , with the exterior flues e and apertures g g , substantially as and for the purposes herein described.

No. 16,262.—JOHN ARMSTRONG.—*Improvement in Steam Boilers.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The series of cylinders A A , placed vertically in rows, with a series of horizontal flues a passing through each row, and lying in the vertical plane cutting the centre of each cylinder—the space between each row of vertical cylinders being closed at the top by a horizontal flue boiler B , all the vertical cylinders being connected together at the top and the bottom, and the furnace M being located in one end of the space between the rows of vertical cylinders, the whole being arranged substantially as and for the purpose described.

No. 14,033.—THOMAS STUBBLEFIELD.—*Improvement in Steam Boiler Alarms.*—Patented January 1, 1856.

A represents a fragment of the upper side of the steam boiler. When the boiler is filled to the proper height with water, the float G and the lever F will be raised to their highest position and the valve closed. When the water lowers, the float will sink, but without disturbing the valve until it has descended far enough to let the upper extremity 2 of the slot n rest upon the pin m , when the weight of the float will depress the lever F , raise the heavy end c of the lever D , and open the valve to allow the steam to escape and sound an alarm, through the steam-whistle, of a deficiency of water.

Claim.—The combination of the flexible lever with the float and alarm valve, substantially in the manner and for the purpose herein set forth.

No. 16,092.—ALLEN LAPHAM, assignor to Himsel. and STEPHEN WILKES.—*Improvement in Combined Steam Boilers and Kettles.*—Patented November 18, 1856.

The water in the kettle C is heated by means of steam in the boiler B , which latter is heated by means of the flues E leading from the fire-box. The reservoirs D are filled through the feed pipe f , and the valves F serve to admit steam to said reservoir, while the feed-water enters the boiler through the valves G .

The inventor says: I do not claim surrounding the kettle with steam as that has been done before.

But I *claim* the use of the kettle C, surrounded by steam, as set forth, in connexion with the boiler B, the reservoirs D D, with valves F F and G G, or their equivalents, on the upper and lower sides, and the induction pipe *f*, arranged, constructed, and operating in the manner and for the purpose set forth and described.

No. 15,870.—PLINY E. CHASE.—*Arrangement of Means for Regulating the Draught of Steam Boilers.*—Patented October 14, 1856.

When the steam boiler B is cool, the damper *a* is closed. Air enters at N, and passes through the fire-box F, rapidly increasing the combustion of the fuel. The flame, smoke, and heated gases are forced over the upper edge of the fire-box F, and, being prevented by the curved plate I from passing directly into the flue L, circulate in the space H, giving off their heat to the extended surface of the boiler, and rapidly generating steam. As the pressure of the steam increases it causes the water to rise in the tube C, elevating the float *f*, which, by its connexion with the dampers *d* and *a*, closes the opening N and the flue L, at the same time opening the flue L¹. The draught will thus be reversed, and the heated products of combustion will be drawn from the annular space H, and the surface of the boiler, down through the fire-box and the flue L¹, reducing the temperature of the boiler, and consequently the head of steam.

Claim.—The apparatus substantially as described, when constructed and arranged so that the action of the steam in the boiler B, when at or above the maximum pressure desired, will cause the draught through the fire-box F to be reversed, and pass down through the fire, and again resume its former course in the opposite direction when the pressure is reduced to the minimum, for the purpose specified.

No. 15,579.—JOHN S. SHAPTER.—*Improved Arrangement of Steam Cylinder within the Boiler.*—Patented August 19, 1856.

The nature of this invention consists in enclosing a steam cylinder G in a steam chamber C, separated from the boiler A, by a partition B, for the purpose of making a steam engine compact and portable. The supply of steam from the boiler can be shut off by means of a valve D, and the cylinder and its attachment can be got at through a man-hole E.

The inventor says: I do not claim enclosing a steam cylinder in a steam boiler, as that is known and used.

But I *claim* enclosing a steam cylinder in a steam chamber separated from the body of the steam boiler, where the supply of steam can be shut off from the chamber by a valve for that purpose, and where the cylinder and its attachments can be got at through a man-hole, when the supply of steam to the chamber is so shut off.

No. 14,449.—JACOB FRICK.—*Improvement in Feed and Blow-off Apparatus for Steam Boilers.*—Patented March 18, 1856.

C screws into and communicates with the steam boiler, and D forms the blow-off passage. Should the plug have been turned so as to obstruct the passage of the feed-water to the boiler, the pressure will cause the water to act on the safety-valve M, and, passing through *n*, will operate against the spiral spring *w* in pressing down the piston *q* until a portion of the water can escape down the grooves *s*, causing at the same time the bell to ring.

The inventor says: I do not claim the combining of a check-valve and stop-cock in one instrument, the same being in common use.

But I *claim*, 1st, arranging substantially in the manner set forth a check-valve F and stop and blow-off valve E, in one instrument, for steam boilers, for the purpose of avoiding the attachment of the separate and distinct connexion hitherto employed for the same purpose.

2d. The pressure-valve M, with its weighted lever O, as connected with the alarm-valve, and as arranged with the check and stop-valve, the whole being constructed and operating substantially in the manner and for the purposes herein set forth.

No. 14,191.—THOMAS FIRTH.—*Improved Feed-Water Apparatus to Steam Boilers.*—Patented February 5, 1856.

The lever 10 works freely on its axis, and strikes the pins 29 29, which moves the valve 12 either way, as the case may be, until the pin 30 (which is attached to valve 12 the same as pins 29) passes the vertical centre line of the valve, when the spring 18 attached to the pin forces the valve into its right position, so that steam can be admitted to and from the steam cylinders through pipes 17 by the openings 24 in the valve, and escape out of the opening 27 in the valve-face into the escape-pipe 13.

Claim.—The arrangement of the pistons 9 9, beam 10, pins 29 29, (attached to the valve 12,) and spring 18, or their equivalents, for giving motion to the steam-valve 12 for admitting steam to and from the steam cylinders 4 4 and pipes attached thereto.

No. 16,206.—ERASTUS W. ELLSWORTH.—*Improvement in Feed-Water Pumps for Steam Boilers.*—Patented December 9, 1856.

The pipe X forms a communication between the steam cylinder D and the steam boiler at the water line; when the water in the boiler is below that line, steam circulates through X, and when above it, water. The difference in the densities of these two fluids causes the engine to be more or less held in check and impeded according to the height of the water in the boiler; and the feed-pump piston I, connected to the steam cylinder piston E, is thus regulated in its operation.

The inventor says: I *claim* the method of making a steam pump, when applied to maintaining the level of water in steam boilers, or of

other liquids in similar vessels, regulate its own speed, by causing the liquid, when at or above the proper level, to apply resistance to the motion of the engine of the pump, that resistance being caused by the circulation of said liquid back and forth through a narrow passage communicating between the above mentioned boiler or vessel and a variable cavity operated by said engine, said variable cavity being constituted by a piston and plunger working in a cylinder, as described, or in any similar manner, whereby substantially the same result is accomplished.

I do not claim the connexion of the steam-pipe of a pumping engine with the boiler at the water line, whereby steam or water, or both fluids, pass constantly from the boiler and are exhausted through the engine, and by their different densities regulate the speed of the engine, for the pipe which conveys the steam expended in working my engine has not such a connexion, but my claim, as set forth.

No. 14,959.—F. A. HOYT.—*Improvement in Floats for Steam Boilers.*—Patented May 27, 1856.

The float A is charged with compressed air by means of valve *e*. The resisting force of the float being thereby increased, a very light float can thus be constructed and applied directly to the indicating apparatus, and without the necessity of counterbalancing the float.

Claim.—Charging the float with compressed air, for the purpose substantially herein specified.

No. 16,173.—WILLIAM S. BLAKE.—*Improvement in Floats for Steam Boilers.*—Patented December 9, 1856.

When the water within the boiler A is heated so as to make steam, that within the float will be correspondingly raised in temperature and vaporized, so that the pressure within the float B will be sufficient to balance that of the steam on its external surface; this arrangement permits the construction of floats of very thin material.

The inventor says: I do not claim the principle of a steam-gauge hollow-ball float, or sphere, made air-tight, and filled with compressed air, or gas forced into it by external pressure, before such float is used, or placed within the boiler.

Nor do I claim a hollow air-tight box or globe, partly filled with water or a liquid, and separate from and without reference to the above mentioned application and connexion of it with a boiler, so as to be operated by it in manner described.

But I claim the specified application of a steam-gauge vapor-generative float, constructed substantially as explained, with a closed steam boiler, and so as to have its contents vaporized by the heat of those in the boiler, in the manner, and for the purpose of resisting their pressure externally on the float, as set forth; the boiler thus serving, by the heat of its contents, to produce the agent by which the pressure of the steam on the external surface of the float is neutralized.

No. 15,424.—E. T. INGALLS.—*Improvement in Steam Boiler Furnaces.*—Patented July 29, 1856.

The inner cylinder *e* is filled with fuel and fire applied to the same at the grate. When the coals become heated as high up as the draught holes *o o*, then the heated gases pass through said draught holes up through the flues *k*, and finally escape through the flue *n*. The gases are prevented from escaping direct through the flue *n* by means of the partition *l* provided with small draft holes *p*.

Claim.—The improvement in steam boilers which consists in arranging a fire pot of sufficient depth to contain a large quantity of fuel, within or about and underneath the boiler, placed concentrically therewith, in such a manner as to keep the fuel which is in contact with the lower part of the furnace in a full state of combustion always, as set forth.

No. 15,825.—ASBURY M. SEARLES.—*Improvement in Steam Boiler Grates.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

Claim.—1st. The described conical grate *k n o*, formed by diverging radial bars, and having the described recurved margin, or otherwise, or equivalent devices, for the purposes explained.

2d. In the described connexion with a conical grate, the radial series of pokers *p*, or its equivalent, having the explained shearing action between the grate bars.

No. 14,835.—THOMAS SLOAN.—*Improvement in Heating Feed-water Apparatus for Steam Boilers.*—Patented May 6, 1856.

The water is driven by the feed pump through the pipe D, and descends into the purifying vessel P, where the level remains the same as in the boiler, the upper part thereof and the chamber G being filled with steam at the same pressure and temperature as in the boiler. In descending through the steam in the purifying vessel, the water is heated so as to cause the precipitation of the greater part of its impurities; and as the upper part of the body of water in the purifying vessel is heated by the steam in the chamber G, it is kept heated above the boiling point, while that in the lower part is cooler, and the precipitation is there finished; and the mud is caused to settle at the bottom of P, while the mineral matter is caused to encrust itself upon the sides of the upper part of said vessel.

Claim.—1st. A vessel separate from the boiler but communicating both with the steam and water chambers thereof, in which the water, previously to its entrance to the boiler, is heated by passing in a thin stream through the steam in its upper part, and also by the contact of the steam with the top of the body of water contained therein.

2d. The arrangement of the purifying vessel, the pipe D with its funnel mouth, the internal heating chamber G, and the pipes E and F

No. 15,494.—JOHN R. SEES.—*Improvement in Heating Feed-water Apparatus for Steam Boilers.*—Patented August 5, 1856.

The feed-water passes through pipe D into the valve chamber E; after having raised the lower valve of the double poppet valve L, it passes up the pipe F through G, J, H, and I, into the boiler B. The water in the pipes J, by means of their small diameters, is heated in less time than would be required if one pipe only of a larger diameter containing the same area were used. If the feed apparatus is not in motion, then the water in the boiler presses through pipe K on the upper valve of rod L, and closes the lower valve, filling the pipes J and preventing them from being overheated.

The inventor says: I do not claim heating the feed-water for boilers in pipes placed between the feed pump and boiler; neither do I claim heating the feed-water by the escape heat of the boiler.

But I *claim* the heating pipes J and the branch pipes G and H, with the chamber containing the double-acting check valve L, and the circulating pipe K, all arranged below the water line of the boiler, in the manner and for the purposes set forth.

No. 15,324.—BENJAMIN F. BEE.—*Improvement in means for Controlling the Feed-Water Apparatus of Steam Boilers.*—Patented July 15, 1856.

W is a shaft carrying the shifting dogs M and the reversing cam I; *s* is the shifting stud placed on the front of the main wheel C, which as it revolves may come in contact with the dogs M. S and T are studs or blocks placed upon the segment F; S being stationary and T adjustable by means of a set-screw. When the lever E is depressed in raising the float A, S comes in contact with I, and restores the shaft and its fixtures to the position as shown in the drawings. If the water is sufficiently high in the boiler B so that the float A in its fall does not cause the stud T to disturb I, the shaft will remain in that position, and as the shifting stud *s* revolves it will engage the lower dog of M, thus causing the shaft W to slide through its bearings, taking with it the shifting lever *t*, which acting upon the shifting bar *y*, will cause the belt to run upon the loose pulley *x*, and the pump or feeder will stop. If, however, when the float fell, there was a deficiency of water according to the adjustment T, then I will be depressed and the stud *s* will engage only with the upper dog of M, and the pump, &c., if stopped, will be started by a counter process.

Claim.—Controlling the feed-water apparatus of steam boilers by the float A, and the intermediate means, or their equivalents, between it and the feed apparatus, and connected with the counter-balance L, or not.

No. 15,617.—LUCIUS PAIGE.—*Improvement in Water Gauges for Steam Boilers.*—Patented August 26, 1856.

The steam and water passes from the boiler C through the passages D and E into the annular chamber B, which surrounds the gauge A.

The object of the auxilliary chamber B is to diminish such causes or disturbance of the proper operation of the tube A as are produced by the evolution in a tube attached directly to a boiler, and by incrustation and other causes. The gauge A is composed of two concentric sections of glass tubes *h*¹ and *h*, mounted in the grooves of metal rings, so that in case of breakage of one tube the gauge may still remain in working condition.

The inventor says: I do not claim combining with the gauge A a separate receiving chamber B, arranged between it and the boiler and connected to both by pipes; but I *claim* applying the said chamber B, or arranging it with respect to the gauge, so that it shall partially surround the same, and form a niche or recess H to receive such gauge and radiate heat upon it towards its axis, for the purpose specified; the said recess H being provided or not, as the case may require, with the curved cover or slider I, made to operate therewith, substantially as set forth.

I also claim constructing the gauge in tubular sections of glass or other suitable transparent material, in combination with providing the same with a clamp frame or apparatus and connexion rings and cups, substantially as described.

No. 16,054.—JOHN C. HARRIS.—*Improvement in Water Gauges for Steam Boilers.*—Patented November 11, 1856.

The nature of this invention consists in employing a medium specifically lighter than water, such as oil, within the gauge chamber S, to float upon the water and to carry the float *m* of the gauge *n*; so that said gauge may indicate the height of the water in the boiler *b*, irrespective of the varying density of said water, due to the concentration of mud or saline matter.

Claim.—The arrangement of the float chamber S, the stop-cock *s*, and the blow-off cocks, to adapt the gauge to the employment of oil, interposed between the float and the water to carry the float, substantially as set forth.

No. 16,182.—F. A. HOYT.—*Improvement in Water-Gauges for Steam Boilers.*—Patented December 9, 1856.

This invention consists in placing the moving parts of the indicating apparatus, consisting of float H and rod I, which are connected with dial *m* by means of rod *k* and shaft *f*, within a separate dry steam chamber L, so arranged over a detached vessel C, outside the boiler, that no water is at any time admitted to it, whereby the shaft, which passes through the outside, is entirely removed from the influence of sediment.

Claim.—The described arrangement of the outside vessel C, the dry steam chamber L, and the float H, having a direct communication with the indicating hand, and operating in the manner substantially as set forth.

No. 16,130.—UEL WEST and ABNER MILLS.—*Improvement in the Construction of Tubular Condensers and Heaters*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The connexion of the ends of the tubes B B with the conductors C C, by squaring the ends of the tubes fitting the squared ends of the tubes of each row close together, and making tight joints between them, and inserting the whole united row directly between the two parallel sides or portions *g g* of the conductor, and securing each tube closely to the said sides or portions *g g*, substantially as described.

No. 14,244.—JAMES T. KING.—*Improvement in Steam Condensers*.—Patented February 12, 1856.

The object of this improvement is to save all the condensed water, and govern the steam pressure by the weight of water, without the noise occasioned by letting the steam into a tank below the surface of the water.

Claim.—A condensing tank having a vertical partition D, of any desirable depth, with the inlet steam-pipe and a vacuum valve upon one side of the partition D above the water, and the escape steam-pipe on the opposite side of said partition, so that the steam, before it can escape, must by its own pressure force the water down one side of the partition and pass up through the water on the other side, substantially as described.

No. 14,954.—WILLIAM B. GODFREY.—*Improved Engine Governor for Side-Wheel Ocean Steamers*.—Patented May 27, 1856.

When the paddle wheel B B has its paddles C submerged and is in motion, the resistance of the water to the revolution of the paddles of the governor-wheel overcomes the force of the springs G or G¹, and drives the governor-wheel paddles towards the propelling paddles on either side of them, whereby the lever I is acted upon to cause the rod *h* to move the slide *g*, and the arm *f* is caused to act through the rod *a*, elbow-lever *c*, and rod *b*, to open the throttle-valve. As soon as the propelling paddles cease to be submerged, the springs G or G¹ instantly throw the governor-wheel to the position to close the throttle-valve.

Claim.—The employment, in connexion with a propelling paddle wheel B B, of a second paddle wheel E E, herein termed the "governing wheel," fitted loosely to the same shaft and having applied to it springs G G to control its position relatively to the propelling wheel when the wheel is out of the water, or not in motion, and being connected with a lever *j*, or its equivalent, which works on a fulcrum *k*, secured to a propelling wheel, and which is connected with the throttle-valve I or cut-off in such a manner that when the propelling-wheel is out of water, or not in motion, the governor-wheel will close the

throttle-valve or cut-off; but when it is in operation in the water, the resistance of the water to the paddles of the governor-wheel will cause the said wheel to move relatively to the paddle-wheel, and by that means give the throttle-valve or cut-off more or less opening.

No. 15,056.—WILLIAM BAXTER.—*Improved Hydro-Steam Engine*.—Patented June 10, 1856.

When steam is admitted to the steam-chest, it will pass down the passage G and D to the small cylinder C, and passing through the holes in the piston fitted thereto, will force down the valve *t* and force the water in the main cylinder B through the valve Q, causing it thereby to take a direction, as indicated by the arrows, through the turbine. The water passes then through the valve Q into the cylinder B¹, raising the float M¹ and closing the valve *t*¹, and then forcing up the small piston until its rod E¹ acts upon the sector F, to shift the valve by which the direction of the action of the engine is reversed.

Claim.—The method, substantially as described, of imparting rotary motion to a wheel or wheels by the pressure of steam, or other equivalent expanding gas, acting alternately on the opposite one of two columns of water or other liquid connected together, to cause the said water by such alternate action to pass through and impel the wheel or wheels.

No. 14,967.—WILLIAM W. H. MEAD.—*Improvement in Instantaneous Governors for Steam Engines, &c.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Combining the fly-governor with the throttle-valve C by fitting it loosely to the spindle D, and driving it by friction from a wheel F which is loose on the same spindle, and which derives its motion from the said spindle through a spring *e*; the said wheel F being connected in any convenient manner with the throttle-valve or cut-off, so that it may be caused by the retarding or advancing effect of the moment of inertia of the governor or fly, as the speed of the engine is suddenly increased or diminished, to diminish or increase the supply of steam to the engine.

No. 14,239.—BIRDSILL HOLLY.—*Improvement in Condensing Steam Engines which are used for Pumping*.—Patented February 12, 1856.

The steam engine A and pump B represented in the engravings are rotary. The nature of the improvement will be understood without further description.

Claim.—Leading the eduction steam pipe F of a steam engine A into the suction pipe C of a force or lift pump B, substantially as herein described, whereby the condensation of the steam is effected, and a partial vacuum produced without a separate condenser and air pump,

and this in engines employed wholly or in part to raise water without any additional expenditure or loss of power to raise the water to effect condensation.

No. 16,202.—JOHN UNDERWOOD.—*Improvement in the Cylinder and Piston of Hydraulic and Steam Engines.*—Patented December 9, 1856.

The India-rubber ring *b* is placed between the serrated piston B and serrated recess *e* of the steam cylinder A, serving as packing between piston and cylinder.

Claim.—The cylinder and piston, made as described, and for the purpose set forth.

No. 15,122.—CHARLES N. CLOW.—*Improvement in Differential Governor for Marine and other Engines.*—Patented June 17, 1856.

Power being applied, the pump A A will rotate, and the water be drawn from the box G by way of valve E, cylinder C, and branch induction pipe B¹, and returned through the eduction pipe I I and cock J to the box again; if now the motion of the pump is increased so much that the pipe I I will not carry the water off freely, it will cause piston L to rise, whereby valve E is closed and valve E¹ opened, permitting thus the water to flow through it into the cylinder C, and press against piston D, while a vacuum will be produced at that end of the cylinder connected to the pump by branch induction pipe B¹, and as a consequence, the piston D moves in the direction of the arrow, thereby closing the throttle-valve of the engine; the motion of the pump then subsides, and the reverse of this action takes place.

The inventor says: I do not wish to be understood as limiting my invention to marine engines entirely, as there are cases where it may be used to advantage in stationary ones.

I am aware that governors operated by pumps have been heretofore used, and that a piston moved similarly to piston L has been attached to the throttle-valve of the engine, and therefore I expressly disclaim such a construction.

But I *claim* controlling the throttle valve of the engine by means of pistons L and D and valves E E¹, by producing a vacuum on either side of piston D alternately, as the motion of the engine may require.

No. 14,124.—HUGH WIGHTMAN and WILLIAM HARDEN.—*Improvement in Oscillating Engines.*—Patented January 15, 1856.

The object of this improvement is to save steam and prevent leakage of steam, and also to avoid friction.

Claim.—The arrangement of the plumber-block I in correspondence with the steam openings in the hollow trunnion H of an oscillating steam engine, and the steam openings of a suitable valve J, so that the plumber-block lies contiguously between the trunnion and the valve, substantially as described and for the purpose represented.

No. 15,685.—WILLIAM A. CLARK.—*Improvement in Steam Engines.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of two or more pistons on the one piston-rod within the one cylinder, divided into compartments, the movement of each piston being limited to its respective compartment, and all the pistons travelling in the same direction, as set forth.

No. 15,181.—HENRY J. HAWKINS and THOMAS HAWKINS.—*Improvement in Adjustable Cut-Offs for Steam Engines.*—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engraving.

9 represents an end view of the rock-shaft, with bearing bracket removed; 18 the index rack; 6 the lower steam valve lifting-rod; 17 the rest block and carrier for self-inserting toe.

Claim.—The adjustable cam 13 and self-inserting toe 15, which, when combined together on any rock-shaft motion for working steam valves, can cut off the steam at any given point on either motion of the piston at a moment's notice.

No. 15,650.—ANDREW HARTUPEE and JOHN MORROW, assignors to JOSEPH P. HAIGH, ANDREW HARTUPEE and JOHN MORROW.—*Improvement in Adjustable Cut-Offs for Steam Engines.*—Patented September 2, 1856.

When the stroke of the engine commences, the crank *m* turns the shaft *n*, and simultaneously with the lifting by the lifter *g* of the lever *s* and exhaust valve *k*; the box *t* being turned on its centre on the shaft *n* (in the opposite direction from the lifter *g*) tilts up the extremity of the lifter *h*, on which rests the point of the lever *r*¹ of the adit valve *i* to admit the steam into the forward end of the cylinder. In this elevated position it would retain the lever *r*¹, were it not that the slide *w* being drawn back in its way *v* by the action of the cam *e*¹ and cam rod *c*¹ before the stroke is terminated, the upper extremity of the stop *z* attached to the screw-shaft *y* comes in contact with the projecting extremity of the T-shaped lifter *h*, and draws it back in its box *t*, until the point on which the lever *r*¹ rested is drawn into the box *t*; and no longer supporting the lever *r*¹, the lever drops at once, cutting off the communication of the steam with the cylinder by closing the adit valve *i*. On the return stroke of the engine, the like process is repeated with the other adit valve *i*¹. The closing of the adit valves can be regulated by adjusting the stops *z* *z*¹ on the screw *y*, which, being provided with right-and-left-hand screw-threads will cause the stops to move in opposite directions when said screw is turned.

Claim.—The combination of the T-shaped lifter, slide, screw, and stops, or their equivalents, constructed and arranged as described, and operating as an adjustable cut-off for steam engines, in the manner set forth.

No. 16,132.—WILLIAM WRIGHT.—*Improvement in Adjustable Cut-Offs for Steam Engines.*—Patented November 25, 1856.

The toe upon the valve is so placed that the back end of it is directly above the centre of hub *b*, so that when the rock-shaft *d* turns, so as to bring the end of one projecting boss *e*¹ behind the back end of the toe, the toe will fall; and upon the return motion of the rock-shaft, the projecting boss *e*¹ coming in contact with the back of the toe, the disk *e* will be pushed back, thus causing a projection of the boss upon the other disk *e*, by which means the corresponding toe will be lifted. The valves *o* are hinged to the cross-head *k* of the valve-stem *m* to relieve the valve from striking its seat with a shock when falling to cut off.

Claim.—The construction and arrangement of the adjustable cut-off, consisting of the cylindrical hubs, disks, and their adjustments, substantially as described. Also, the flap-valve checks, constructed and combined with the drop-valve as described.

No. 15,604.—JOHN T. DENNISTON.—*Improvement in Condensers for Steam Engines.*—Patented August 26, 1856.

The condensing water enters the condenser through a pipe *h*, chamber *b*, and valve *j*, at a time when that end of the steam cylinder with which it connects is taking steam, the piston of its pump *B* being then descending and keeping the valve *p* closed and the valves *k* and *j* open. When the action of the pump *B* is reversed—that is, when its up stroke commences before the eduction of the steam to its condenser takes place—the effect of this action is to close the valves *j* and *k* and open the valve *p*, thereby causing the water to flow from the condenser *C* to the pump *B*; and in consequence of the stroke of the pump changing before the eduction of the steam, sufficient water will have left the condenser when eduction commences to make room for the incoming steam, which opens the valve *Q* and rushes in between the water-cups *v* and passages *w*, and is all condensed by the time the engine piston has made a very small portion of its stroke.

Claim.—1st. Forming a partial vacuum before the commencement of the eduction of the steam from the engine to the condenser, by first filling the condenser with water, and then partially withdrawing the water to form steam space, substantially as set forth.

2d. Suspending the water in the condenser in a number of cups or cells *v v*, with perforated bottoms, and passages *w w* between them, thus causing the steam to circulate among and over and under the water in the cups, and through the shower of water falling through the condenser.

No. 15,663.—DAVID MATTHEW.—*Improvement in Condensers for Steam Engines.*—Patented September 2, 1856.

The exhaust steam passes from the cylinder through pipe *X* into the receiver *C* and condenser *B*, and is condensed by the jets of water

discharged through the apertures of pipe *e*, at the same time that a blast of cold air is forced from a ventilator *H* into the condenser, and in between the flat tubes and the cross-tubes *g* in the condenser. As the air becomes heated, it passes back through the pipe *S* to assist the furnace, while the condensed water is collected in the receiver *D*.

Claim.—I claim the combination of the flat vertical tubes, connected by horizontal tubes with new rose pipes inside, and surrounded by the outer case, to condense by the combined action of air and water, substantially as described.

No. 14,486.—ORVILLE LEONARD, assignor to Himself and GEORGE H. REYNOLDS.—*Improvement in Cut-Off Gear for Steam Engines.*—Patented March 18, 1856.

The rocker *d* vibrates with crank *c* around *f*, it being connected with the eccentric rod *D* by means of arm *H* and link *I*. Through the centre of the rocker passes a post *g*, which is connected with the governor *K* by lever *L* and rod *m*. The bar *G* has a slot which locks with the post *g*. If the governor balls fall, the post *g* is projected in proportion above the surface of the rocker and, in taking hold of *G*, raises the valve until the post is withdrawn by the motion of the rocker, when the valve will close by the weight *E*. If the balls rise still higher, the post is withdrawn beneath the surface of the rocker, and the valve is not raised.

Claim.—The rocker *d*, toe *g*, and bar *G*, constructed and arranged as described, and operating substantially as herein set forth.

No. 14,699.—JOHN S. SHAPTER.—*Improvement in Cut-Offs for Steam Engines.*—Patented April 15, 1856.

The lower steam valves being raised by the rock-shaft *B*, the plunger *J* attached to the bottom end of the lift-rod *G* raises the valve *L* and allows the fluid to fill the supporting chamber *K*. The dropping of the toe *E* from the lift *E*¹ leaves the lift-rod held up by the fluid; the turning of the rock-shaft drops down the connecting-rod *U*, and the thimble *i*² striking the adjustable nut *O*, and raising the discharge valve *M*, allows the fluid contained in the supporting chamber to be discharged back into the reservoir *N*, and the lift-rod *G* and the steam valves *i*¹ to drop back into their seats. As soon as the thimble *i*² raises the discharge valve *M* its given height, the weight *W* is upheld by the nut *P* striking *Q*, and the link in the end of rod *U* slips on the pin in the arm *T*, until the motion of the rock-shaft is reversed, and the link catches the pin and raises the lever *T*, disengaging the thimble *i*² from its contact with nut *O*, and allowing the discharge valve *M* to return to its seat by its own weight and that of its attachments.

Claim.—Holding up the poppet steam valves of a steam engine by the fluid contained in a supporting chamber *K*, and adjusting the discharge of said fluid from said chamber for the purpose of dropping said steam valves, and cutting off the supply of steam to the cylinder at different points, as may be required.

No. 15,095.—MARSHALL WHEELER.—*Improvement in Governors for Steam Engines*.—Patented June 10, 1856.

The governing valve *b* is connected to the piston *d* in such a manner that the degree of pressure of the steam on the right-hand side of the valve *b* will, by its greater or less degree of pressure on the piston *d*, in connexion with the action of the counteracting spring *j*, so regulate the size of the governing valve *a* aperture as to admit an amount of steam to the engine exactly proportioned to the power which said engine is required to exert. The circuit-pipe *C* serves to facilitate the starting of the engine.

Claim.—The pressure piston *d* working in an offset chamber *B*, placed between the throttle and the engine cylinder, and combined with the throttle-valve *a*; said pressure piston being made to act against a spring *j*, which simultaneously closes it and the throttle-valve, and which yields in proportion to the resistance upon the engine piston, and opens the throttle-valve in a corresponding degree, substantially as herein set forth.

No. 14,545.—HENRY S. HOPKINS, assignor to Himself, BENJAMIN W. HENDRICK, and JOSEPH C. PECKHAM.—*Improvement in Means for Regulating Variable Cut-Offs for Steam Engines*.—Patented March 25, 1856.

This invention is an improvement on a mechanism for which a patent has been granted to G. H. Cooliss. During the fall of the balls of the governor, the inclined plane *S* will force down the vertical slide *C* (as shown in fig. 2) so as to throw the catch-rod *D* entirely out of action with the crank *E*. Thus the engine will stop in consequence of the steam being cut off from its cylinder. In order that the steam may not be entirely cut off, the shifting block *T* is interposed, which prevents the reversed inclined plane *S* from being driven over the vertical slide *C*.

Claim.—Combining the reversed inclined plane *S* with the main inclined plane of the regulator and valve mechanism above described, the same being to operate in manner and for the purpose substantially as hereinbefore specified. I also claim combining the movable stop-block *T*, or its mechanical equivalent, with the two inclined planes *B* and *S*, the same being for the purpose as set forth.

No. 14,204.—JUAN PATTISON.—*Improvement in Oscillating Steam Engines*.—Patented February 5, 1856.

The inventor says: The advantages gained by this improvement, besides the simplicity of the construction, consist in the mode of receiving the steam through the arched pipe surrounding the cylinder, instead of admitting it through the trunnions, by which means the friction is considerably reduced.

Claim.—The arrangement of parts, viz: The arched steam pipe *c c*,

saddle *e e*, hollow valve *h*, and chest *K*, substantially as described, for passage and distribution of steam in cylinders of oscillating steam engines.

No. 14,778.—JOHN B. ROOT.—*Improvement in Rotary Steam Engines*.—Patented April 29, 1856.

Upon the outside of the cylinder *a a* is constructed another shelf *b b*, concentric with the first, and forming a chamber between the two, which chamber contains a partition so as to divide it into two equal passages extending the whole circumference of the engine. The steam is admitted under the rubber *i i*, through ports *o o*, in the inner cylinder. The roller *R*¹ being in advance of the opening below the stop-bar *p*, the steam is let into the chamber connected with this port; the steam, passing through this port under the rubber behind the roller *R*¹, carries it forward. The roller *R*¹ in passing the bar *p*¹ loses the steam pressure by the steam escaping out of the opening at the bottom of the chamber to which the roller has passed and into the passage communicating with the exhaust *W*; as soon as the roller *R*¹ passes the stop-bar *p*¹, it again takes the steam behind it from the steam port above the stop-bar. The other rollers take and lose the steam in the same manner. The engine is reversed by means of slide *r*.

One of each pair of arms *g g* being fixed to the stationary plates *f f*, and the other of the same pair being fixed to the movable disks *d d*, it follows, that, if the movable disks are turned on the shaft *D*, they will draw closer together, or separate the friction rollers *g*¹ *g*¹ of each pair, according to the direction in which the movable plates are turned; and hence, according as the friction rollers are nearer together or wider apart, will the piston rollers *R R*¹ be carried close to the lining *i i*, or withdrawn from it towards the central shaft *D*.

Claim.—The contrivance of the steam ports, passages, and stop-bars, arranged in connexion with the piston rollers, so as to let the steam in upon the rubber at different and opposite sides of the cylinder at as many places as the number of rollers used shall require; thus acting upon the rollers from different and opposite points, thereby relieving the centre shaft from side pressure and friction, and also increasing the power of the engine with the increase of the number of steam ports and piston rollers.

I also claim the arrangement and device of the movable plates *d d*, and the stationary plates *f*, and collar, with the friction rollers *y*¹ and metallic bars or arms *g*, for the purpose of adjusting the piston rollers.

No. 15,281.—JAMES M. COLMAN and THOMAS TURTON.—*Improvement in Rotary Steam Engines*.—Patented July 8, 1856.

The steam, entering the induction chamber *I* and passage *J*, constantly issues from the openings *i i* into the cylinder, as shown by the arrows, and acts between one of the abutments and the face *e f* of the piston, thereby giving the piston a rotary motion in the direction of the

dotted arrow. The steam which has already acted and ceased to act upon the piston escapes through the passages *k* and *l* to the eduction chamber K, (fig. 2,) and, as indicated by the arrows, to pipe L. The abutments are severally caused by the cam, in regular rotation, to assume a position corresponding to that of B, as represented in fig. 1, as the prominent part of the piston passes them, to move into the cylinder, and the steam acts between each abutment and the piston in turn.

The spherical head Q (fig. 2) is secured to the shaft E, to be received in a spherical cavity made within the piston, thus forming a ball and socket connexion. The object of this is to enable the piston to adjust itself to the cylinder in case of the shaft wearing itself out of line.

Claim.—The engine composed of the rotary piston D, struck from three centres, as described, and the three oscillating abutments B¹ B² B³, with packing pieces at one end of their concave faces, arranged and operating in connexion with the piston in a cylinder A, in the manner substantially as herein described.

No. 15,667.—JOHN ROBINSON.—*Improvement in Rotary Steam Engines.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim the hollow shaft or piston-head D, with a passage or passages in its periphery, to admit or carry off the propelling gas or fluid; as such, but with a lateral arrangement of said passages in relation to the radial piston, and employing a separate transverse partition in the hollow head, to form inlet and outlet chambers at opposite ends of the piston, has before been used.

But I *claim* the arrangement of the piston G, projecting radially into, within, or through the hollow head D, and forming inlet and outlet cavities or passages *c*¹ *c*² and *b*¹ *b*² on either side of it, across its whole breadth, or face, substantially as described, for the purposes set forth.

No. 15,641.—P. D. M. CARMICHAEL.—*Improvement in Rotary Steam Engines.*—Patented September 2, 1856.

The steam enters through pipe I to the chamber L, and acts upon the interior of the rim *d d*, to drive the piston around in the direction of the arrow, while the opposite chamber is open to the atmosphere through pipe J. The rim *d d*, moving in the direction of the arrow, will cross over the induction post I, which changes the action of the steam to the outside of the eccentric rim *d*, as represented in fig. 2, by forming the induction chamber L¹ and eduction chamber M¹ on opposite sides of the exterior of the rim *d d*, and at the same time provides for the escape of the steam that was in the chamber L, around the block D to the pipe J. Thus the steam will act upon the rim *d* during half of each revolution outside, and during the other half of each revolution inside the ring *d*.

Claim.—The rotary engine composed of a piston with an eccentric

rim *d d*, whose interior fits at one point to the outer of the cylinder, and its interior at a diametrically opposite point, to a central circular block D, said rim working within a slotted rocker H in an oscillating abutment E, the whole operating substantially as set forth.

No. 14,923.—JAMES M. MILLER.—*Improvement in Surface Condensers for Steam Engines.*—Patented May 20, 1856.

The steam passes into the trunks *a* of the condenser, through the induction pipe *a*²; but just before it reaches the condenser it enters a receptacle under an evaporator 2, from which a number of tubes project upwards. This evaporator 2 is filled with impure water. A pipe 2¹ leads from the evaporator into the steam pipe, so that the vapor from the water in 2 rushes into the condenser, and the evaporation goes on under a vacuum in the evaporator, produced by its connexion with the condenser; the whole supply, thus condensed, runs down into the coils *g* and passes through the pumps at *h*, where it is forced through pipe *k* up into the small reservoir *l*. Here the air, oil, and gases are occasionally blown off through pipe *l*¹. The water passes below into the upper chamber of case *c*.

The water in the upper section of case *c* is hot, while below the division plate *c*¹ the cold water enters through pipe *m* into chamber *f*, and thence through holes in the plate *e* into the space below *c*, whence it passes off through pipe *n*.

The inventor says: I do not wish it understood that I confine my claim to this precise form of tubes, in connexion with using the condensed steam in the main body of the apparatus above, as many various forms might be used. Nor do I confine myself to the precise quantity of cooling surface below, as it requires much less surface, in proportion, on a large scale than a small one. If vacuum is not required, it may be dispensed with entirely.

Claim.—Passing the water of condensation in or upon the main body of the condensing surfaces, on its way to the boiler, under the pressure of the steam, and the cold external water on the other portion of the surface.

No. 14,932.—NATHAN THOMPSON, jr.—*Improvement in Surface Condensers for Steam Engines.*—Patented May 20, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. An elastic junction of a tube *d* with a tube-sheet *b*, composed of a thimble *c* on a tube-sheet, and a short piece of elastic tubing *g* applied thereto, and to a tube end or a collar *f* on a set of tubes.

2d. I claim uniting firmly several small tubes into a collar, which latter is attached to a tube-sheet, by means of a slip, or elastic joint, whereby several tubes require only a single stuffing-box, or elastic junction, in order to compensate for their expansion and contraction.

And, lastly, I claim, in conjunction with an elastic junction, metallic clamping-rings *h h*, or their equivalent, applied substantially in the manner and for the purposes herein specified.

No. 15,745.—CHARLES H. REYNOLDS.—*Improvement in Variable Cut-Offs for Steam Engines*.—Patented September 16, 1856.

The governor *G*, by means of the centrifugal power of its regulating-balls, operates the levers *k* and *i*, turning on the fulcrum *i'* and *k'*, and thus raises or lowers the rod *h* and the plate *C*, which is provided with the bevelled edges *g*. The arms *I* rock on the rock-shaft *D*, and one arm raises one of the rods *F* which are attached to the cross-head *E* of the valve-stem, and raises the valve *B*, bringing the parts *e* opposite the parts *d*. As the stem is thus lifted, the arms *F* are forced apart by means of the studs *m* sliding on the bevelled edges *g*, until they escape the arms *I*, when the valve, being unsupported, falls down, causing the parts *e* to move below the parts *d*.

Claim.—The arrangement of the suspended lifting-rods *F F*, with their studs *m m* secured to the valve-rod or rods, and operated on by the arms *I I* of a rock-shaft, and the plate or plates *C* with bevelled edges *g g*, sliding on the said valve-rod or rods, said plate or plates being operated on by the governor, and operating on the lifting-rods, substantially as described.

No. 15,371.—WILLIAM DARKER, jr.—*Improvement in Vibratory Steam Engines*.—Patented July 22, 1856.

An oscillating piston *A*, turning on shaft *c*, is enclosed in a steam-box *B*; the length of the piston corresponds to the length of the chest, and its shape is represented at fig. 1. The steam-box *B* is separated by a partition into two chambers *C* and *C'*, the upper part *e* of said partition being packed water-tight to the shaft of the cylinder, the lower part *g* being fastened in the bottom of the steam-chest and encircling said shaft. Steam is introduced into the steam-box through the pipes *i* and *i'* alternately to the chambers *C* and *C'*, and acts thus upon the faces *a* and *a'*; thus imparting to the cylinder an oscillating movement, which is converted into a continuous rotary motion of main-shaft *G* by cranks *E* and *I* and pitman *F*. The steam-box *B* is filled with water, as represented at fig. 1, to secure a steam-tight packing.

The inventor says: I do not claim the interposition of water between the steam and the working parts of the steam engine, but the oscillating piston *A*, of the form substantially as specified, arranged within a steam-box *B*, which is provided with a partition *e* and with suitable packing, all substantially as described, and with a suitable arrangement of a valve or valves and passages, the whole operating as set forth, in connexion with suitable means of converting the oscillating movement of the piston into a continuous rotary motion.

No. 14,082.—WILLIAM H. BROWN.—*Variable Dial for Dividing Engines*.—Patented January 15, 1856.

The nature of this improvement consists in causing both the index *E* and dial *D* to rotate at the same time, either in the same or contrary directions, with such relative velocity that at the completion of a revolution of the main shaft *S* one point of division in the dial shall occupy the position which one of the others had at the beginning, or shall resume its own position, having made one or more revolutions in the mean time, thereby causing a difference in the number of divisions made in a circle rotating with the main shaft from what would have been made had the dial been stationary, equal to the number of such points of division in the dial that pass a fixed point during the revolution of the main shaft—less or more, according as the dial turns in a direction with or contrary to the index. For this purpose is made use of the toothed wheel *H* fixed on the main shaft; the adjustable stud *l* for intermediates of various diameters, which are used for transmitting motion to the dial plate in such proportion as may be desired, teeth being cut in its outer edge for this purpose; the stud *k* for a second intermediate, when required to give the dial a contrary motion.

The inventor says: I do not claim the use of gearing as a means of transmitting or varying rotary motion.

But what I claim as my invention, and which I desire to secure by letters patent, is causing both the index and dial to rotate at the same time, by means substantially the same and for the purpose set forth in the foregoing specification.

No. 14,891.—JOHN VAN AMRINGE.—*Fire and Escape Ladder*.—Patented May 13, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—The combination of the ladder 2, frame 7, and guy chains 2 3, as attached to the frame-work 17 17, and these in combination with the pulley 3 and rope 24, or their equivalents, for elevating the ladder and frame.

I also claim the arrangement of the guiding shafts 21, arranged with the two sections of the framing 17 and the windlass 1, and the cord connected therewith and to one of said sections 17, for drawing the two sections apart and together.

No. 15,539.—CHARLES W. WILLARD and JOHN P. WILLARD.—*Improvement in Valve-Gear for Steam-Hammers*.—Patented August 12, 1856.

During the reciprocating movement of the trip-hammer, the actuator *L*, turning on a pin *M* which projects from a hanger *N* which turns on a pin projecting from the shank of the trip-hammer, will be raised and depressed and alternately brought in contact with the adjacent in-

clined faces of the cams *O P*, which are adjustable by means of the

Claim.—1st. Combining the sliding bolt *q*, by which the sector on the

clined faces of the cams O P, which are adjustable by means of the screws R and Q, and by said cams will be forced against the bent lever I so as to impart to it a reciprocating movement such as will operate the valve in the valve-chest G. The extent of such movement will be increased as the cams are caused to approach one another, and decreased as their distance from one another is increased.

Claim.—The combination of the bent rocker-lever I, the actuator L, and the two adjustable cams O P, the whole being applied together and to the valve-rod and trip-hammers, substantially as described.

No. 16,071.—JOHN R. SEAS.—*Arrangement of Means for Heating Feed-Water of Locomotive Engines.*—Patented November 11, 1856.

The feed-water passes from pipe D into pipe F, and enters the outer coiled pipe G at the bottom of the cylinder coil; it then passes up said cylinder and descends through pipe J to the bottom of the inner cylinder coil I, whence it passes through pipe H into boiler B. As the water passes through the pipes G and I it becomes heated by the steam escaping through the exhaust-pipes K and K¹, the orifices of which are placed under the coils G and I, and also directly under the neck N of the smoke-stack.

The inventor says: I do not claim heating the feed-water of a steam boiler in its passage from the feed-pump to the boiler; nor heating it by the waste or escape heat from the boiler; nor placing the heating pipes in the smoke-box of the boiler—as they are known and used: neither do I claim the use of the circulating pipe and double-acting check-valve; nor placing the heating pipes and their connexions below the water line of the boiler, as secured to me by letters patent, dated August 5, 1856.

But I *claim* the construction of the duplicate cylindrical coils G and I, and their arrangement in relation to the smoke-box A, the exhaust-pipes K K, the tubes C, and the base N of the smoke-stack of a locomotive boiler, as and for the purposes set forth.

No. 15,820.—JOHN ROBINSON.—*Improvement in Locomotives for Roads, &c.*—Patented September 30, 1856.

The first part of this invention relates to the arrangement of a spring-bolt *u*, which serves the purpose of locking the toothed sector Q when the locomotive is intended to run in a straight direction. If it is desired to alter the course of the locomotive, then a longitudinal motion is imparted to the shaft R, by means of the lever *n* bringing the pinion *m* in gear with the pinions *o*, at the same time that the collar *t* in the groove *u* withdraws the bolt *q* from the sector Q; by turning the shaft R, the bevel wheel *l* operates the sector Q, which is attached to the forward truck, and thus changes the course of the locomotive. The second part of this invention will be understood by reference to the claim and engraving.

Claim.—1st. Combining the sliding bolt *q*, by which the sector on the fore truck is locked, with the rotating shaft R, which carries the gear which operates upon the sector to turn the fore truck, by means of a loose collar *t* and groove *u*, or in an equivalent manner, whereby the bolt may be operated by a longitudinal movement of the said shaft, as fully described.

2d. Fitting the sprocket wheel P to the shaft K, which drives the fore wheels, with a universal joint, to enable it to adapt itself to the direction of the driving chain when the said shaft K is not parallel with the engine shaft, and thus to prevent the chain slipping off the wheel, or being twisted or broken, substantially as described.

No. 16,220.—SAMUEL CARSON, assignor to THE AMERICAN RAILWAY MANUFACTURING COMPANY.—*Method of Charging the Receiver of a Locomotive with Compressed Air from fixed Stations.*—Patented December 9, 1856.

As the locomotive *b* moves along the track *a*, the pipe *d* of the receiver enters the bell-mouth *t* of the charging cylinder *n*, and forms an airtight joint with the same by means of the elastic mouth-piece *h*¹. The carriage of the charging cylinder gradually curves off on the tracks *j*; the compressed air passing constantly from the charging pipe *x* to the receiving pipe *d*. When the carriage of the charging cylinder stands at right angles to the main track, then the pipe *d* begins to move out of cylinder *n*, and the valves *v* and *g* are closed by their respective springs, and the locomotive is charged.

The inventor says: I do not limit my claim to the special construction and arrangement of the parts, as these may be greatly varied.

I do not claim the propelling of locomotives on railroads by the elastic force of compressed air or other permanently elastic gas, nor to the charging of compressed air or gas into the receiver of a locomotive at given stations along the line of a railroad, when this is done by stopping the locomotive, to connect the receiver with the supplying apparatus, as these have long been suggested and described.

I *claim* the method, substantially as described, of charging the receiver of a locomotive with compressed air or other permanently elastic gas, from fixed stations, whilst the locomotive is in motion and passing the station, by means of the self-adapting apparatus, substantially as described, or equivalent thereto.

No. 14,187.—PETER S. EBBERT.—*Improvement in Heating Feed-Water Apparatus for Locomotives.*—Patented February 5, 1856.

1 is the pipe forming a connexion with the pump 2 and the heater at 3; 4 the discharge pipe from the heater, the connexion being at 5 and passing into the boiler through check-valve 6; 7 is the branch of pipe 4 having a junction at 9 and also a connexion with the top of the check-valve 6, or any part of the boiler which may be used as a return sup

ply-pipe for the purpose of keeping the heater full if at any time required.

Claim.—The auxiliary pipe 7, as arranged in relation to that part of the main pipe containing a valve, so that a communication may exist between the water space of the boiler and the interior of the feed-water pipes in the smoke-stacks when the feed-pump is not in operation, as herein set forth.

No. 15,225.—PETER S. EBBERT.—*Improvement in the Base-Piece of Locomotive Smoke-Stacks.*—Patented July 1, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The construction of saddles or base-pieces A for the stacks or chimneys of locomotives in which the feed-water for the boilers is heated, the trough or receiver e, for catching the water or condensed steam that drips from the pipes F, and the waste-pipe G for conveying it away, substantially as shown.

No. 14,081.—JOHN BEATTIE.—*Improvement in Means for Supporting the Propeller Shaft and Receiving the Rudder of Stern Propellers.*—Patented January 15, 1856. Patented September 5, 1850, England.

The nature of this invention will be understood by reference to the engraving.

Claim.—The construction of an open wrought-iron stern frame E E E, forming part with the keel H of the vessel, and receiving the rudder, substantially as above described.

No. 15,246.—W. K. MILLER.—*Improvement in Steam-Gauges.*—Patented July 1, 1856.

The plaster is not allowed to surround the short limb of the mercury tube C from *a* to *a'*, as this space is left open for the index plate, and filled with alcohol for the purpose of preventing refraction and oxydation of the index plate by moisture from condensed steam. The steam is conveyed to the mercury tube through the pipe K and holes I.

Claim.—The arrangement of the syphon tube within the cement-holding tube or case G, and both within the metal case with transparent front, and thereby forming a cement and transparent liquid chamber within the case, in the manner substantially as described for the purpose set forth.

No. 15,058.—SAMUEL W. BROWN.—*Improvement in Steam Pressure Gauges.*—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The combination of the rigid radial arms P P with the flexible and elastic disk or surface R, for covering the joints of these radial arms steam-tight, when yielding or moving by the force of steam or water to correctly indicate the pressure thereof, the radial arms P P being fitted so as to operate so close to each other as to prevent the surface R from bagging, essentially in the manner and for the purposes fully set forth.

No. 15,259.—WILLIAM MONT. STORM.—*Improvement in Steam Pressure Indicators and Regulators.*—Patented July 1, 1856.

The regulator being located in the plane of the desired water level of the boiler, if the water in the latter falls, steam fills the tube A, heating, expanding, and buckling it, and moving the arm E by means of the spiral grooves. When the water rises on F¹, working in a sleeve G, as shown, water will fill the tube A, displacing the steam and cooling, contracting, and straightening the tube, rotating the arm in the opposite direction. One end of A passing through a hole in the corresponding end of the casting B is plugged steam-tight with the plug C, against which presses the key plug D, so as to give the tube A so much buckle at the ordinary temperature, that if the apparatus was reduced far below zero it would not bring the tube more than straight, or injure the instrument were it left improperly exposed, filled with water, and frozen up.

The inventor says: I have no claim to the use of a tube which, admitting the steam within, saves the steam case and stuffing-box, nor any claim to the double communication (hot or cold) with any form of thermostat; nor do I lay any claim to the expedient of the buckling motion, whether of tube or bar, separately considered.

But I *claim* the combination of a simple steam-tight metal tube A with a fixed and open (not steam-tight) frame or support B, in which both of its extremities are held stationary, while the motion of its middle, left free, is communicated to its work in such manner, or by a device combined with the instrument, as to multiply its range of action; the communication of the tube with the steam of the boiler being separate and distinct, moreover, from that to the water space of the boiler, and filled with a cold fluid, and so arranged as not to allow any circulation through it of the heated water from the boiler—the instrument, as a whole, being substantially as described and shown.

I also claim in combination with the tube the "key nut," or its equivalent, for the purpose explained.

No. 15,229.—WILLIAM S. GALE.—*Improvement in Steam-Pressure Regulators.*—Patented July 1, 1856.

The groove F in the bottom of piston B fills with air when the pressure is applied, thereby preventing any leak of steam; G is a gasket clamped between the base E and the cylinder A, overhanging the

sound both as regards degree and duration. The shaft c of the cylinder

groove F made of rubber, to conform itself to the piston B as it moves up and down.

Claim.—The arrangement of the groove F in the piston B, in connexion with the gasket G.

No. 14,500.—STEPHEN J. GOLD.—*Improvement in Steam Radiator Cocks.*—Patented March 25, 1856.

The space between the disk f and the cavity of the cock will admit of the discharge of air from the radiator while the steam enters. When the radiator is full, the steam between the disk f and cap C will at once be condensed and close the passage, thus causing the pressure behind the disk to keep it close to the cap.

Claim.—The automatic closing of the cock on the filling of the radiator with steam, by means of a loose disk in the head of the cock, acted upon substantially as set forth.

No. 14,944.—WM. BALL.—*Improvement in Operating Steam Stamps.*—Patented May 27, 1856.

The interior diameter of the cylinder D is enlarged at a , so that on the piston arriving at a certain point, a free passage is afforded all around it for the steam, and the operation of the stamp is instantly stopped.

Claim.—Stopping the operation of the stamps whenever the piston is allowed to descend to a certain point, by the neglect to feed the material to the mortar in time.

No. 15,815.—JOHN PERCY.—*Improved Steam Wagon.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The two trucks C C attached to the under side of the frame A, connected by the perch G, and turned by means of the rods i^1 , which are fitted in the inner ends of the frames b of said trucks and connected to the rack H, or an equivalent device.

2d. Connecting the axles d of the wheels D with the connecting rods e^1 of the steam cylinders by means of the gearing e g and crank h , substantially as described.

3d. The arrangement of the trucks C, frame A, steam cylinders E, boilers F, and the device for turning and guiding the trucks, as herein shown and described for the purpose set forth.

No. 14,562.—JAMES HARRISON.—*Improvement in Automatic Steam Whistles in Locomotives.*—Patented April 1, 1856.

The object of this invention is to cause the whistle automatically to sound at fixed points, with all the requisite modifications of tone or

sound both as regards degree and duration. The shaft c of the cylinder A, with the spiral grooves a a , is intended to be geared with one of the truck-wheels of the locomotive in such a manner that the periphery will rotate not less than about six inches for every mile. The pin e of lever D moves in the grooves a , striking from time to time one of the lifters f f^1 f^2 f^3 , whereby the other end of the said lever is depressed, causing the whistle to remain open, in proportion to the length of the respective lifter, and to sound.

Claim.—The within described apparatus, consisting of the spirally slotted or grooved cylinder A, for connexion with and operation by the locomotive, detachable and adjustable lifters (f f^1 f^2 f^3) of varying thickness, length, or breadth, and lever D, or its equivalent, in combination with and for operation on the whistle E, as and for the purposes set forth.

No. 14,709.—ALEXANDER BUCHANAN.—*Improvement in Balance and Slide Valve for Steam Engines.*—Patented April 22, 1856.

The steam entering through c^1 flows on and enters the channel f^1 ; from this it passes into the parts a or a^1 , according to the position of the valve, the exhaust through b being as usual. Steam will also flow through the pipe i into m ; here it escapes by raising the valve l^1 , and thence passes into the steam case h through i ; but unless means were taken to prevent it, the pressure in h would soon be equal to that in f , and of course, as the outer surface of the valve exposed to the pressure of the steam is much greater than that on the under side, it would be forced down upon its seat. This is prevented by shutting off the flow of steam through i^1 so soon as enough has entered h to accomplish the object; and this is effected by means of the piston k^1 , (figure 4,) where a branch pipe m^1 leads a portion of the steam off from i^1 into the cylinder k , and, acting on the piston k^1 , forces down the valve l^1 and stops the further influx of the steam through i ; the areas of the piston k^1 and valve l^1 being to each other as the respective areas of the outside of the valve f and of the channel f^1 .

Claim.—The means of maintaining the differential pressures on the two sides of the valve necessary for balancing the same; that is to say, the combination of an apparatus, substantially as described, with the valve, as set forth.

No. 15,208.—WILLIAM WRIGHT.—*Improvement in Cut-Off Valve-Checks for Steam Engines.*—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The arrangement for retarding the descent of the valve, namely: The combination of the bell crank q r with the valve-rod A on the one part, and the dash-pot o or equivalent resisting apparatus on the other, so coupled and operating that the arm s of the crank r r to which the valve is attached shall be approaching its centre when

descending, while the other arm q connected with the piston in the dash-pot shall be approaching its greatest throw, thereby checking the rate of descent of the valve by a force compounded of the diminished speed and diminished pressure.

No. 14,978.—HERMAN WINTER.—*Improved Valve Gear for Steam Engines*.—Patented May 27, 1856.

The crank f^4 has an elongated slot f^3 for the reception of the pin on the rotating lever f^2 , and thus accommodates itself to the irregular curve described by the end of the rotating lever f^2 .

The rods g^3 and g^4 are vibrated in the plane of their reciprocation by means of the system of links j , bell cranks h^2 , and radius bars g^7 g^8 , and the rollers g^5 attached thereto describe an irregular oval. As the rods g^3 g^4 reciprocate upwards, they raise the loose toes h^2 , which lift the foot-stalks l l . But as the valves rise, the friction pulleys are drawn over, as before explained, until they reach the concavities m m m , whose inclined faces then commence to slide down over the rollers, thus lowering the toes and valves, while the rollers vibrate in the direction of arrow x . This lowering may take place even while the roller is rising, and a cut-off at less than half-stroke can consequently be effected.

Claim.—1st. An eccentric f on the main shaft d , a lever f^2 properly governed and connected therewith, and a crank f^4 upon a secondary shaft g ; the whole in combination and connected each to each substantially in the manner and for the purposes herein set forth.

2d. An eccentric, or its equivalent, upon the revolving shaft, in combination with a rod or lever connected therewith, receiving a reciprocating motion from the eccentric, and a vibrating motion, whereby valves of steam engines may be raised and lowered, substantially as herein described.

3d. Forcing rods or levers, caused to reciprocate as specified, to vibrate in the plane of their reciprocation by a positive motion, derived from some convenient part of the engine, through the intervention of bell cranks, radius bars, and links, or their equivalents, connected and acting substantially as set forth.

4th. Changing the centre of vibration of reciprocating vibrating levers, or altering the distance through which they vibrate, as described, in combination with a toe or foot curved, whereby the period of cut-off may be varied as herein specified.

And, lastly. Altering the position of the pivots of a bell crank provided with a link and radius bar, whereby the period of cut-off may be varied at the pleasure of the attendant.

No. 16,171.—ALFRED S. BEEBE.—*Improvement in Valve Gear for Steam Engines*.—Patented December 9, 1856.

Before the main toe D commences to rise, the secondary toe I is within the recess of the main toe, as represented in the dotted position. As the main toe D rises, its upper face acts upon the under face of

lifter E and operates the valve, but at the same time comes in contact with lifter E , depresses the short end, and raises the long end; the spring bolt e falling into catch-piece d and holding up the secondary toe I , which holds up lifter E until its point s passes the rounded edge n^* , when the lifter is gently lowered to close the valve by the point s working up the face n n^* . The spring bolt e is now liberated from the catch d in passing the edge n^* , and the secondary toe is drawn into the recess of the main toe before lifting the valve again. By adjusting the sliding-piece G , the lifter E can be caused to be held up a longer or shorter time, for admitting a greater or smaller portion of steam to the cylinder.

Claim.—I claim the secondary toe I , applied to the main toe D , and operating substantially as described, in connexion with a sliding-piece G , or its equivalent, fitted to the lifter E , for the purpose set forth.

No. 14,580.—WILLIAM STEPHENS.—*Improvement in Valve Gear of Oscillating Engines*.—Patented April 1, 1856.

The slot g is made in a circular plate G , which is capable of turning in a circular frame H , which is rigidly attached to the slide h ; the plate G is secured to the frame H by means of a set-screw n ; by turning or adjusting the plate G by means of a handle H' , so as to bring the ends of the slot g nearer in line with the slot h , the lead is diminished; and by turning it so as to bring the ends more out of line with the said slide, the lead is increased.

Claim.—The within described arrangement of the slotted plate G in the slide h , or its equivalent, for the purpose of adjusting and varying the lead of the valve, as set forth.

No. 14,620.—H. H. SMITH.—*Improved Governor Valve for Steam Engines*.—Patented April 8, 1856.

The nature of this improvement consists in furnishing the stem 4 of the valve with two rings 8 8, which are fitted to eccentrics 5 and 6, and made to slip on said eccentrics so as to adjust themselves to the seat of the valve by the steam pressing against the outside edges of the ring, thereby keeping them up against the valve seat at all times and forming a steam joint, without being subject to so much friction as to affect the action of the governor upon the valve for regulating the proper quantity of steam admitted to the engine.

Claim.—The self-adjusting rings 8, combined with the eccentrics 5 and 6, or their equivalent, operating substantially as and for the purposes set forth in the foregoing specification.

No. 14,516.—HORATIO O. PERRY.—*Improved Valve-Motion for Oscillating Engines*.—Patented March 25, 1856.

V is the vibrating valve, S the valve-shaft, O the steam-chest, and P the cylinder. The valve-shaft S is provided with the two arms X

and A . By elevating the lever E , the rollers F F are lifted, and both the

open the valves and for lowering the same bodily to close the steam-

and A. By elevating the lever E, the rollers F F are lifted, and both the eccentric rods are raised until Y hooks into the arm X and gives a backward motion to the engine. By depressing E, both rods are depressed until B hooks into A, whereby the motion is reversed. The arm H is fixed on the cylinder for the purpose of supporting the valve-shaft S.

Claim.—I do not claim the invention of rotating or partially rotating valves loosely connected to shafts in the steam-chest; nor do I claim the opening and closing of parts by the oscillating motion of the cylinder; nor do I claim, broadly, the working of valves partly by the motion of the cylinder, and partly by the aid of eccentrics, irrespective of the peculiar form and arrangement described. What I *claim* is, the valve-motion above described, as arranged, in relation to and in connexion with the loosely attached hollow-throated and partially rotating valve, substantially as described and for the purpose herein set forth.

No. 15,576.—EDWARD S. RENWICK.—*Improvement in Valve-Motions for Steam Engines.*—Patented August 19, 1856.

The lifting rods D D¹ and F F¹ have feet secured to them which project over suitable toes G G¹ and H H¹, by means of which the feet-rods and valves are lifted and lowered. By rocking the shaft I the exhaust valves are alternately raised and lowered; the steam-toes G and G¹ are secured to the rock-shafts J and J¹, which are supported at their ends by the yokes K, which latter is secured to a cam on shaft M that rocks upon the exhaust rock-shaft I. The steam and exhaust rock-shafts are provided with arms d d¹ d², which are connected by link L, which is pivoted to all three arms; by this link L and the arms, the rock-shafts J and J¹ are caused to rock simultaneously with the rock-shaft I. The shafts I and M are rocked by a cam N working in a spring-cam box, such as is shown at U, in which the friction-wheels s s are constantly held in contact with the rim of the cam N by the action of a spring V.

Claim.—The combination of the parts of a valve-motion, substantially in the manner described, so that the steam-valves shall be opened by mechanism at intervals coincident or thereabouts with the opening of the exhaust-valves, and that the steam-valves shall be closed by mechanism that is independent of the exhaust-valves, but which governs and controls the toes by which the steam-valves are opened in such manner that the closing of the steam-valves does not change the angular position in which these toes have been placed to open the valves.

2d. The combination of the steam-toes G G¹, rock-shafts J J¹, arms D D¹ D², and link L, with the exhaust rock-shaft I, for opening the steam-valves.

3d. Also the combination of a cam and spring-cam box, with mechanism for imparting the movement of the cam-box to the valves.

4th. The combination of the yokes K K and shaft M, with appropriate operating mechanism, depending on the movements of the crank-shaft of the engine for holding the steam-toes in the proper position to

open the valves and for lowering the same bodily to close the steam-valves.

5th. Closing steam-valves that have been opened by moving the steam-toes, or their equivalents, bodily, without changing their angular position, the distance required to shut the valves.

No. 16,227.—JOHN BUTLER.—*Improvement in Valve-Motions for Steam Engines.*—Patented December 16, 1856.

As the main shaft S is rotated, the eccentric G, rock-shaft E, rocker g, and stud g¹, operate on the yoke b, to move the valve C in either direction to open one of the ports to admit steam to one side of the piston; and the other eccentric H, rock-shaft F, rocker h, and stud h¹, operate on it to move the valve back again only far enough to cut off the steam, leaving the movement which is necessary to open the other part to admit steam on the other side of the piston to be completed by the eccentric G, rock-shaft E, rocker g, and stud g¹.

The inventor says: I do not claim the use of two eccentrics to give the valve two distinct movements to admit and cut off the steam.

But I *claim* the arrangement of the two rock-shafts E F, with their rockers operating upon a yoke b, or its equivalent, attached to the valve-stem, said rock-shafts deriving motion from separate eccentrics, and the whole operating substantially as described.

No. 14,225.—CHARLES W. COPELAND.—*Improvement in Valves and Exhaust Passages of Steam Engines.*—Patented February 12, 1856.

The object of this improvement is to secure a larger passage for exhaust than for steam, without complicating the valve gear; and the improvement consists in so constructing the valve and seat that the former shall, in its operation, open two or more passages for the exhaust, instead of one, as is the case with the valves commonly used. For instance, when the valve occupies the position shown by dotted lines, steam is entering the left end of the cylinder at r by the end passage, while the centre passage is closed by the bar; while at the other end of the cylinder all three passages are open into the cup and exhaust passage.

Claim.—The herein described manner of increasing the area of the passages for escaped steam by means of bars, or their equivalents, making part of the valve, acting in conjunction with additional apertures or ports in the seat, substantially in the way and for the purpose herein set forth.

No. 15,207.—WILLIAM WRIGHT.—*Improvement in Operating Cut-Off Valves for Steam Engines.*—Patented June 24, 1856.

a a represents the yokes to which the lift rods A and A¹ are attached. The toe b is keyed to the rock-shaft b¹. Through the slot c¹

of the supplemental toe *c* passes a pin *d*, whereby it is kept fastened to the yoke. The curved slotted piece *e* (the centre of said curve being at *b'*) is fastened to *c*, and passes through a split formed in the end of the toe *b*. *f* is a latch secured to the end of a sliding-bar *g*, which plays in bearings across the head of the yoke. As the yoke rises vertically, the pin *e'* describes the arc *e' e''*, consequently the piece *e* is compelled to move with the pin, and causes the toe *c* to move also in the same direction from *x* to *e''*, and the point of *c* will therefore be drawn from underneath the latch *f*, at which moment the valve will drop, since it requires the engagement of both ends of *c* to support it upon the toe *b*; *b* now descends, causing *c* to follow and engage again under the latch, the spring upon the back yielding to allow the end of the supplemental toe to pass, and the lifting will be again performed as before.

Claim.—So combining the lifting toe with the lift rod, by means of a supplemental toe or slide bolt, that the arc or curve described by the vibration of the lifting toe shall effect a lateral movement of the bolt, thereby tripping the valve, as described.

No. 14,649.—HENRY E. CANFIELD.—*Improved Arrangement of Means for Operating Cut-Off Valves of Steam Engines.*—Patented April 15, 1856.

As the slotted arm *c* (the said arm being connected with the main valve rock-shaft B of an oscillating engine) departs from a line parallel with the slide D, it will affect the operation of the governor, if not entirely overcome its power. To prevent this, the spring-cramps G G are used in the following manner: When the slotted arm C departs from a perpendicular position, it is brought in contact with one or the other of the springs G G, thereby causing the inner face of the head *h* to be pressed against the slide D, so as to prevent any movement of the said slide until the spring part is released from pressure, when it will be thrown back to its place by the small spring J, thus allowing the slide to assume such position as may be indicated by the governor, and at a time when the latter can act to the best advantage.

Claim.—The spring cramps G G, as arranged in relation to the sliding-bar D of the governor, for the purpose and substantially in the manner shown and described.

No. 15,400.—HENRY R. WORTHINGTON.—*Improvement for Relieving Steam Slide-Valves from Pressure.*—Patented July 22, 1856.

A represents the slide-valve of a steam cylinder; it is provided in its middle with a passage *c* communicating with the exhaust opening B and a small cylinder *b*. The piston H is properly fitted in the cylinder *b* and attached by a swinging link G to the steam-chest cover at S, thus allowing the piston H to move easily back and forth in accordance with the motion of the steam-valve. The pressure thus made

upon the area of the piston H is so much taken from the back of the steam-valve A, and transferred, by means of the swinging-bar G, to the point of support S.

Claim.—I claim transferring steam pressure from the back of a steam slide-valve to a fixed point, by means of a piston and vibrating link, substantially as described and for the purposes set forth.

No. 14,749.—HENRY R. WORTHINGTON.—*Improvement in Completing the Throw of the Valves of Direct-Acting Engines by the Exhaust Steam.*—Patented April 22, 1856.

The engraving represents the steam admitted through the central opening C on the point of passing into the right-hand end of the cylinder, while the exhaust fills the space D. The steam acting on the piston A uncovers the openings *a'* and *b'*, which latter communicates with the escape-pipe or condenser. Thus, the necessary motion of the steam-valve is produced by the effort of the steam to escape from the small cylinder B. A similar operation takes place at the end of the return stroke.

Claim.—Completing the throw of steam-valves of direct-acting engines by the steam already within the cylinder on its way to the open air or to a condenser.

No. 14,338.—JACOB SCHEITLIN, assignor to Himself and OLIVER A. DAILEY.—*Improved Arrangement of Means for Operating the Valves of Steam Engines.*—Patented February 26, 1856.

The surface of the cylinder B is provided with two rectilinear teeth *a a* and two screw-thread teeth *b b*. The indentations *a' a'* of the cross C are adapted to the teeth *a a*, and the indentations *b' b'* to the teeth *b b*. The cross being free to slide on its shaft H, by means of a feather *f*, receives from the cylinder and transmits to the crank C¹ (to which latter the valve-rod E is connected) a motion corresponding to the relative position of the cross and cylinder.

Claim.—The four-teeth cylinder B, keyed on the main driving or crank-shaft A, the Maltese cross C, with its shaft H, and the small crank C¹ keyed thereto; said cross, by means of the feather *f*, or any equivalent device, being susceptible of a free and steady to-and-fro motion along whilst driving its shaft H, and being so moved by the rack and pinion D, a screw, or other equivalent means, by which also it can be retained on its shaft H in any desired position in relation to the cylinder; the whole being arranged, connected, and operated substantially as herein set forth, whereby a single steam-valve of a steam-engine can be worked either as a feed-valve, or as a feed and as a cut-off valve alternately, and the steam cut off at any required point of the stroke whilst the cylinder is in operation.

No. 14,419.—ROBERT L. STEVENS.—*Improvement in Means for Re-*

forced out by the steam, a portion of the packing *b* is placed between

No. 14,419.—ROBERT L. STEVENS.—*Improvement in Means for Reducing the Friction of Slide-Valves of Steam Engines.*—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The box or balance-block B, constructed substantially as above described, in combination with an ordinary slide-valve, altered as above described, said balance-block having around the edges of its upper face ledges L L, which project upward, and are made to fit around the whole upper face into a recess, such as is above described, in the follower D, and formed by double edges projecting downward from D and enclosing L, which recess has an India-rubber packing in its bottom, against which the said ledges L are made to pack steam-tight, together with another India-rubber joint at the bottom of another similar recess, formed by the ledges L L and a part of the bonnet C, into which latter recess one of the ledges of the follower D fits tight in the same manner as the ledges L fit in the recess.

No. 15,025.—OTIS TUFTS.—*Improvements in Operating Valves of Steam Engines.*—Patented June 3, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. The oscillating plate *a*, with its attachments, carrying the adjustable cut-off cams *d*, acting with their sliding-rolls *o*, for cutting off the steam variably.

2d. The self-adjusting arrester J and its parts acting on the closing edge of the adjustable cut-off cam, for easing the motion of the cut-off valve and its gear.

3d. The adjusted arrangement in combination in the cut-off and exhaust-cams *d* and *3*, to work the cut-off and exhaust-valves united.

4th. The double arm *s*, with its sliding and other roll, acting alternately on the cut-off and exhaust cams.

5th. The gear-joint connexion between the regulator-shaft 24 and the adjusting-screw 8 for working them together, while one is fixed and the other oscillates.

6th. The sliding-carrier 12, with its attachments and friction-held nut 13, for adjusting the variable cut-off cams on the oscillating plate by the regulator.

7th. The arrangement of the adjustable coil-springs 2, in combination with their shaft 30 and lever 1, for forcing the rolls to the cams.

No. 14,605.—WILLIAM S. GALE.—*Improvement in Piston Valves for Steam-Boiler Regulators.*—Patented April 8, 1856.

As the piston B rises, the packing *b* is forced inwards, and the contraction of the spring *d* increases its force, thus producing a gradual closing of the damper. In order to prevent the packing from being

forced out by the steam, a portion of the packing *b* is placed between the spring *d* and the lip *e* of the piston-cap F.

Claim.—The lip *e* of the piston-cap F and the spring *d*, arranged in relation to each other and to the piston body, for the purpose of clamping the packing *b*.

No. 15,834.—HENRY F. SHAW, assignor to Himself and GEORGE F. SHAW.—*Improvement in Regulating Valves for Steam Engines.*—Patented September 30, 1856.

By reference to the engraving it will be seen that as the velocity of the regulating balls increases, the gates *m* will be raised and the steam way through the ports *c* of the valve D will be diminished; and as the velocity of the balls decreases, the gates *m* will descend and an increased amount of steam will be admitted.

Claim.—The regulating gates *m*, as connected with the valve D and the governor, for the purpose set forth.

No. 15,120.—ROBERT CORNELIUS.—*Improvement in Safety-Valves.*—Patented June 17, 1856.

As soon as the steam raises the valve A in the slightest degree, immediately the equilibrium of the weight W is destroyed, and the weight W falls forward, and raises up D and A to its highest point, thus instantly affording a large and free issue of escape for the steam until the engineer restores the weight to its former upright position.

Claim.—The arrangement of the weight and lever of an ordinary safety-valve, so that as soon as the steam reaches its limit of pressure the weight shall so change its position as to open and keep open the aperture of discharge of steam, in the manner and for the purpose substantially as herein before described.

No. 14,963.—ALEXANDER B. LATTA.—*Improvement in Safety-Valves for Steam Engines.*—Patented May 27, 1856.

The safety-valve lever E operates upon the spring balance D by means of the quadrant A B, which turns on a pin C; as the crank A approaches a perpendicular position, the power required to hold it must be increased at the same time the crank B is nearly horizontal, which gives the safety-valve the advantage over the spring balance, and *vice versa*. In this way the lever is allowed to rise, without increasing the power thereby.

Claim.—The mechanical means herein described for the purpose set forth, or any equivalent arrangement.

No. 14,611.—WILLIAM M. HENDERSON.—*Improved Arrangement of Slide-Valves and Means for Operating them.*—Patented April 8, 1856.

The cylinder has five ports: E is the exhaust port, *e e* are the education ports, and *i i* the induction ports. The valve *s* operates on the

induction ports, and receives its motion from the graduated adjustable cut-off box B, the different degrees of cut-off being graduated across the box in an oblique direction, and adjustable by sliding on the parallel key on the shaft A. The rise for opening the valve being parallel with the shaft, the steam ports will always open at the same part of the stroke. When the oblique fall passes the nose P, the spring J closes the port. The valve is prevented from going back too far by the part T of the box catching the opposite nose P¹ on which it slides until the rise comes in contact with it, which opens the other port D¹ in like manner, the closing of which is effected by the spring K. The valve E is made variable by the adjusting box C¹, which is similar in construction to B.

Claim.—The arrangement of the valves and the means for operating them, by which the entire exhaust is controlled by a non-pressure valve, enclosed and working within the balanced cut-off induction slide valve, and worked by separate mechanism in the same plane, the time of cut-off and exhaust being variable at pleasure, and in no way connected or affected by the movements or operations of each other.

No. 14,991.—JOHN F. ALLEN, assignor to NOAH L. COLE.—*Improvement in Operating Slide-Valves for Steam Engines.*—Patented May 27, 1856.

The wiper I is attached to the valve-stem D in such a position that, as the valve is moved, the said wiper at every stroke of the valve wipes against the end of the rocker G, and by that means through the action of the rocker on the stud h moves the seat E along with the valve, and then passes the said rocker, and allows the seat to be returned by the action of the springs to the central position shown in full lines. The effect of this motion of the seat E is to keep up a wide communication between the exhaust cavity m and the port a or a¹ through the port a* or a*¹, and thus provide for a free exhaust.

Claim.—The movable valve-seat E, arranged and operating between the valve and the usual stationary valve-seat.

No. 14,010.—JAMES COCHRAN.—*Improved Method of Operating and Lubricating Slide-Valves.*—Patented January 1, 1856.

The nature of this invention consists in making an aperture or opening in the valve-seat for the purpose of introducing a pin or lever from or into the movable valve, which opening is surrounded with tight sliding surfaces, and thus avoid the troublesome stuffing-box used heretofore.

To lubricate the valves or rubbing-surfaces, the slide-seat is provided with another aperture that leads from any convenient part of the slide-seat to the face of the valve in such a part as does not uncover by its motion; and the valve and seat are also punctured in such parts as do not uncover, which cavities receive and retain the lubricating medium. A represents the valve-seat; B the opening in the valve through which

the lever is introduced, forming the valve V; C the inlet to the chest; D, is the outlet; O and F cavities for the reception of oil.

Claim.—1st. Moving a vibratory flat or curved slide-valve within its chest, without the necessity of a stuffing-box, by the means or similar ones to those described.

2d. I claim, substantially, the method of lubricating slide-valves, as described, by and through an aperture of the valve or its seat.

No. 14,999.—WILLIAM BURDON.—*Improvement in Relieving Slide-Valves from the Pressure of Steam.*—Patented June 3, 1856.

By this improvement the steam is prevented from acting upon the back of the valve, except on the narrow margin a a, which is sufficient to receive the requisite pressure for keeping the valve tight.

Claim.—The employment of a hollow cylinder E, with a closed head b, supported upon wheels F F, to run back and forth on the valve-seat B, or on ways parallel thereto, and receiving a piston C, attached rigidly to the valve, and thereby being caused to travel with the valve, and relieve it of all pressure of steam beyond what is necessary to confine the valves to its seat.

No. 14,125.—CHARLES H. BROWN & CHARLES BURLEIGH, assignors to THE PUTNAM MACHINE CO.—*Improvement in Means for Regulating and Working Steam-Valves as Cut-Offs.*—Patented January 15, 1856.

In proportion as the balls of the governor diverge, the rod V is raised, and the end of the lever d is withdrawn from the slot in the bottom of the stem g of valve A¹, thus carrying the shoulder f further from the circle of revolution of cam h. When the balls are at their highest point the shoulder f is withdrawn, (see fig. 2,) so that the cam revolves without touching the lever, and the valve is not opened.

Claim.—Operating the valves by means of the revolving cams h, in combination with the bent levers d and their combination with the governor, in the manner and for the purpose substantially herein set forth.

No. 14,145.—JAMES P. ROSS.—*Improvement in Means for Operating the Steam-Valves in Blower Engines.*—Patented January 22, 1856.

The piston moving in the direction of the arrow in fig. 1, the head piece i, by pressure on the under edge of cam t, lifts the right-hand end of yoke y, and through rod r lets on the full head of steam; when i leaves the cam t, and after passing up cam t¹ and t², it presses against rim w and slightly lifts the left-hand end of the yoke and causes rod r to cut off the steam, the weight c² acting with it to depress the opposite end of the yoke.

The rods $r^1 r^2$ slide in holes in the ends of the yoke, and have weights $c^1 c^2$ attached to their lower ends; the rods and weights are connected with levers $d^2 d^2$ and $d^1 d^1$, which carry also weights $f^1 f^2$ of the same size as weights $c^1 c^2$; the difference in the length of lever arms, however, serves to overcome the friction, and causes the weights $f^1 f^2$ to lift $c^1 c^2$ and to elevate the rods $r^1 r^2$ as their respective ends of the yoke rise, so that the nut i^2 will just come in contact with the end of the yoke at the termination of its upward motion. The higher up the nuts i^2 will be screwed, the greater will be the length of rods $r^1 r^2$ slipping through the yoke before the nut reaches it, and, consequently, the yoke will receive the less motion as the weight drops to its seat. By this means a greater or less opening of the valve will be produced.

Claim.—The cam yoke y , in combination with the adjustable weights and counterpoise levers, or the mechanical equivalents of these several parts, constructed, arranged, and operating substantially as and for the purposes specified.

No. 14,108.—JAMES McNAB and ADAM CARR.—*Improvement in Steam Stop-Valves.*—Patented January 15, 1856.

The outer shell B B is secured to the spindle A by means of the screw c and the screw-thread D at the bottom of the spindle.

Claim.—The attachment of the outer shell B B to the valve-spindle A A in such a way that it can be removed at pleasure to repair the valve.

No. 14,906.—RICHARD COLBURN and L. W. HANSON.—*Improved Arrangement of Supplemental Valves for High-Pressure Steam Engines.*—Patented May 20, 1856.

When steam is admitted through port C, the valve K is closed, and K^1 opens; a way is thus opened through h^1 for the exhaust steam, which will remain open until the steam is admitted at the opposite port C¹, when the valve K^1 is closed and K opened, and the steam from the other side of the piston passes off through the opening h .

Claim.—The self-acting valves K K^1 , connected together for the purpose of freeing the cylinder of water and of back steam.

No. 14,150.—ALBERT BISBEE.—*Improvement in Means for Operating the Throttle-Valve of Steam Engines.*—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Raising and lowering the vibrating toe a by means of the lever f , operated by the governor, in the manner substantially as herein set forth.

VII.—NAVIGATION.

No. 14,903.—JAMES BEETLE.—*Improved Boat-Framer.*—Patented May 20, 1856.

In using the machine, its keel rests $m m$ are fastened to the keel timber, and so that the plane of the machine shall stand transversely and at right angles to the said keel timber. The rib timbers are next introduced between the parts $m m$, and fastened on the keel; they are then to be bent around against the outer edges of the bars $c d e f$ and between the clamp-bars $a a$ or $b b$, the screws thereof being set up so as to cause the rib timbers to be held in place, or such timbers may be tied or secured to projections $t t$ extending upward from the bars $n o$.

Claim.—The boat-framer, as composed of the sets of adjustable and extension bars $a a, b b, c d, e f$, and connecting contrivances, viz: the keel rests $m m$, bars $n o$, and their screws.

No. 14,565.—GEORGE W. LA BAW.—*Improved Life-Boat.*—Patented April 1, 1856.

Figure 3 represents the inner boat; J J are pivots on which the inner boat is suspended; B B are the ends of the outer boat, which contain the air chambers I I (see figure 5); C C are the seats; figure 4 represents an end view of the inner boat; F are ports for ventilation; G is the cabin door. The sides of the boat are constructed so that the top and bottom are the same as shown in figure 1.

Claim.—Arranging the carriage or inner boat upon pivots, so as to allow the outer boat to rotate over and around the inside boat or carriage, which always retains an upright position, when constructed and operated as described.

No. 15,794.—RUFUS RODE, assignor to JOHN DENIG.—*Improvement in Boat Oars.*—Patented September 23, 1856.

By operating the handle B attached to the lever 3, the connecting plate 4 will cause the oar A attached to the corresponding arm 3 to be moved in an opposite direction. By this arrangement the oarsman can row the boat, having his face fronting the bow. The oscillating plate 2 swings freely on a pivot a , supported by a rower box 1, which is attached to the side of the boat.

Claim.—The combination of the oscillating plate and double-jointed arms, forming a double-jointed boat oar, operating on an oar or rower-box as described, or in any manner substantially the same, for the purpose of enabling the oarsman to row forward with his face fronting the bow of the boat.

No. 14,489.—CHARLES H. KEY, administrator of the estate of SIMON F. BLUNT, deceased.—*Improvement in Detaching Boats from their Tackle*.—Patented March 25, 1856.

The iron piece A is fastened to the boat through the eye at E. The block of the tackle is attached to a piece of iron F. C slides on A, and connects A and F as long as there is any weight acting on A. When the weight is removed, the slider falls, the wedges at B separate, and the boat is freed.

Figure 3 represents an iron bolt, which, when combined with iron jaws, would answer the same purpose.

Claim.—The use of the weight of the boat when out of the water to keep in place the contrivance for sustaining it, so that it shall no longer be sustained when the boat takes the water and the weight is transferred to the latter; and for this purpose I claim, as the invention of the said Simon F. Blunt, deceased, the contrivances herein described, and any others analogous thereto, whereby the same object is accomplished in a way substantially the same.

No. 15,187.—DANIEL LARGE.—*Improved Arrangement of Means attached to Ice-Boats*.—Patented June 24, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The arranging in the after part of the boat of the two troughs, for throwing, by the power and impulse given by the paddle-wheels, the broken and floating ice upon the fast ice on each side of the channel, and thereby keeping the water clear for the passage of vessels.

No. 15,472.—HENRY BROWN and WILLIAM BROWN.—*Improvement in Ice Breaking Boats*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The formation of a recess in the bows of a steamboat, said recess having inclined shelves E and E', angular terminations F and F', and angular rib G, in combination with the guards H and H', the whole being arranged and constructed substantially in the manner set forth, for the purpose of breaking a channel through ice, and directing the broken pieces under the ice remaining on each side of the channel.

No. 14,843.—GEORGE W. LA BAW, assignor to Himself, JOSEPH COLTON, and THEODORE HOWELL.—*Improvement in Propellers for Lief-Boats*.—Patented May 6, 1856.

The boat is constructed, as shown in the side elevation, (fig. 1), so that the top and bottom may be alike. At the central point in the stem and stern are the trunnions on which the carriage rotates, seen at E, fig. 2,

which trunnions are hollow to admit the rods G and L to slide freely through them. The propellers having blades on both ends are supported on bearings at e; by working the levers J J, a reciprocating motion is given to the paddles F F F.

Claim.—Constructing the propellers with blades on both sides, so as to enable the boat to be worked by the same mechanism when either side up, substantially as described.

No. 15,487.—WILLIAM A. LORDON.—*Improvement in Means for Guiding Line Ferry-Boats, or Flying Bridges*.—Patented August 5, 1856.

The cable X X is passed between the rollers d and d' on the ends of the vibratory beam D, and having been properly tightened, it forms a line from shore to shore. To cross the stream the boat is pushed from the bank, and at the same time the vibratory lever D is brought to the requisite angle with the side of the boat by means of the windlass E, her forward end being pointed up stream, and the force of the current operating against the sides of the boat will cause its propulsion.

The inventor says: I am aware that James Parks proposed the employment of a grooved wheel or pulley-block, with a rope attaching it to a boat guided by an ordinary steering oar, when said wheel was used as a traveller or a tight cable, stretched overhead from bank to bank, as a means of crossing streams by force of the current. I therefore do not claim this as my invention.

I claim the vibratory lever D, constructed substantially as described and arranged and operated with a cable, in the manner and for the purposes set forth.

No. 15,473.—JOHN M. BROOKE.—*Improvement in the Means for Attaching and Detaching Boats to and from their Tackle*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—In the application to boats and their hoisting and lowering apparatus, a bolt B with a hollow head opening on and forming part of a curved channel or deflecting surface C, having also a curved slot to correspond with the channel; so that a ball A fitting conformably thereto will, by the force of gravity, when permitted, follow this curve and be turned aside, and moreover will be prevented from reattaching itself to the bolt if passing up and down before the aperture.

I also claim the arrangement of a cock or prop F, let into the side of the deflecting surface, so as to secure the ball in the head of the bolt when required, but offering no obstacle to its entrance.

No. 15,954.—JOHN SCHAFFER.—*Improvement in Capstans for Steam-boats*.—Patented October 21, 1856.

The nature of this invention consists in the mechanical arrangement connecting the shaft A, which is driven by the steam engine, with a

capstan B, provided with a drum C below deck by means of the shafts D E F, suitably geared to convey motion to the capstan, so that the steamboat may be rapidly shoved or otherwise handled in navigating intricate water channels without the necessity of having men with handspikes to operate the capstan, and without having the rope as thrown off from the capstan above deck piled and obstructing the deck.

Claim.—The drum C on the shaft of the capstan B, as arranged, the capstan being steam driven by geared shafting connecting it with the "little nigger," and the whole being combined and made operative through the pulley I, substantially in the manner and for the purposes described.

No. 15,845.—WILLIAM M. ELLIS.—*Improvement in Buoys.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The method described of moving buoys, beacons, and floating bodies, by having their cables attached to said bodies in the line of their calculated centre of tidal pressure.

2d. The method of connecting the forked or V link or shackle to the said buoy or floating body by means of a trunnion-bolt passing through a metallic tube or pipe properly set and secured within the said body.

No. 15,200.—JOHN TAGGART.—*Tidal Alarm-Buoy.*—Patented June 24, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The combination and arrangement of the air-tank D, the stream or current-wheel C, the bell G¹, and mechanism *i k l*, for causing said bell to be sounded during the rotary movements of the wheel, produced by the action of a current in the water.

I also claim arranging or combining with the stream-wheel the bell, the striking apparatus and air-tank, the enclosing or guard frame A, and the pendulum or weighted lever B applied thereto, the same operating together in the manner as shown.

No. 14,758.—ENOCH APPLGATE.—*Improvement in Chain-Cable Hooks.*—Patented April 29, 1856.

The cable chain is suspended between the projections A when the anchor is raised, they being held together by means of a lock-lever B, the mortises *a a*, and projections *l*. The apex of the angle G of the lock-lever B serves as the fulcrum upon which the lever is moved to lock the arms for the purpose of supporting a weight. The unlocking is effected by striking the end of handle *c*, when the weight of the anchor will cause the chain to force these arms apart, as seen at figure 2, thus allowing the anchor to drop from the cable hook.

Claim.—The hinged arms F and projections A, or their equivalents, for supporting the anchor, in combination with the lock-lever B and projections *l*, when operating in the manner and for the purposes as herein set forth.

No. 15,323.—ARTHUR BARBARIN and B. F. SIMMS.—*Electro-Magnetic Fog-Bell.*—Patented July 15, 1856. England, August 17, 1855.

A is an electro-magnet, B the armature which is attached to the short arm of the lever C. Upon the end of the long arm of this lever is a hammer D, which strikes the bell E when the arm C is raised. To the verge G of a common clock-work are fixed two wires H and H¹, the free ends of which (as the verge vibrates to and fro) dip alternately into mercury cups K; thus whenever the wires dip into the mercury cups, the battery connexion is established, the armatures cause the hammers to strike the bells, and while the clock runs the bells ring.

Claim.—The application of electricity and magnetism to the ringing of fog-bells.

No. 15,605.—HENRY L. DE ZENG.—*Self-Adjusting Fog-Bell.*—Patented August 26, 1856.

When the float at the extremity of the arm or lever F is actuated by the swells, the chain G will be drawn backward and forward through the arch D. This will cause the cam *g* to turn partially around, or revolves upon the ring *d*, it will make no difference in which direction the of the cam strikes the bottom of the arch, the opposite one presenting a smooth surface for the chain to slide over the two friction-rollers *e* and *f*, relieving the ends of the arch; this will compel the axle of the cam *g* to act upon the heel of the hammer E at the passage of each swell, the hammer being a sufficient distance from the bell to allow the catch *h* of the cam *g* to pass to the upper side of the heel *n* of the hammer, the ends of both being bevelled for that purpose. As the frame until the spur or tooth *l* passes out of each of the chains, and one end waves roll, or what may be the state of the tide, as the float will swing round and adjust itself in any position required.

Claim.—The attaching a float to a lever or arm that is connected at or near the other end to a fixed vertical shaft or axis in such a manner that said float shall be allowed to swing around said vertical shaft or axis and accommodate itself in the direction in which the swell or current or both are moving, so that said float is not subjected to any sideways concussion or strain from either the tide or swell, but is free to oscillate or vibrate with the swell, and communicate motion to any suitable bell or other alarm, substantially as specified.

2d. I claim attaching the ends of a chain, or its equivalent, on opposite sides of a lever that receives a vibrating or oscillating motion from a swell, when said chain is passed over a cam-wheel or other similar article, to communicate the motion imparted to the lever and chain to the hammer of a bell or other signal of alarm, as described.

3d. I claim the arrangement of the cam *g* and catch *h* rotatively

with the heel of the hammer and with the chain, substantially as specified, whereby the vibrating motion of the chain works the said hammer, as set forth.

No. 15,586.—GREENLEAF A. WILBUR.—*Improved Grapple for Raising Sunken Bodies*.—Patented August 19, 1856.

To use this apparatus, the staple T is attached to whatever it is wished to secure against loss by sinking in water, and the buoy B is attached to the staple. In case of fire on board of the vessel, and sinking of the object to be secured, the buoy B floats, paying out its chain C¹ from the spool. To save the sunken object, the chain C¹ is detached from the buoy, its free end is passed through the furrows f and f¹, thence through the hole h in G, and the grapple is now permitted to descend the buoy-chain C¹, and will eventually grasp the staple T, which will hook into the hook A, where it is kept by spring K, and the object can be raised now by hauling at the grapple-chain C.

The inventor says: I do not claim the use of a buoy or buoy-chain to indicate the position of sunken bodies.

But I *claim* the improved construction of the grapple to be operated with a buoy and staple, in the manner and for the purpose substantially as set forth.

No. 14,497.—CALVIN FLETCHER.—*Improvement in Paddle-Wheels*.—Patented March 25, 1856.

A represents the shaft of the wheel; B B are the flanges which support the outside arms c c c, &c., and B¹ is the middle flange which carries the inside arms d d d, &c.; e f g are the buckets. The water can freely pass through the spaces o o, (figure 3,) presenting but little vertical resistance to the buckets in their egress from the water.

I do not claim the curvilinear shape of the buckets, as in itself new and patentable; but I *claim* the construction of propellers with a series of narrow buckets of curvilinear or parabolic shape, combined and arranged in the manner hereinbefore set forth, or its equivalent, for the purpose of combining the greatest propelling force with the least possible resistance to the ingress and egress of the buckets in their passage through the water.

No. 15,564.—ABRAHAM HOUSEWORTH.—*Improvement in Paddle-Wheels*.—Patented August 19, 1856.

When the cam F is placed at the right side of the shaft A, and the wheel rotates as indicated by the arrow, the buckets D D¹ will be spread apart as they enter the water, one end of the forks a¹ being acted upon by the oblique groove c¹, and the oblique face or end d¹ of said cam acting upon the ends b¹ of the floats D¹. As the floats pass underneath the centre of the shaft, and rise to pass out of the water, they are closed by the cam G.

Claim.—The floats or buckets D D applied or attached to the wheel, as shown, and expanded, or spread and contracted, or closed by the cams F G, arranged as shown and described.

No. 15,967.—MATTHEW A. CROOKER.—*Arrangement of Buckets of Paddle-Wheels*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The method of arranging the buckets or floats of a paddle-wheel when the buckets are to be broken into sections; that is to say, by arranging each set or section of buckets along four arcs which circumscribe the periphery, and which arcs are struck with a radius greater than the semi-diameter of the wheel, each set of buckets when placed upon the shaft being arranged so that the place where the arcs of the one set meet shall stand opposite to the centre of an arc in the adjoining set, if the wheel be composed of but two sections, or when more than two sections shall be divided proportionally.

No. 14,920.—HARVEY LULL.—*Improvement in Feathering Paddle-Wheels*.—Patented May 20, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Imparting to the paddles e of paddle-wheels a rotating motion on axis d, whilst revolving about the axis a of the paddle-wheel, by means of an eccentric cog-wheel g, combined with and engaging the cogs of the pinions f on the shafts d of the paddles.

No. 15,149.—JOSEPH G. SHANDS.—*Improvements in Feathering Paddle-Wheels*.—Patented June 17, 1856.

Within each ring C is placed a steadying grooved wheel D, secured to the wheel-shaft A. Two smaller grooved wheels E E are placed in such positions as to act on the outer peripheries of said rings opposite their axes. The said grooved wheels E E rotate freely on their arbors F F, and they are allowed to have a limited lateral movement on said arbors, controlled by the off-sets k k and springs j j; which arrangement enables the grooved wheels E E to adapt themselves to all lateral oscillations of said rings, and yet enables said grooved wheels to afford ample lateral support to said rings when they are subjected to violent shocks. All shocks or concussions which have a tendency to force upwards the rings C C are transmitted directly to the wheel-shaft A by the grooved wheels D D.

Claim.—Combining the wheels D D with the shaft A, in such positions that they are enabled to transmit a portion of the strain exerted upon the rings C C directly to the said shaft, substantially as herein set forth; in connexion with the combination of the wheels D D with shaft A in such positions as to bring them within the inner peripheries of the rings C C.

I also claim making the holes in the outer ends of the arms h h of an oblong shape, for the purpose substantially as herein set forth.

No. 16,091.—AUGUSTUS JUAN.—*Improvement in Propeller Shafts*.—

vents the bark from slipping round, so as to carry the bolt-rope out of

No. 16,091.—AUGUSTUS JUAN.—*Improvement in Propeller Shafts.*—Patented November 18, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—A propeller shaft which in its construction is circular, conical, and angular, with these three conditions combined, or otherwise, and to be applied vertically, as described and shown, and for the purpose set forth.

No. 14,589.—AARON ARNOLD.—*Improvement in Enclosing Propeller Shafts in Keels.*—Patented April 8, 1856.

The hollow side-keels B B are bolted through flanges c c to the vessel's bottom, parallel to the keel C. They are made of a width sufficient for stiffness and to contain the propeller shafts D D. At a a they are made with a gradual enlargement to receive the cranks b b.

Claim.—The manner of enclosing the propeller shafts in keels B B, made of sheet-iron, or other material, fastened to the vessel's bottom, for the purpose and in the manner substantially as herein described.

No. 14,973.—JOHN GERARD ROSS.—*Improvement in Hand-Propellers.*—Patented May 27, 1856.

If this propeller is to be used in shallow water, the plate e is attached to the lower part of bucket c by means of studs and mortises, &c.

When used for whale fishery, or similar purposes, the lance-points f are attached to the bucket in place of the plate e, for the purpose of fastening it to the whale or similar fish, &c.

The inventor says: I do not claim a bucket moving on hinges in itself, as this is well known in propellers for steam vessels, and is generally known as the duck's-foot propeller; but I *claim* the plate e and lance-points f, in connexion with the propelling bucket c.

No. 14,786.—S. W. WOOD.—*Improvement in Propelling Boats.*—Patented April 29, 1856.

The shaft of the drum E, to which the paddles k are attached, being secured to the frame F, and entirely independent of and not connected with the boat, is raised and lowered through the operation of the hand-wheel and screw P attached to said frame.

Claim.—The arrangement and combination of the horse-power and paddle-wheels, whereby the raising and lowering of the paddle-wheels, to suit the various depths at which the boat sinks produces a variable inclination of the horse-power, so as to enable the horse to exert a power proportional to the weight of the load.

No. 16,169.—HENRY M. BONNEY.—*Improvement in Sail-Hanks.*—Patented December 9, 1856.

The guard F attached to the part A prevents the stay from wearing the bolt-rope which passes through recess E; and besides this, it pre-

vents the hank from slipping round, so as to carry the bolt-rope out of the recess E.

The inventor says: I am aware that it is not new to make a metallic hank-body in two parts, connected by a hinge and screw. I do not claim such.

I *claim* an arrangement of the hinge and the guard, relatively to the eye and the clasp, or connecting contrivance; the entire guard being in one piece, and fastened to the movable part of the body, and so as to be movable with it, and to open from and shut against the other part, as specified.

No. 14,094.—HENRY DUNCAN PRESTON CUNNINGHAM.—*Improvement in Reefing Sails.*—Patented January 15, 1856.—Patented November 30, 1850, England.

The sail is kept from chafing against the lee rigging when rolled upon the yard, by the spar G, which stretches from yard-arm to yard-arm, and is secured to the yard-arm hoops. This spar also carries the top-gallant studding-sail booms.

The sail is divided down the centre, to enable it to clear the centre fittings on the yard; and this aperture in the sail is closed by a bonnet S, which is provided at intervals with metal travellers T. The upper traveller T is furnished with screw-bolts which are inserted into holes in the iron D, which latter is so made as to swing, that the bonnet shall blow out or work in harmony with the other parts of the sail.

Claim.—1st. The chafing spar G applied to the after side of the sail yard, for fending off the sail from the mast or rigging when rolled around the yard, as set forth.

2d. The radius bar D in combination with the bonnet-head, in order to permit the top of the bonnet to blow out in harmony with the belly of the sail, as described.

No. 15,754.—ISAAC BOSS.—*Improvement in Reefing Topsails.*—Patented September 23, 1856.

The lines c are fastened in the eyelet holes a, and reef from aft forward, having knots in the ends of the lines, bringing the knots close to the holes; the lines then run up between the head of the sail on a straight line and the fore part of the yard, thence to the mast-head direct, with a block at the mast-head, reefing from forward aft and thence leading on deck.

Claim.—1st. The running of lines from the reef, between the head of the topsail and the fore part of the yard, thence direct to the top mast-head.

2d. The arrangement of reef tackle beneath the yard, running from the end of the yard to the quarter on deck.

3d. The peculiar mode of strengthening the sail by bands and double ropes, as described.

No. 14,723.—GEORGE HUBBARD.—*Improvement in Suspending Extra Topsail Yrads.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: What I *claim* as my invention or improvement in the application of the extra yard F is, arranging the same, or its connexion with the mast A above the cap e of the lower mast-head, and applying said extra yard F to the topmast B, and suspending it from or near the trestle-tree g, whereby said yard may not only be raised up towards said trestle-tree, but be supported in the manner set forth, and be capable of being braced around as occasion may require, and this without danger of injury to the cap of the lower mast-head.

No. 15,837.—HUBBARD BIGELOW and MORTIMER M. CAMP.—*Improved Ring-Bolt for Ships' and Boats' Tackle.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—We do not claim an eye or ring-bolt made in parts, that can be secured to or released from each other; but we *claim* the tongue C, the holdfast D, and the levers E E', as arranged in relation to the body A, in the manner and for the purposes set forth.

No. 15,624.—REUBEN SHALER.—*Improvement in Bilge and Leakage Water Indicators for Ships and other Vessels.*—Patented August 26, 1856.

To the metal chamber A is attached a pipe which extends downwards to the bottom of the hold of the vessel to which the apparatus is attached. The chamber A is covered with a system of dish-shaped India-rubber springs C, to the upper one of which is attached the shaft D of a rack. When the bilge-water rises in the pipe, it compresses the air in the same, actuates the rod D and pinion E, and moves the indicator G on dial F.

Claim.—In bilge and leakage indicators, the sectional diaphragm spring C, as arranged in relation to the chamber A and the standard D, for the purposes described.

No. 14,113.—CHARLES PERLEY.—*Improvement in Cargo-ports for Ships and other Vessels.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engraving.

h represents the cross-bar, with the lashing for the purpose of securing the shutter *g*.

Claim.—The rim 7 around the flanch 6 that receives the bolts 9 to secure the frame *f* to the vessel, said rim 7 receiving a caulking on both sides—one against the vessel, and the other against the shutter *g*—thereby effectually preventing leakage in the manner specified.

No. 14,048.—SAMUEL W. BROWN.—*Improvement in Constructing the Bottoms of Ships and other Vessels.*—Patented January 8, 1856.

The nature of this invention consists in constructing so much of the lower bottom part A of cast-iron as may be necessary to constitute both ship's bottom and ballast.

Claim.—Making the entire bottom A and keel of ships and other vessels of thick and continuous plates of metal, for the united purposes of bottom and ballast, as herein set forth.

No. 14,365.—ALEXANDRE LE MAT.—*Improvement in Means for Increasing the Buoyancy of Ships and other Vessels.*—Patented March 4, 1856.

The nature of this improvement consists in inserting into and attaching to the sides of a vessel slotted tubes *s s'*, into which are placed knobs at the rear ends of bags *a a' a'' a''' a'''' a'''''*. These bags can be drawn to their proper positions along the tubes by means of a windlass and ropes attached to the knobs. The bags when inflated, as represented at *a' a'' a'''*, will add to the buoyancy of the vessel. The sectional figure 2 is drawn on an enlarged scale.

Claim.—The horizontal and upright tubular rails or tubes, constructed, furnished, and operated, substantially as described and for the purposes essentially as specified.

No. 15,090.—WILLIAM MONT. STORM.—*Improvement in Safes for Ships and other Vessels.*—Patented June 10, 1856.

The bottom *b* of the fire-proof receptacle B is detached from the main body, so as to permit the water to flow in at *c*, in order to float out the buoy C as the vessel sinks. C is formed of two separate thicknesses of metal, the space between these two being filled with India-rubber. The tube Z is open at top and bottom; the float Z' carries a flag-staff and pennant, which will be hoisted by the rise of Z' when the safe is afloat. The safe C is made to serve also the purpose of a preserver by means of the bails *f f*, &c.

Claim.—The combination of the receptacle or "sheath" B, open at the bottom, and at its top open to the upper deck A, with the (independently water-tight) double-shelled buoy C, having within it the (again independently water-tight) "deposit chamber" D for valuables, said chamber being accessible from the exterior by a water-tight door E, closing and clamping for that purpose on an elastic seating, &c., substantially as described.

2d. The buoy, the tube Z, flag, and float Z', for the purpose explained.

No. 15,886.—JAMES KELLEY.—*Improvement in Anti-Friction Bushing for Ships' Blocks.*—Patented October 14, 1856.

The rollers D can revolve freely in their bearings in the rings E, and said rings can rotate freely in corresponding grooves *d* in the heads C

D. The head C is riveted to the flanges A of the head B, and thus sand and water are excluded from the apparatus.

Claim.—The described mode of constructing the bush, by riveting the head within the cylinder, and the annular grooves *d d* for the reception of the bearing rings E E of the rollers, for the purposes specified.

No. 15,817.—JOHN M. RILEY.—*Improvement in Means for Lubricating the Sheave-Pin of Ships' Blocks.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The bands E F, one or more interposed between the axis B and the eye or band B of the pulley C, the bands E F being perforated as shown, and the axis B provided with passages or apertures *f g*, for the purpose of lubricating the bands and axle, substantially as described for the purpose specified.

No. 14,377.—DANIEL TALLCOT and GEORGE TALLCOT.—*Improvement in Ships' Capstans.*—Patented March 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the ratchet I fastened to the gear J, with the ratchet R on the barrel F, and the traversing pawls P P in the head H, for the purpose of locking the head to and releasing it from each of the ratchets I and R, substantially as described.

No. 14,983.—SAMUEL GATY.—*Improvement in Ships' Capstans.*—Patented May 27, 1856.

In consequence of the action of the pawls *ff* and *f¹ f¹*, when head H is turned from left to right, the body C will be turned also, the shaft E remaining stationary. But if the head is turned in the opposite direction, the action of the pawls will be reversed, thereby allowing the shaft E and rim M to be turned, and the pawls *d* will catch between the ratchet-teeth on the outer periphery of the rim M, which will consequently turn the body C in the same direction.

Claim.—The arrangement of the ratchets and pawls, and spur-wheels and pinions in capstans or windlasses; so that simply reversing the prime mover, will change it from a simple to a compound capstan, without shifting any of the parts by hand; and so that, also, the spur-wheels and pinions may only rotate when used as a compound capstan, and be self-ungearing when changed to a simple one.

No. 14,986.—DANIEL TALLCOT and GEORGE TALLCOT.—*Improvement in Ships' Capstans.*—Patented May 27, 1856.

The vertical ratchet-wheel I (arranged to turn within the ratchet R) is fastened to the gear J, both turning loose on the spindle E, so that when the pin Q is pushed into the position represented by dotted lines,

the pawl P will catch into the ratchet I, and release ratchet R, so that by turning the top H it will carry the gear J which turns the gear K and shaft L. This shaft L turns in boxes M N on the arms G G, and carries the gear O, arranged to work into the stationary internal annular gear B, so as to turn the barrel F with great power.

Claim.—The gears J and K, arranged at the top of the capstan, in combination with the shaft L and gears O and B, arranged at the bottom of the capstan, for communicating a slow and powerful motion to the barrel F, substantially as described.

No. 15,933.—CHARLES PERLEY.—*Improvement in Ships' Capstans.*—Patented October 21, 1856.

By reference to the claim and engravings, it will be seen that, by turning the barrel *a* into certain positions, the pinion *m* may be removed from shaft 2. The apparatus may then be worked without said pinion, or the pinion *m* may be attached to shaft 8, and thus the number of revolutions of the barrel *b* can be regulated according to circumstances.

The inventor says: I do not claim a capstan with the barrel filled to rotate with, or be independent of, the handspike head, as this has been done; neither do I claim varying the power of the capstan by means of gearing in itself, as worm-pinions, gears, and a variety of means have been heretofore in use; but I am not aware that a wheel around the base of the capstan has ever before been actuated by a movable pinion, receiving its motion from the handspike head, centre-shaft, and gearing in the base; thereby the power to revolve the capstan is applied to the best advantage, and with the largest possible leverage against the rope or chain around the barrel of the capstan.

But I claim, 1st, retaining said pinion *m* in place, by the overhanging base of the capstan barrel, except at the notches *q*, at which point said pinion *m* can be removed, as specified.

2d. Constructing the oil receptacle and groove 6 (that contains the sustaining balls) higher at the outside than the inside, to cause said balls, in their motion, to lubricate the journal 5, substantially as specified.

No. 15,123.—JAMES EMERSON.—*Improvement in Ships' Capstans and Windlasses.*—Patented June 17, 1856.

If the key *b* is elevated, the wheel or windlass H will be connected and will turn with the shaft D and capstan G. The capstan G is connected with the windlass or wheel H when the cable is drawn up, and the strap J is loosened by turning the shaft L. This capstan combines thus the advantages of a double capstan for joint or separate and controllable operation.

The inventor says: I claim nothing new, irrespective of the arrangement and operation together, substantially as specified, of the parts of the capstan made to couple and uncouple at pleasure for joint or separate action, as required; nor do I claim the application of a friction-strap or belt to a windlass barrel.

But I *claim* the double or divided capstan G or windlass, arranged for operation in the manner specified, and consisting of an upper hand operative portion of the body or capstan proper G, and under loose portion of said body H, separately controllable by friction-strap J or gearing, at pleasure, with the upper operative portion G of the body of the capstan, as and for the purposes herein set forth.

No. 16,059.—RUDOLPH KNECHT.—*Improved Method of Ventilating Ships, &c.*—Patented November 11, 1856.

By the revolution of the shaft C, the wings G will draw in the fresh air through the pipe E, cooling the same, while through the perforated plate N, if the same is covered with ice, the fresh air partly purifies the unhealthy air in the room, and expels the same, with the assistance of the wings F above the top of pipe D, through said pipe.

The inventor says: I do not claim wings to draw in fresh air or to expel the foul air out of a room; nor do I claim the ventilating tubes.

I *claim* the combination and arrangement of two sets of wings on one shaft, acting simultaneously, so that while one is expelling the foul air, the other will draw in fresh air, in the manner substantially as described and for the purpose specified.

No. 15,395.—J. STEVER.—*Improved Arrangement of Means in Pendulum Pumps for Ships.*—Patented July 22, 1856.

The frame B turning on the hollow shaft A will move corresponding to the movement or inclination of the ship, and the sector I will be moved by the swing of the weight K on the bars J, and the sectors H, levers G, rods F, and plungers E will be operated, raising the bilge-water through the lower end of the shaft A, and forcing it through pipe L into the upper part of shaft A and through the pipe c. These pumps will be operated, whether the ship is rolling from side to side or pitching fore and aft.

Claim.—Attaching a series of pumps C to a hollow shaft A, which is allowed to turn freely in its bearing, and connecting the weighted bars J J to the plunger rods F of the pumps by means of the geared sectors H I and levers G, substantially as shown, for the purpose specified.

No. 15,704.—CHRISTOPHER N. NIXON.—*Improvement in Hanging Ships' Rudders.*—Patented September 9, 1856.—England, May 12, 1854.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The use or construction, as applied to sailing vessels, for steering purposes, of the groove or socket, as described, whether the same be formed to extend from the top or near the top to or near to the bottom of the stern-post; whether the same be continuous or divided into sections or parts.

2d. I claim the rod, continuous or in sections, attached to the rudder, and combined with the groove, or other equivalent, attached to the stern post.

No. 15,732.—JOSEPH S. FOSTER.—*Improvement in Reefing Ships' Sails upon Extra Yards.*—Patented September 16, 1856.

On lowering the topsail yard C and sail L, a tension and drawing is caused on the reefing lines n, operating through the pulleys O, which, drawing on the circumference of the arms d of the folding yard H, causes this yard to revolve, and consequently folds up the sail, as may be required, in two directions towards, the top and lower yards C and D.

Claim.—The double yard H H H, or extra yard of two pieces, placed about midway between the upper and lower yards, the sail passing between the two pieces, operating in the manner and for the purpose set forth.

No. 16,045.—THOMAS CARR.—*Improvement in Steering Apparatus for Ships.*—Patented November 11, 1856.

The ropes wound around the tiller-shaft F pass around the pulley E, to which the rudder-shaft L is connected by means of rod K.

The inventor says: I do not confine myself to the details, as I have shown that they may be variously modified and yet retain the peculiar characteristics of my invention. I *claim* the application to the ordinary steering apparatus of vessels of a crank, or its mechanical equivalent the eccentric, working in combination with an entire pulley or its segment, a quadrant on a vertical axis, the whole being interposed as a medium of communication between the wheel-ropes or chains and the tiller.

No. 26,165.—DAVID W. SMITH.—*Improvement in Steering Apparatus for Ships.*—Patented December 2, 1856.

This apparatus is an improvement on the steering apparatus of D. Crowell, patented December 5, 1854. In this apparatus the main pinion H on wheel-shaft E does not engage directly with the main rack I, but plays into the guard-rack M, and also into the pinion L, which engages with the main-rack I on the rudder-shaft K.

Claim.—I *claim* the arrangement of the guard-rack and the pinion on the tiller with the main rack and the pinion of the hand-wheel shaft, the whole being substantially in the manner and for the purposes as specified.

No. 16,238.—PETER H. JACKSON.—*Improvement in Ships' Windlasses.*—Patented December 16, 1856.

This invention refers to the peculiar construction of pawls 2 attached to each of the heavers k, which operate the ratchets i of a windlass; these pawls 2 are attached to shaft 3, and can be turned by means of cranks 4 to either of the two positions represented in figs. 2 and 3, and are retained in such positions by means of counterweights 5. By turning these pawls to one or the other side, the motion of the windlass can be reversed.

Claim.—The double-acting pawl 2, crank arm 4, and counterweight 5, applied to the heaver or heavers of the windlass, arranged and operated substantially as and for the purposes specified.

No. 16,000.—CHRISTOPHER AMAZEEN.—*Machinery for Operating Pawl-*

No. 14,104.—WILLIAM R. LAVENDER and ATKINS SMITH.—*Improved*

No. 16,000.—CHRISTOPHER AMAZEEN.—*Machinery for Operating Pawl-Cases of a Ships' Windlass*.—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—I am aware that it is not new to operate the pawl-cases by a single brake-lever, and that a lever working on a vibratory post is not new, as the same has been applied to a pump; therefore I do not claim such.

Nor do I lay claim to a single brake-lever, and two levers or series of levers applied to a windlass, so as to turn it by a single gear affixed on it, as is shown in the specifications and drawings of Nialance & Pelatiah Osgood's rejected applications for patents.

But I *claim* the arrangement of the brake-levers H H, connection lever G, vibratory posts I I, and two pawl-cases B C, as applied to a post and windlass barrel, substantially as specified.

No. 15,085.—RUFUS PORTER.—*Mode of Sounding Whistles for Fog-Signals*.—Patented June 10, 1856.

The cylinders A are provided with interior clapper-valves E near the heads thereof, which admit the air when the water recedes, but prevent its escape when the water rises, thereby producing shrill sounds as often as the cylinders are plunged into the water.

Claim.—The combination of vertical cylinders A, (or their equivalents,) and whistles attached thereto, for the purpose of having loud sounds produced by the undulations of waves or swells, substantially as herein described.

No. 15,510.—JOHN W. DRUMMOND.—*Improvement in Steering Apparatus*.—Patented August 12, 1856.

The nature of this invention will be understood by reference to the claim and illustrations.

The inventor says: I do not claim a sector attached to the rudder head, acted on by a pinion, as this has before been done.

But I am not aware that a two-wristed or leaved pinion, actuated by the steering wheel, has ever before been so applied in connexion with the aforesaid sector that the two wrists or leaves of the pinion can be placed on the plane of motion of the sector, and thereby avoid all tendency to turn the steering wheel by any surge or wave against the rudder; and also in connexion with said two leaved or wristed pinion I make use of a spring, or its equivalent, to hold the wrists of said pinion on the desired plane.

I *claim* arranging a pinion having two leaves or wrists in such a manner relatively with the sector or wheel acting on the rudder, that the said wrists or leaves can be turned into the plane of motion of said sector or wheel to prevent motion to the steering wheel by any surge or wave against the rudder, as specified.

And in combination with the aforesaid two-wristed or leaved pinion, I claim the T-headed rod and spring K, or their equivalents, to tend always to bring the said two wrists or leaves into the plane of motion of the sector or wheel, substantially as specified.

No. 14,104.—WILLIAM R. LAVENDER and ATKINS SMITH.—*Improved Steering-Wheel Stopper*.—Patented January 15, 1856.

The lips *c* relieve the hinge D of all lateral strain. The dotted lines marked C¹ represent the stopper when turned back out of the way of the handles *b*, so as to leave the wheel free to be operated.

Claim.—Constructing a wheel stopper C, and applying it so as to operate with the wheel A and tiller B, substantially as specified, viz: so that it may turn up and down on a hinge D, and when down embrace the wheel handle *b*, and be supported laterally under the strain of the wheel by devices essentially as above described.

No. 15,898.—LODNER D. PHILLIPS.—*Improvements in Submarine Exploring Armors*.—Patented October 14, 1856.

The operation of this apparatus is such that a person placing his feet in the lower extremities *ff* of the machine, and attaching the leathern girdle firmly about his loins, the air-chamber *e* being filled with condensed air, and the cap *d* firmly bolted to the head *c*, the apparatus may be let down to any required depth in the water. The air in the cavity A becoming vitiated, the operator turns the cock *m*, and receives a fresh supply from the air pressed in the reservoir B; by opening the valve *l*, the vitiated air escapes through the tube *k*. If the operator wishes to ascend without assistance, he turns the cock *o*, and admits the compressed air into the bag or submarine balloon *r*, which gives additional buoyancy to the apparatus; then, if wishing to descend again, he closes the cock *o*, opens the cock *p* in the branch pipe, and the pressure of the water collapses the balloon *r*.

Claim.—1st. A submarine armor with which the explorer can be wholly invested, composed entirely of metal, having free and easily moving jointed-limbs, and from within which the explorer may give motion to the armor, and operate the external means, as set forth.

2d. Connecting with such armor a collapsible exterior vessel, so united with the interior air-chamber as to allow of its being inflated, and buoy up the armor, as described.

3d. Arranging the rods for operating the external tongs or nippers within the tubular arms, as set forth.

No. 15,125.—J. B. FAYETTE and D. WHEELER.—*Improvement in Strapping Tackle-Blocks*.—Patented June 17, 1856.

These improved straps for tackle-blocks can be applied to the blocks cold, and removed from and applied to other blocks with facility.

Claim.—For tackle-blocks a strap made in two parts A and B, each part having a hook at one end to hook into the eye of the block-hook, and a hole near the other end for the bolt that fastens them together.

No. 16,084.—GEORGE S. BURROWS.—*Improvement in Attaching Centre-Boards to Vessels*.—Patented November 18, 1856.

The centre-board C may be raised or lowered in the usual manner

by a chain attached to the end F. When it becomes necessary to remove the centre-board C from the trunk A, the bolt *b* is unscrewed and taken out, and the part D with the centre-board attached may be lifted out of the trunk by any suitable hoisting apparatus.

Claim.—The hanging of the centre-board to a movable post D, or other sliding piece of similar character, which admits of its being easily and readily removed from the trunk for repairs, or any other purpose, as described.

No. 15,420.—GEORGE W. GERAU.—*Improvement in Fore-and-aft Rig of Vessels.*—Patented July 29, 1856.

The nature of this invention consists in having the mainsail A of triangular form, attached to the boom B, as usual, and having a single block or halyard C attached to the upper end of the sail for the purpose of raising it—the lower end of the topsail D being attached to the outer end of the boom B, the upper part being attached to the topmast. By this arrangement the gaff and one set of halyards are dispensed with.

Claim.—Constructing the mainsail A, as shown, and having the lower end of the topsail D attached to the outer end of the boom B, substantially as shown and described.

No. 16,090.—AUGUSTE JOUAN.—*Lee-Boards for Vessels.*—Patented November 18, 1856.

This invention consists in attaching elastic metal plates F, by means of stanchions B, to the sides of vessels, to aid in propelling and steadying the same in heavy swells of the sea.

Claim.—The elastic metal blade lee-boards, which I call "ship-fins," to the sides of ships, vessels, and boats, in a position nearly vertical, as described and shown, for the purpose set forth.

No. 15,298.—JAMES MINIFIE.—*Improved Arrangement of Means for Balancing and Propelling Life and Property Saving Vessels.*—Patented July 8, 1856.

The boat is composed of seven air-tight compartments strongly secured together. Attached to said boat in a substantial manner are the steel rods R and T for supporting the driving wheel M of the apparatus. Motion is imparted to the driving wheel by means of the connecting rods N, the latter being provided at their upper end with cranks and shoes for the operator to stand in and receive, in this manner, a reciprocating vertical motion. The rotary motion of the driving wheel M is converted into a reciprocating motion by means of connecting rod P, and said motion is transferred to the piston-rod N and piston K, by which means the boat is propelled.

Claim.—The arrangement of the driving wheels M, the steel foundation pieces R, and the rods and bars connected therewith and with the propellers, as they are described, in relation to the vessel.

No. 14,487.—LAMBERT ALEXANDER.—*Improvement in Propelling Vessels.*—Patented March 25, 1856.

B B are slides or guide-rods; E E are piston-rods to which the motive power is communicated; fig. 3 represents the bucket F in an upright position, and fig. 4 in a horizontal position. G G are guide-blocks.

When the rollers I I come in contact with the inclines H, the bucket is brought into a vertical position; at the same time the spring-blocks K K, becoming free, will project over the slides B, and keep the buckets moving in this position until the inclines L force the blocks K K back again, allowing the bucket again to be turned horizontally by passing beneath the rollers M on the adjustable levers N N.

I do not limit myself to the use of my propeller in any particular part of the vessel, nor to the size or shape of the buckets themselves, nor to any particular character of motive power; but what I *claim* is, regulating the motion of the propelling buckets by the combined action of the spring-blocks K, inclines L, rollers I I and M, and inclines H H, substantially as specified.

No. 14,226.—WALDO P. CRAIG and WILLIAM R. RIGHTOR.—*Improvement in Signals for Vessels.*—Patented February 12, 1856.

The object of this improvement is to make it manifest if one vessel is steering directly towards another; in this case, the three signal lights *a b c* on one of the vessels will appear to an observer on the other vessel in a vertical line, one above the other; whereas if the vessel steers in any other direction, the three lights will appear in an oblique line.

Claim.—A range of lights placed in the forward part and in the longitudinal centre of a vessel, the foremost being the lowest, and the following ones rising in succession above it, so as so present to an observer in or near the line of its course a range of light which is either vertical, or is directed obliquely to starboard or larboard, according to the course of the vessel.

No. 15,319.—JOHN GUEST.—*Improvement in Sounding-Guards for Vessels.*—Patented July 8, 1856.

The rod A is marked in feet so as to show on the spar deck the number of feet of water under the bottom, when the ends of the rods or radius bars B come in contact with the ground. The bars B B attached at E to the rod A slide with their other ends in a groove C by means of rollers R; they serve as fenders to prevent the rod A from breaking or bending, and to shut it up as the water shoals. A bell is attached to the pin of the shackle L, so that an alarm is given the instant the rod A rises above the mark at which it was set.

Claim.—The mechanical construction of the machine hereinbefore described, and especially the attachments of the radius bars B B, working in the grooves C C, by which I am enabled to indicate the approach of shoal water, whether the vessel be going ahead or astern.

No. 15,850.—AUGUSTE JOUAN.—*Arrangement of Elastic Plate Paddles for Steam Vessels.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The series of vertically divided elastic plate paddles, arranged as set forth.

No. 14,035.—IRA F. THOMPSON.—*Improvement in Velocimeters for Vessels.*—Patented January 1, 1856.

a represents the bottom of the vessel; *b* is a drag or paddle swinging on the centre 1; it is provided with a bucket or piston 2 on the top edge, which plays in a circular motion in the box *c* in such a manner that the piston does not fit water-tight to the inside of box *c*. The joint 3 connects the link *d* and arm *e* to the drag *b*; the arm *e* passes below a roller 4, and the link *d* is kept vertical as it is moved by the drag *b*. The friction-roller 5 operates upon the lever *f* of the fulcrum 6, and the lever *f* operates upon a vertical rod *g*, which, by means of a cord or chain 7 attached to it and wound around the spindle of the dial *h*, moves the hand 8, which indicates the speed by means of the figures on said dial.

Claim.—I do not claim the water-leaking pistons in themselves, as these have before been used for checking and stopping vibrations in other indicating instruments; but what I *claim*, and desire to secure by letters patent, is:

1st. The combination of a water-leaking piston or pistons with the drag *C*, in the manner substantially as specified, whereby the drag, being hinged at or near the bottom of the vessel, indicates by its inclination the speed of the vessel, and said water-leaking piston or pistons act to prevent a sudden motion to said drag as the vessel pitches, as specified.

2d. I claim the method herein described of communicating motion from the drag or paddle *z* to an indicator by means of the link *d*, guided and retained vertically by the arm *e*, substantially as specified.

No. 14,328.—IRA F. THOMPSON.—*Improvement in Velocimeters for Vessels.*—Patented February 26, 1856.

As the vessel heels over and inclines the velocimeter drag and rod sideways, the pendulum hanging vertical will depress the slide *l* more or less, according to the inclination of the vessel; and this slide acting in front of the drag *b* will shield the same from the action of the water, so that there will not be so much power exerted to incline the drag, thereby compensating for the amount of weight acting to keep the drag down.

Claim.—The gate or slide *l* actuated by the vertical weighted lever or pendulum *h*, in combination with the hinged drag *b*, in the manner and for the purposes specified.

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FOR THE YEAR 1856.

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IN THE HOUSE OF REPRESENTATIVES,

February 17, 1857.

Resolved, That there be printed, of the Mechanical portion of the Patent Office Report for the year 1856, sixty thousand copies; fifty thousand for the use of the House, and ten thousand for the use of the Patent Office.

Attest:

WM. CULLOM, Clerk.

49
707
JUN 29 1921

ERRATA IN VOL. I.

An English patent for an invention for which a provisional protection has been granted is dated, not at the option of the applicant, as stated on page 4, but at the discretion of the law officer to whom the application is referred, or the Lord Chancellor.

- Page 187, 1st line..... instead of 16,111, read 16,112.
195, 12th line.....instead of 14,991, read 14,999.
196, 17th line.....instead of 14,598, read 14,589.
205, 39th line.....instead of 19,923, read 15,923.
210, 1st line.....instead of 16,233, read 16,232.
212, 14th line.....instead of 19,977, read 15,977.
213, 7th line.....instead of 15,192, read 15,193.
219, 2d line.....instead of 16,198, read 16,197.
219, 14th line.....instead of 14,480, read 14,880.
227, 21st line.....instead of 14,499, read 15,499.
227, 25th line.....instead of 14,406, read 15,406.
231, 16th line.....instead of 15,829, read 15,828.
239, 25th line.....instead of 16,011, read 16,072.
242, 26th line.....instead of 13,763, read 14,763.

CONTENTS.

IV.—DESCRIPTIONS AND CLAIMS—Continued.

	Page.
VIII.—Mathematical, philosophical, and optical instruments	1
IX.—Civil engineering and architecture	20
X.—Land conveyance, comprising carriages, cars, &c.	60
XI.—Hydraulics and pneumatics	102
XII.—Lever, screw, and other mechanical power	139
XIII.—Grinding-mills and mill-gearing	151
XIV.—Lumber, including machines and tools for preparing and manufacturing.	165
XV.—Stone and clay manufactures	237
XVI.—Leather, including tanning, dressing, and manufacture	267
XVII.—Household furniture, machines, and implements for domestic purposes.	290
XVIII.—Arts polite, fine, and ornamental.	333
XIX.—Fire arms and implements of war	383
XX.—Surgical and medical instruments	421
XXI.—Wearing apparel, including implements for manufacturing	429
XXII.—Miscellaneous	434
Appendix	454
Claims of inventions for which patents were reissued in the year 1856.	458
Claims of designs for which patents were granted during the year 1856.	482
Claims to additional improvements rendered during the year 1856.	499
Disclaimers entered during the year 1856	506
Claims of extensions granted in the year 1856.	507

VIII.—MATHEMATICAL INSTRUMENTS, &c.

No. 15,565.—ISAAC G HUBBS.—*Improvement in Machines for Adding Numbers*.—Patented August 19, 1856.

The manner of operating this machine is as follows: The dial C (fig. 2), with the zero indication on it, is placed in line with the number 50 on the cover F; the index H, which is operated upon by a spiral cam G moving in notches of said index, is drawn out so as to have its outer end reach to the inner line of the zero space on the dial. If it is required to add the numbers 24 and 12, the pin in the end of the indicator I is moved and placed in the perforation in the edge of the disk E opposite to number 24 on the cover F, and that disk, and with it the dial C, is rotated by the indicator (to the left) to and over the number 50 on the cover F; the inward motion of the index H, being coincident with it, causes it to follow the spiral line on the dial; the pin in the indicator I is then released, and the indicator carried around to, and the pin placed in, the perforation in the disk E opposite to number 12, and the disks are moved as before; the sum of the two numbers, 36, appearing in line with and at the end of index H.

The inventor says: I do not claim the scale of numbers inserted in the spaces formed by the spiral and radial lines on the dial C, as that is known and used.

But I *claim* the disk E, with its continuous spiral tooth, the ratchet index H, and the indicator I, substantially as and for the purposes set forth.

No. 15,359.—WILDERICH JOSEPH VON KAMMERHUBER.—*Improvement in Centro-lineads*.—Patented July 15, 1856.

This invention relates to an arrangement by which perspective drawings can be executed without the use of large tables or long squares, when the vanishing point lies outside of the limits of the picture. The T-square A B is provided at its head A with two pins 1 1, the edge 2 4 dividing the distance between the two points in equal parts. The arc C of a true circle being fastened to the drawing board, the T-square can be moved along the periphery of said arc by the two pins resting on its edge, and all the lines corresponding to the edge 2 4 will be radial lines of the same circle.

The inventor says: I do not limit myself to two projections provided on one side of the cross piece, as both sides of the same may be pro-

vided with two projections, or their equivalents, whereby only one edge of the blade of my centro-linead is to be used for drawing lines.

But I *claim* the combined T-square and centro-linead, constructed as above described, in connexion with the circular arcs of different diameters and of any suitable material, provided on their ends with pins, or their equivalent, to secure them to the drawing board, when used to guide the centro-linead.

No. 14,645.—EDWIN ALLEN.—*Improvement in Calendar Clocks*.—Patented April 15, 1856.

The nature of this invention will be understood by reference to the patent issued to John Williams, dated September 19, 1854.

The inventor says: I do not claim the lever *n* and its stop-pin 23, nor any other parts described in the patent of John Williams.

But I *claim* the lever *a*, with its pin 4 attached to the wheel *b*, and the eccentric *A* applied to the lever *n*, in combination with a spring *d*, for the purpose of controlling the operations of the said lever in connexion with the pins 19, 20, 21, in all positions of the clock movement.

No. 15,637.—EDWIN ALLEN.—*Improvement in Calendar Clocks*.—Patented September 2, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood from the claims and engravings.

The inventor says: I do not claim the lever *C* and stop-pins *d* on the month-wheel, as their equivalents are found in the calendar mechanism of John Williams, patented September 19, 1854.

But I *claim*, 1st. The change-wheel *E* and year-wheel *F*, or its equivalent, fitted, as described, to rotate with the month-wheel *B*, and carrying the leap-year wheel *G*, occupying such a position on the change-wheel as to represent the month of February, said change-wheel receiving every month one-twelfth part of a complete rotation on its axis, independently of the month-wheel, and the leap-year wheel receiving every year, in addition to its revolution around the axis of the change-wheel, one-fourth of a complete rotation on its own axis, the movement of the change-wheel and leap-year wheel being produced by any means equivalent to those described, and the said wheels combined and operating upon the lever *C*, substantially and for the purpose described.

2d. The internally-notched ring *P* on the driving-wheel *M*, or its equivalent, that transmits motion from the month-wheel to the yearly rotating month-card, combined with the lever *Q* and its locking-pin *i* and the pin *z* on the month-wheel, the whole operating substantially as described to lock the wheel *M*, or its equivalent, and through it the month-card, till the time for moving the same, and then unlocking it as long as is required to effect the movement.

No. 14,251.—JOHN PRIME.—*Improvement in Ships' Compasses*.—Patented February 12, 1856.

This method of fitting the glass cap *C* to the box *A* protects the glass cap from being cracked by the expansion of the bowl. The convex form of the glass cap always allows the water to run off.

Claim.—The method herein described of constructing the cover of compass boxes by inserting the metallic ring *B* within the rim of the glass *C*, with a band *d* of India-rubber or other elastic material between them to compensate for their unequal expansion and contraction, substantially as and for the purposes set forth.

No. 15,017.—R. H. PEVERLY.—*Improvement in Self-Registering Ships' Compasses*.—Patented June 3, 1856.

The strip *A* is introduced between rollers *b b* and over a bed-plate *c*, with a circular groove *d* to receive the marker *a*, (the marker being connected with the needle pivot *d'* by spring arm *e'*); the paper then passes between rollers *e* and *f*. The feed-roller *e* is caused to revolve by gear *g*, connecting it with the time-piece *C*. The arm *k* has two forked projections, the one of which, as the releasing lever *J* rises, lifts a lever *l*, and the other fork *z* acts as a stop at certain intervals to the stud *n* of a wheel *o*, which forms one of a series of wheels that, together with a winding-up spring *t*, constitutes an independent clock-gear for operating the hammer *D* that strikes upon the pointer *a* to effect the register. The movement of the hammer stops when the stud *n* reaches and rests on the fork *z* of the arm *k*, which (when it drops with the periodical dropping of the release lever *J*) allows, by letting loose the stud *n*, of a further movement of the clock gear till the other stud *s* is again stopped by the ratchet arm *r*. The hammer is thus operated independently, as it were, though in concert with the clock, producing the feed of the marking strip, whereby a certain action of the hammer is insured without retarding the movement of the clock proper *C*.

From the above it is obvious that, as the ship varies her course, the deviations from the main course will be registered on either side of the centre line of *A*, while the transverse divisions indicate the intervals of time between the courses steered.

The inventor says: I do not claim as new any of the within described devices, separately considered, and am aware that various electro-magnetic and other instruments have been made to record automatically the indications and periods of such on a clock-fed continuous fillet or strip—this, therefore, as a principle or system of automatic registration, I do not claim; but I *claim* registering permanently and automatically the ship's courses on a continuous strip of paper, or other material, at known or fixed intervals of time, for a part or the whole of the voyage, by means of the continuous clock-feed to the fillet or strip, in combination with the ship's compass and marker, arranged and operating together essentially as set forth.

No. 15,117.—M. F. BONZANO.—*Improvement in Machines for Counting Coin.*—Patented June 17, 1856.

The coins to be counted are thrown into the basin *g*. By the rotation of the spindle *a*, the coins are seized by the toothed wheel *h* and propelled towards the slot *d*. The pieces are prevented from going past it by the projecting end of the slide *K*, and are thus compelled to enter it, one piece pushing the other along until, arrived at the toothed wheel *b*, and imparting to said wheel a motion upon its axis, corresponding to one tooth for each and every piece, they fall through the opening *l* into the box. The number of teeth in the wheels *e e e* are in such proportions to their respective pinions as to effect the decimal system of numeration, so that the figures pointed to by the hands indicate the number of pieces passed into the box.

Claim.—The manner of passing the pieces in regular order through a slot by means of a tooth wheel, for the purpose of making them aid as a pinion to revolve a wheel connected by other wheels with a registering index.

No. 16,323.—JAMES A. BAZIN.—*Improvement in Counting Machines.*—Patented December 23, 1856.

The requisite motion is given to the pawls, figs. 4, 5, 6, 7, by means of crank *R*, which vibrates in slot *h*¹ in the plate *b*. As the plate *b* and hub *g* are thus made to vibrate, the pawl 1 engages with each succeeding tooth of the wheel *a*, and the numbers upon this wheel are brought successively into action, they being set out of gear and their pawls depressed by the flanges *d* upon the rings. The first wheel continues to move until the number 9 is brought into action, at which instant the notch *f* in the flange of this wheel is brought opposite to pawl 2, which is permitted to rise and enter a notch in the wheel or ring *a*¹; and when the plate *b* is again vibrated, the rings *a* and *a*¹ are moved one notch, and the 0 of the first wheel is brought into action with the 1 of the second wheel, and the 10 is produced; in this way the two wheels move on, producing the consecutive numbers—the three wheels *a a*¹ *a*² to produce the hundreds, four wheels to produce the thousands, &c.

The inventor says: I do not claim operating a series of numbering wheels by a corresponding series of mutually dependent pawls, when the pawls are arranged upon the outside of the wheel; but I *claim* the described arrangement of the numbering wheels, and the parts immediately connected therewith—that is to say, hanging the pawls to the central drum within the rings, and operating them in the manner substantially as set forth.

No. 15,608.—GEORGE GIBBS & JOHN W. GIBBS.—*Improvement in Dynamometers.*—Patented August 26, 1856.

To test the amount of power required in the draught of ploughs, &c., one of the ends *E*¹ of the elliptic spring is attached by a hook to

the clevis on the machine, and the other end of the elliptic spring is connected in a similar manner to the double tree attached to the team. The minor axis of the elliptic will be contracted or extended, according to the power applied to the major axis of the elliptic; and the amount of power will be indicated by the pointers *L* and *P* on the dial, by an arrangement as represented in the illustration.

The pointers *L* and *P* turn on shaft *M*, which passes through hole *O*, and a pin *S* on pointer *L* enters a slot *R* on pointer *P*. The pointer *L*, in passing from *T* to *T*¹, moves the pointer *P* *P*¹ by means of the pin *S* in slot *R*; this slot allows the pointer *L* to vibrate from *T*¹ to *T*² without moving the pointer *P* *P*², which thus indicates the precise amount of draught by the dial.

Claim.—The register or pointed *P P*, which shows the average or mean draught, in combination with the slot *R* and pin *S*, or its equivalent, which overcomes the vibrating motion of the pointer *L*, shown on the dial, substantially as set forth.

No. 14,032.—CHARLES ROBINSON & CHARLES T. CHESTER.—*Improvement in Automatic Electrical Circuit-Breakers.*—Patented January 1, 1856.

By pushing the knob *F* to the right, the spring is correspondingly wound up, and, acting on the train, impels the wheels *a* and *b* in the direction of the arrow; at the same moment the spring *e e*, being liberated, bears against lever *l*¹ and elevates lever *l*, releasing wheel *b*, which immediately commences its revolution. When the revolution of wheel 1 carries the handle *G* against the spring *e*, the lever will again drop into its position in wheel *b*, and hold the train firmly until its liberation. The relation of the wheel *a*, which may be called the circuit-wheel, to these parts, is shown in fig. 1. *f* and *d* are binding screws for the attachment of wires; *d* is secured into and connects with the frame, and hence with the circuit-wheel. *f* is insulated from the frame by ivory *n*; a slip of brass is attached to *f*, and carries a slip of platina *q*. As the wheel *a* revolves, its points *j j j* are brought into successive contact with the platina slip.

The inventors say: We do not claim the circuit-wheel as a method of breaking and closing electric circuits mechanically; nor do we claim any peculiar use of these interruptions of circuit for ringing or recording signals; nor do we claim the use of clock-work for operating a break-circuit signal-wheel and regulating its motion, as that is not new; nor do we claim the manner of making the break-circuit signal-wheel stop at a point where it shall leave the circuit closed, or at a point where it shall leave it open, since, in the apparatus described in Silliman's Journal, second series, vol. 13, the break-circuit signal-wheel is made to rest at the desired point for leaving the circuit closed by the weight of its crank.

But what we do *claim* as new, and desire to secure by letters patent is, the manner in which the detent of the clock is let down to take effect, viz: by means of the lever *G* pushing back a spring *e* which previously held the detent in its elevated position.

No. 15,596.—EDWARD C. SHEPARD.—*Improvement in Magneto-Electric Machines.*—Patented August 19, 1856.

This apparatus is composed of several permanent magnets N S, with their ends placed in the planes of several vertical circles, and between every two of which circles is mounted a wheel E, having a series of helices of insulated wire fixed on its periphery, so that when the wheel revolves it shall cause the helices to pass between the sides of the ends of the magnets composing the circles for the purpose of creating induced electric currents. All the magnets in each circle must be so arranged that their north and south poles shall follow each other in regular order, and so that in each circle of magnets there shall be a north pole and south pole alternately around it. In the circles of magnets of which this machine is composed, the poles in adjoining circles must follow in reverse order to each other, so that a north pole shall always have a south pole opposite to it, in the circle of magnets on each side of it; or, in other words, every helix must at any given moment pass between and be acted upon by the north pole of the magnet at one end of it, and the south pole of the magnet at the other end of it.

The inventor says: I do not claim the helices, the connecting bands or rings $p^1 n^1$, the connecting rods, the frotteur plates, or the springs F or G, individually.

But I claim the springs F and G, the frotteur plates P, the connecting rods $r^1 r^1$, and the conducting bands or rings $p^1 n^1$, when these are combined with helices in sets of four, said helices being united amongst themselves, and by their terminal wires with the rings $p^1 n^1$, or their mechanical equivalents, so as to collect and aggregate in one current the several currents generated in the said helices when resolved between the magnetic poles, as set forth.

No. 16,175.—JAMES W. CAMPBELL.—*Improvement in Elliptographs.*—Patented December 9, 1856.

By moving the bar E so that two beams D will rotate on the plates B, the pen G on shaft h will describe an oval of the same shape as those described by pins g on the beams D.

Claim.—Attaching the bar E to the two beams D D of the plates B B, the pen G being secured at the centre of said bar, substantially as described, for the purpose set forth.

No. 14,682.—MAURICE VERGNES.—*Improvement in Electro-Magnetic Engines.*—Patented April 15, 1856.

A B C D are four wheels composed of wood, revolving upon a common axle M N, and each including an electro-magnet X Y X¹ Y¹. Each pair communicates with a separate galvanic battery; and whatever be the position of the wheels, the polarization of the magnets remains unaltered. The currents in the two multiplying coils, which latter communicate with separate galvanic batteries, are reversed alternately

by the pole-changing device P, so as to produce a continuous revolution of the wheels.

Claim.—The concurrent action of two or more electro-magnets parallel and with contrary adjacent poles, revolving upon an axle common to both, within a double multiplying coil, arranged or running between and on the outside of the magnets in opposite directions, and acting upon both sides or faces of the magnets.

No. 15,491.—DAVID MUNSON.—*Improvement in Lightning-Rods.*—Patented August 5, 1856.

This invention consists in providing a lightning rod A with spiral flanges D D for the purpose of increasing the stiffness of the rod and also its conducting power, presenting a greater amount of surface for the fluid to act upon than is the case in ordinary rods of the same diameter.

Claim.—Constructing a tubular lightning-rod with spiral flanges, one of which is left open or divided its entire length for the purpose of admitting the electric current to the inner surface of the rod, to diminish its intensity and mechanical effect, substantially as described.

No. 14,598.—CALVIN CARPENTER, jr.—*Improvement in Magneto-Electric Machines.*—Patented April 8, 1856.

The pole-changer consists of the ivory ferrule c^1 , surrounded by two semi-circular insulated metal segments with cogs, which form a spur-wheel c^2 . Two other cog-wheels $d d^1$ gear into c^2 , and answer as a substitute for the springs commonly used. The revolving prism f upon the axis of the insulated cog-wheel d , together with the spring h , serve for rapidly breaking the current.

Claim.—The cut-off consisting of the geared segments and gear wheels or wheel, and thus serving the purpose of springs, and driving a revolving prism, or its equivalent, for rapidly breaking the current, substantially in the manner and for the purpose set forth.

No. 14,857.—ELISHA DEXTER.—*Self-Counting Measure.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Supplying the point which marks the extremity of the yard or standard of measure with the pressure knob A, and connecting with it the pointer E, by means of the escapement lever F and the rack C, as a means of pointing out the number of yards measured upon the index.

No. 15,602.—ENOCH A. CRANDALL.—*Improved Instrument for Measuring Distances from a Single Station*.—Patented August 26, 1856.

The nature of this invention will be understood by describing the manner of operating the same. If it is desired to measure the distance between the points f and g , then the instrument is placed, with the point where the line a of the front side of the base meets the vertical plane in which is the axis of the tube B, vertically above the point f , and the tube B is sighted to the point g . The line a of the instrument then forms a base, to which the line fg is perpendicular. The tube C is then moved on its pivot c , at the end of the line a , till it also sights the point f ; and the angle that is formed with the line a , by the line h running from c to g and forming the hypotenuse of the triangle fcg , determines the line fg . The index E moves with tube C, by means of index-bar D; and the scale $e e^1$ being graduated in distances corresponding to the angle at c , the true distance from f to g is indicated on scale $e e^1$. In measuring long distances, the tube c comes nearly parallel with the tube B; and as it approaches to a state of parallelism, the tube C will take a long range along the line fg without producing a movement of the index E that is very perceptible to the eye. In such cases the multiplying levers I J K are used, which are provided with indexes $ij k$, working through slots $lm n$ in the top plate of the base A, over graduated scales $o o^1 p p^1 q q^1$.

Claim.—The combination of the stationary telescope B, the movable telescope C, with its index-bar D and index E, and the multiplying levers I J K, with their indexes $ij k$ and springs M, and their respective scales $e e^1 o o^1 p p^1$ and $q q^1$, all arranged as described and for the purpose set forth.

No. 15,040.—HORACE L. HERVEY.—*Improvement in Parallax Instruments for Measuring Distances*.—Patented June 3, 1856.

The teeth $o o$ on the edge of bar T form a rack which acts upon the pinion on the shaft u and turns the index hand v , when the bar T and telescope S^1 are traversed, so that the distance they are moved will be indicated by the index hand v on the dial D. The tangent-screw n is fitted to the stand p on the block V, and turns in the nut q fastened to the bar l , to adjust the bar and telescope to the angle desired, which will be indicated upon the dial r by the projection t on the bar l , which serves as an index to denote the angle at which the telescope S^1 stands.

The inventor says: I do not claim to have been the first to measure distances by means of a base line within the instrument, several different forms of instruments having long since been contrived for this purpose. In some of these, two telescopes are used at the ends of a fixed or invariable base. In the patented instrument of Wm. Wurde-mann, a single telescope is mounted on pivots in such manner as to take two parallel positions at the ends of such a base, and the parallax is measured by a micrometer. Another instrument consists of a single telescope and a pair of mirrors, of which one slides over a variable base, which thus furnishes a scale of distances. I do not, therefore,

claim as new the use of either a fixed or variable base line in the instrument.

But I *claim* combining the traversing or sliding telescope S^1 with the fixed one S, in such a manner as to measure distances by means of a constant angle between them and a variable base.

No. 15,509.—SMITH BEERS.—*Improvement in Odometers*.—Patented August 12, 1856.

A spiral band P is attached to the inner side of the hub Q of a wheel O. As the wheel makes one revolution, the toothed wheel R, being in gear with the spiral band P, will be turned the distance of one tooth. The flexible shaft T, consisting of the chain U and spring V, connects the toothed wheel R with the arbor C, which, by means of an arrangement of cogged wheels, moves the dials D E and L M, and thus indicates the speed of the wheel O of a vehicle.

The inventor says: I do not claim the use of a simple spiral spring for communicating motion from one shaft to another, forming an angle with it.

But I *claim* the flexible connecting shaft T, composed essentially of a chain U and spiral spring V, or their equivalents, arranged and operating substantially in the manner and for the purpose set forth.

No. 16,003.—ALBERT CARTER.—*Improvement in Odometers*.—Patented November 4, 1856.

This apparatus is attached to the axle of a common vehicle by means of the set-screws E. D is a ring closely fitted between the plates A and collar C, and to it is attached a spring-catch H. As the click-wheel G revolves over the spring-catch H, it is caused to move one notch, and is held by the click T; the motion of the wheel G is transmitted to the gearing, as represented in the engraving, whence motion is communicated to the indicator on the dial.

Claim.—The bearing-ring D, the catch-spring F, and the set-screws E, on which the case containing the movements turn by the action of the carriage-wheel, and produces the result of indicating the distance travelled, in the manner and for the purpose as set forth and described.

No. 15,140.—JOSEPH LLOYD MARTIN.—*Improvement in Odometers and Counting Machines*.—Patented June 17, 1856.

The inventor says: I do not claim to be the first inventor of an odometer or machine for measuring distances travelled or traversed by carriages or other vehicles, or steam or sailing vessels, as I am aware that several inventions for this purpose already exist. Neither do I claim to be the inventor of a "tell-tale," as applied to registering the movements of machinery; nor of the calendar clock, as usually made. But all machines of the kind, and for the purpose above named, with

which I am acquainted, differ entirely from mine; one peculiarity of which consists of communicating motion from the first motor to the registering train by means of such a connexion by means of friction, that, while it allow sexcess of motion in the parts and compensates for wear, does not allow the accuracy of indication and registering to be thereby made less exact; this form of construction also produces very accurate results where they are required, without involving the necessity of nice arrangement of other parts, and permits a ready means of application to any machine which has a reciprocating movement. Another peculiarity of my invention consists of the method of operating the train of wheel-work by means of a central axis and cam, which axis is directly connected with that of the carriage-wheel, and operates by this direct connexion, and not by means independent of it, insuring thereby sufficient power to move the registering train, and also to overcome the resistance of the frictional clutch upon the ratchet-lever. In constructing these machines, I do not confine myself to the exact forms laid down in the drawings; for it is obvious that the same results may be obtained by means analogous, though not identical, without changing the principles of application or action.

But I do *claim*, specifically, the following parts, combinations and applications:

1st. The attachment of a friction-clutch to the ratchet-lever H, operating against the bar of the connecting-rod G, for producing the requisite motion in the first wheel C, so arranged that any excess of motion in the bar will not produce excess of motion in the wheel; and I claim this, whether in combination with the ordinary train of wheel-work, with a single or double ratchet-pawl, or in combination with the arrangement of wheel-work described.

2d. Though I do not claim operating the count-wheel by a cam or eccentric F placed at its centre, when this is actuated by means independent of the axle of the carriage, and disconnected therefrom, as by the weight and clutch of Julius Thompson, patented October 31, 1854, I do claim the combination of the cam F (whose axis is attached directly to the carriage-axle P) with the connecting-rod G, and frictional-clutch upon the ratchet-lever H.

NO. 15,356.—JOHN C. BRIGGS.—*Improvement in the Mode of Regulating the Conical Pendulum of Time-Keeper*—Patented July 15, 1856.

The pendulum B, which revolves in a circle, is propelled by a power sufficient to propel it in a circle larger than the one desired. As soon as the pendulum begins to swing in a larger circle than the one required, it comes in contact with the arm A, which can turn on the centre C, and carries the arm with it; and the power necessary to carry the arm A so counteracts the propelling power of the pendulum that it soon takes a smaller circle again, and lets go the arm A.

Claim.—The application of friction to conical or rotary pendulums to keep them revolving very nearly in any desired circle.

NO. 16,148.—HENRY NEUMEYER.—*Improvement in Pentagraphs*.—Patented December 2, 1856.

When a *fac-simile* in size of any figure is to be made, the original is placed on the drawing board D², the marker S² making the copy as the pointer T² is drawn along the lines; in this case, the belt V³ is slackened by turning the winch U⁴, and the traversing rack S must be confined to the sliding-bar R², by turning set-screw R³. When a reduced or enlarged copy is to be made, the belts U¹ and V³ are set to different points of the conical rollers O and L, and the rack S is permitted to slide in the bar R²; by these arrangements the drawing board D² will be caused to move respectively in such directions during the operation of transferring the drawing that a reduced or enlarged copy will be obtained, according to the position of belts V³ on their respective pulleys.

Claim.—The upper sliding frame A A A A, in combination with the under stationary frame and casing B B B C C, and the traversing cog-racks E E and uprights F; the slotted traversing bed-plate D D g g H H, with the traversing drawing-board or tablet D², the compound cog and geared cone pulleys L L M M² O O² O⁷; the compound or double and adjustable rack devices P P P² P³ P⁴ Q Q Q, as described.

Also the grooved sliding rack bar R² R² of the traversing rack S S, with its devices S² T², when combined with their pinions and cone pulleys, and the traversing carriage A A, as described.

NO. 15,183.—CHARLES R. ILIFF.—*Improvement in Plotting-Instruments*.—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

Figure 1 represents a plan of the machine.

Figure 2 a front elevation of the trammel stand, the drawing stand being removed.

Figure 3 a vertical section of the instrument in the line x x, looking towards the face of the drawing stand.

Figure 4 a front elevation.

The inventor says: I wish it to be understood that I do not claim the trammel, or any of the separate adjustments described, in themselves separately.

But I *claim* the combination of the trammel with the drawing stand, which is provided with the angular and offset adjustments, whereby an instrument of greatly increased capabilities is produced.

NO. 15,162.—THOMAS HEDGCOCK.—*Improvement in Reflecting Quadrants*.—Patented June 17, 1856.—England, March 31, 1855.

To determine the sun's altitude by means of this instrument, the vernier A¹ is set so that its 0 coincides with 90 degrees on the arc D,

and the vernier of the index bar B^1 , at 0 of the arc $E F$; in this position, the mirror A and mirror B are at right angles to each other. Then, holding the instrument vertically, as shown in fig. 1, the back turned to the sun, when it is on the meridian, move the detector backward and forward until the image of the sun is reflected on the surface of the water at the horizon line. It remains now to measure the angle formed by the direct with the reflected rays of the sun passing through the operator's eye. For this purpose the index A is moved to bring the scale A^1 in such a position that the direct and reflected images of the sun coincide at the horizon, and the number of degrees and minutes is read on the divided circle D. The detector G and the mirror B must now be parallel; if not, one of the images would be reflected above and the other below. This parallelism is obtained by moving the scale without touching the detector.

There are other modes of using the quadrant in taking altitudes, but the method above described will be sufficient to explain its practical operation.

Claim.—The detector glass G, in combination with the index glass A and horizon glass B, for the purpose of facilitating observations, in the manner herein set forth.

No. 14,396.—R. EICKEMEYER.—*Improvement in Parallel Rulers.*—Patented March 11, 1856.

The foot-piece c fits easily and slides freely in slot a in the base-piece A. When the instrument is laid upon the paper, the pressure of the finger of the draughtsman upon lever d^1 causes the foot-piece c to take a firm hold upon the paper and become stationary, making the point f or fulcrum of the lever e stationary, and causing the said lever e to convert the lever d^1 into a link to draw along the ruler. The removal of the finger from lever d^1 , and the application of a gentle pressure to the base-piece A, cause the ruler to take a firmer hold upon the surface than the foot-piece does, and will allow the spring h to force the foot-piece in the direction in which the ruler has moved till it comes to the end of the slot a . Thus, by alternately applying the fingers to the lever d^1 and to the base-piece, the ruler will be intermittently moved along. The cam i^1 serves to graduate the distance between the lines. In moving the ruler by the intermittent depression of lever d^1 , the stop piece j^1 is every time brought into contact with finger l of arm k^1 , which stops the further movement, thus allowing only a certain limited movement of the rule, determined by the position of cam i^1 .

Claim.—Providing the ruler with a movable foot-piece c and suitable stops, to operate substantially as and for the purpose specified.

No. 16,002.—WILLIAM A. BURT.—*Instrument called an Equatorial Sextant.*—Patented November 4, 1856.

A detailed description of this invention would take up too much space to be given here. For observation, having set the latitude circle

I to a given latitude, and the declination having been set off on the declination arc by the vernier H on limb M, from its attachment to limb n , by removing the set-screw e^5 , and the time vernier v being moved to the time of observation, will give motion to the revolving sextant I J K L X, and azimuth vernier X^1 , and altitude vernier e^6 , and thus give the azimuth, altitude, and time when the celestial object is seen in the horizon.

Claim.—Combining with the common sextant equatorial and horizontal movements, substantially as set forth, for the purposes of obtaining latitude, time, azimuth, altitude, and declination, which are read from the instrument without computation.

Combining the limb E, which moves over the face of the hour circle, with the limb n by means of the slotted arc, or equivalent thereof, and movable bearing K^2 and vertical spindle S.

Also, combining the latitude circle with the limb n by means of the limb E having its centre of motion on the line $m m$, the arc F, and bearing K^2 , and vertical spindle S, as set forth.

No. 14,664.—CHARLES KIRCHHOFF.—*Improvement in Electric Telegraph.*—Patented April 15, 1856.

By the movement of the hand W the stud o^2 is caused to slide the frame Y far enough to insert the arm d of the lever $d d^1$ in the notch in the catch c^1 , whereby the arm d is caused to partake partially of the movement of the armature K K^1 , and to be withdrawn from contact with the ivory piece $w w^1$, and to carry the knee-lever past the line of culmination of the axle d^2 and the point u^1 , so that the power of the spring u may throw it against the block w or w^1 , and reverse the position of the shuttle and hold it fast.

The index is stopped by means of a watcher h and waker l . The waker rotates with the spindle T and index; and, if the hook l^1 meets with any obstruction, it is swung sideways, and the semi-circular part l^2 is thrown upwards, and the collar m is thereby raised and caused to raise the fork i of the watcher-key h , and thus to break the circuit which passes through the watcher, the pin h^2 , and the plate g .

The hook l^1 is obstructed by means of the elbow-levers V V, which are connected with the knobs X X.

The inventor says: I do not claim any part or arrangement with the use and result thereof, as far as already well known and clearly specified.

But I claim, 1st, the prevention of the too early intermission or restoration of the circuit in the use of self-intermission, through the method by which a key-shuttle q , or its equivalent, is not only stationary during the whole travel of the armature K K^1 , but also for a certain time afterwards, so that the circuit, during that time, remains either permanently broken or closed; but afterwards this shuttle is started and shoved by the indirect influence of the motion of the armature through some devices, till to the moment of breaking or restoring the circuit

and here stopped and the armature, and by that all oscillating mechanical parts are obliged to reverse immediately.

2d. The manner of stopping the index of all instruments of a circuit right opposite the desired letter, without disturbing or preventing the index, armature, or shuttle of any instrument to complete their adopted motion, by means of a "watcher" *h* and "waker" *l*, operated by the revolving hook *l* and key-lever *V*, or its equivalent, in the manner specified, so that the watcher will keep open; meanwhile the shuttle makes contact, whereby the indices stop until the key is relieved and the watcher closes again.

3d. The method to keep all instruments of a circuit in unison working, and without any mechanical means, through employment of "the induction current," by retarding the influence of the electro-magnetic power at a certain degree upon that instrument which intermits the circuit, and whereby the other instruments of the circuit, not having their intermitters in activity, are governed by it, and insured to complete their motion before the circuit of the prime current is intermitted or restored again.

The said induction current in each instrument being used in connexion with some suitable means for connecting and disconnecting the self-intermitter with the armature lever, and also with a means for closing and opening the induction circuit, and for the opening and closing of the accommodation course of the prime current, which act together at once, answering simultaneously their different purposes.

No. 14,157.—MOSES G. FARMER.—*Improvement in Telegraphic Registers*.—Patented January 29, 1856.

The engraving shows the connexion of the main circuits. *A* represents the screw-cup which receives one main wire; the course of the current is through the main circuit magnet *m*¹ to the anvil *a*, spring *s*, and by wire *w* to the screw-cup *G*, which is the connexion with the ground. The cup *B* receives the other main wire, and its course is through the magnet *m* to the anvil *a*¹, spring *s*¹, by *w*¹, to the ground *G*. The main circuit *B* will be opened by the movement of the armature lever of the local magnet *L*¹; if *L*¹ is charged, its armatures will lift the spring *s*¹ from the anvil *a*¹, and thus break the circuit *B* at that point. Similarly the circuit *A* can be broken at *a* by the motions of the armature lever of the local magnet *L*.

The inventor says: I am aware that a telegraphic register, operating upon the same general principle as mine, has been invented at an earlier date by Elisha Wilson, of New Haven, Connecticut. In his machine, however, the local circuits are both closed, while in mine the local circuits are similarly both open when the main circuits are both closed. The same work which in Wilson's machine is done by the closing of the local circuit, is done in mine by the opening of the local circuit, and *vice versa*. The general plan, therefore, in which my machine agrees with Wilson's I do not claim; neither do I claim simply

substituting the breaking of the circuit for the closing to do the same work.

But what I do *claim* is, that modified combination of parts by which, in the self-acting telegraphic repeater, as described, the breaking instead of the closing of the local circuit is made to close the main circuit, and by which, throughout, the breaking of the local circuit is made a substitute for the closing.

No. 14,917.—DAVID E. HUGHES.—*Improvement in Telegraphs*.—Patented May 20, 1856.

The nature of this invention will be understood from the claims and the engravings.

The inventor says: I do not claim any feature of any existing printing or marking telegraph as any part of my invention, nor do I desire to interfere in the least with any heretofore invented.

But I *claim*, 1st, the holding in place of the attractive power of electro or natural magnetism as applied to the telegraphic purposes, whether the same be applied in the manner herein described, or in any similar manner producing like results.

2d. Particularly I claim combining with the permanent magnet *B* an adjustable spring almost sufficient to sever it from its contact with the soft iron of the electro-magnet *A*, and a lever *D*, or its equivalent, which, after the permanent magnet has been separated from the iron by the action of a current, shall bring it back again into renewed contact by the action of the power which has been called into action by the retreat of the magnet.

3d. I claim the employment of two cog-wheels or circuit-breakers *R S* at each station, so arranged that one shall be in connexion with the electro-magnet at the same station, and the other in connexion with the transmitting cylinder at that station, the whole being arranged so that the connexion alternates at each station for every letter between the electro-magnet and the transmitting cylinder at that station, in such manner that the through connexion is always simultaneously through the transmitting cylinder of one station and the electro-magnet of the other station, whereby the machine at each station can at the same time be transmitting a message and receiving a message; it being understood, however, that I do not claim, in general, the use of a single wire for the simultaneous transmission of different messages by means of rapid changes of connexion, which is not new, but only the peculiar manner as above claimed, in which I have applied it in connexion with my machine.

4th. So arranging a bolt *L* and operating the same by a cam, or its equivalent, that it shall act upon a wheel attached to the shaft of the type-wheel *J*, so as to preclude the intelligence from one station being communicated to any other station or stations on the circuit from which it is desired to withhold the communication.

5th. I claim the employment of a vibrating spring *O*, properly weighted at its extremity, if necessary, and so arranged by a series of mechanism as to govern and regulate the movement of the type-wheel

J. This I claim also as a governor in other machinery, without limiting its use to its connexion with electro-magnetism.

6th. I claim printing by electro-magnetism, by a continuously moving type-wheel, printing while in motion.

7. I claim the arrangement of a cylinder S, with pins spirally arranged thereon, to operate by contact with metallic points to close and break the circuit, when this is combined, for the purposes herein set forth, with the systems of keys W W W W, &c. and catches, so arranged that any desired point may be thrown into a position where it will be retained until it is struck by its corresponding pin.

No. 15,373.—MOSES G. FARMER.—*Improvement in Self-Acting Electric Telegraphs*.—Patented July 12, 1856

When neither station is transmitting, the switch S w of each instrument is turned into the position represented in dotted lines in fig. 1. The current then passes from the screw-cup A, through the magnet M, by the wires c and z, to the switch S w and bar I, thence by the bar L, key B r, anvil h, and wire k, to the screw-cup H; the current not passing through the circuit-wheel is not broken, and the magnet remains permanently charged. When the operator at one end desires to transmit, he moves his switch S w into the position drawn in full in fig. 1, by which the current is thrown through the circuit-wheel of his machine; whereby the circuit is made and broken, and the armatures of both magnets are set in operation, and the circuit-springs, letter-wheels, and printing-wheels of both instruments revolve together. The operator at the transmitting station then sends his message through the keys A B C etc., the current passing through the transmitting instrument as follows: from the screw-cup A, by M c B D d, segments i or i, wires F or G, to the bar L, and by the key B r and wire k to the screw-cup H. Through the receiving instrument it passes from the screw-cup A by the magnet M, thence by the wires c and z to the switch S w and bar I, and by the wire n to the bar L, back to the screw-cup H, as before.

The inventor says: I do not claim arresting the motion of the type-wheel by a positive stop upon the key which interrupts the motion of the wheel whenever a key is depressed and at a moment when the circuit is broken, as in the telegraph of Siemens and Halskes.

But I claim the method described of arresting the motion of the type-wheel by means of the alternately open and closed keys, in combination with the circuit-wheel, constructed and operating in the manner substantially as set forth.

2d. I claim the combination of a straight key-board with a circuit-wheel, when the two are connected together by means of the wires F and G, whereby the place of making and breaking the circuit may be transferred to the immediate vicinity of the key-board, for the purpose set forth.

3d. The method described of putting the two machines in correspondence with each other, the current being turned out of the operating

magnet M of the receiving machine by means of the regulating key R g, the arm b¹, insulated spring c², and their connexions, operating in the manner substantially as set forth.

No. 14,731.—ALBERT J. PARTRIDGE.—*Improvement in Electro-Magnetic Printing Telegraphs*.—Patented April 22, 1856.

The branching of the circuit takes place between the pillar P and the pin p¹. To the pillar P is pivoted a metal arm S, which has a T-shaped extremity, which is capable, by a slight vibrating movement, of entering a slit in either of two small brass blocks s¹ s², which are secured to a slab L of ivory. To the block s¹ is connected a wire t¹, which leads along one side of the slab L and down through a hole i¹ in the base A and then to a pin u¹, and from thence up through a hole w¹ to the helix of the magnet J J. To the block s² is connected a wire t² which passes through a hole v² in the base and then across to a pin x² and from thence up through a hole w², to connect with the helix of the magnet K K.

While the revolution of the type-wheel E¹ continues, there is no perceptible movement of the loose piece x of the clutch along the shaft, and the spring x² holding the said piece x closely engaged with the piece x¹ causes the circuit-changer s to remain in contact with the block s¹; but when the type-wheel shaft is suddenly arrested by the depression of a key-bar lever, the loose part x by the inertia of the fly-wheel x³ moves far enough along the shaft to move the circuit-changer into the slit in the block s²; thus, without breaking the circuit, the circuit is transferred from the magnet J J to the magnet K K, and the printing and feeding movement of the paper effected. But this change of circuit is only momentary; for as soon as the momentum of the fly-wheel x³ is spent, the spring x² forces back the part x, and returns the circuit-changer to the block s¹.

The operator, by depressing the knob of either of the key-levers q q, throws up the inner end of that lever (as shown in fig. 3) to such a position that the revolution of the circuit-breaker G will bring the projection e in contact with it, and thus cause the circuit-breaker to be arrested. The arrest of the circuit-breaker of the sending instrument stops the operation of the whole of that instrument, and also prevents the action of the escapement of the receiving instrument, and consequently stops that instrument also, and thus causes the change of circuit to take place in the manner before described through the momentum of the wheel x³ acting on the clutch.

Claim.—The mode of operating the circuit-changer S to change the circuit by means of the clutch x x, and fly-wheel x³ attached to the loose part thereof.

No. 14,759.—HENRY N. BAKER.—*Improvement in Electro-Magnetic Printing Telegraphs*.—Patented April 29, 1856.

The wire 13 connects with the metal plate 14, which is provided with two spring keys 16 and 17. The wire 12 passes from 15 to 19,

to which and to the screw 20 the helix of the magnet E is connected, and from 20 a wire 21 goes to the key 16. The ends of the helix of the magnet H connect with 15, 22, and 17. By depressing the key 16 the circuit is caused to pass through the helix of magnet E, and the type-wheel C may be brought to such a position as to present any desired letter opposite the roller F. Then by allowing the finger-key 16 to rise, and depressing the key 17, the circuit passes from 17 to 15 and the printing magnet H, causing the paper to move along and the type opposite the roller F to be lifted by the curved tongue *p*, and pressed against the paper under the said roller to produce the impression. To repeat two letters in the same word, the key 17 must be depressed twice without closing the key 16. To make the spaces between the words, the key 16 is first depressed, and before the finger is taken off to allow the circuit to break, the key 17 is depressed to close the circuit through the printing magnet H. The circuit through the type-wheel magnet not having been opened when the movement of the lever G takes place, and the type-wheel consequently only having moved half the distance necessary to bring a new type between the tongue *p* of the lever and the roller F, causes the tongue to fall into a space between two types and thus renders it inoperative, but yet allows the movement of the roller F to take place to feed the paper. By keeping the key 16 closed, and closing and opening the key, a space of any desired length may be produced; but for the spaces to separate the words, the key 16 needs only to be kept closed during one closing and opening movement of the key 17, after which it may be played as before to move the type-wheel.

Claim.—The arrangement of the type-wheel C, the escapement wheel *i* attached thereto, the arrangement of the crutch or detent *j*, acting upon the said escapement wheel relatively to the armature of the type-wheel magnet E, and the arrangement of the whole relatively to the tongue *p*, by which the types are lifted up into contact with the paper—all in such a manner that when the circuit is closed through the type-wheel magnet the tongue *p* will be opposite a space between two letters, and when, during the closing of said circuit, the circuit by which the said tongue and the feed-rollers are acted upon is closed, the tongue will be inoperative, and the feed-rollers allowed to act without any impression being given, thereby producing a space between the printed letters or words, substantially as herein set forth.

No. 14,711.—ANDREW COLEMAN.—*Improvement in Receiving Magnets for Telegraphs.*—Patented April 22, 1856.

The curved form of the faces *a a* of the poles of the magnet A and of the armature B allows the armature to rock or roll, and hence to be converted into a lever with a changeable fulcrum. The finger *g*, which, playing between *h* and *h*¹, opens and closes the circuit, is pivoted to a small stand *k* secured to the top of the armature, and sufficient friction is produced between the stand and the finger by means of a screw and nut on the pivot, and a small spring *l*, to overcome the inertia of

the finger, and cause it to move with the armature until it is arrested by either of the screws *h h*¹, after which it allows the armature to move independently of it.

Claim.—So constructing or arranging the armature B and applying the spring *e*, or its equivalent, that the armature constitutes the whole or part of a variable lever which causes the effective force of the spring, or its equivalent, to increase or diminish as the magnetic force becomes greater or less; when this is combined with the so applying the finger *g*, by which the local circuit is opened and closed, that the said finger is caused to move with the armature by friction only, or its equivalent, and, after having moved the slight distance necessary to open or close the circuit, leaves the armature free to move as far as necessary independently of it, thereby obviating the necessity of manual adjustment of the armature to compensate for variations of magnetic force.

No. 15,251.—GEORGE P. REED.—*Improvement in Independent Seconds Movement for Watches.*—Patented July 1, 1856.

When the wheel B is put in motion, a regular intermittent vibratory motion will be imparted to the lever-pawl, in consequence of its being caused to slide from one tooth to the other of the wheel B; and every time it is so moved by a tooth the catch *b* will be moved forward over a tooth of the ratchet wheel, and will also be drawn back by the action of the spring I, so as to turn said ratchet and its second hand a sector corresponding with $\frac{1}{60}$ part of a circle. Thus an intermittent rotary motion will be imparted to the arbor of the second hand, and so as to indicate seconds on its dial, provided such dial be suitably divided and marked.

The inventor says: I do not claim applying to a watch or time-piece an independent second mechanism operated or driven by a motor, or main-spring and train of gears, separate from the main-spring and train of gears, for imparting motion to the hour and minute hands of such watch or time-piece; but I *claim* the combination of the gear-wheel B, the ratchet C, curved lever draw-pawl G, the spring I, and the detacher L, the whole constituting a mechanism applicable to the arbor of the index hand of a dial, and for imparting to the same an intermittent rotary movement, in the manner and for the purpose as specified.

IX.—CIVIL ENGINEERING.

No. 15,257.—WILLIAM SILVER, jr.—*Improvement in Blasting-Powder.*—Patented July 1, 1856.

The object of this invention is to produce a compound that is cheaper than common blasting powder, and possesses greater explosive force. This compound is composed of—

10 parts of gunpowder.

5½ parts of chlorate of potassa.

2 parts of calcined or burnt cork.

Claim.—The explosive compound herein described, consisting of rags or paper saturated and coated with a mixture of gunpowder, chlorate of potassa, and powdered calcined cork, in about the proportions set forth.

No. 16,053.—WILLIAM L. GALLAUDET.—*Improved Spring Holder for Slat Blinds.*—Patented November 11, 1856.

When the slats are wide open, as in fig. 2, the rod will be held by the simple frictional pressure of the spring against hook *b* from dropping down; and when the slats are closed, the spring *a* will also retain them in position.

Claim.—The combination of the peculiarly shaped spring described, with the rod and with the lower rail, substantially in the manner set forth.

No. 15,587.—CLARENDON WILLIAMS.—*Improved Apparatus for Boring Artesian Wells.*—Patented August 19, 1856.

Motion being imparted to the shaft *F* and auger-shaft *N*, the auger *O* is revolved and works the rock by means of its spiral flange. The steel plate *S*, which is provided with cutters at its periphery, is attached in such a manner above the cone, as to work in a slot instead of working in a central hole; it can thus assume an eccentric motion and cut a hole into the rock of a larger diameter than its own, to allow the introduction of the tube *R*. The nut *G*, working on screw-shaft *F*, is placed between two plates *i*, and may be secured to the shaft by means of a set-screw, and will then turn with the shaft, thus preventing the further descent of the auger and shaft until the rock is reduced. If the nut is released and fastened between the plates *i i*, the screw will feed the auger to the rock.

Claim.—The boring of earth and stone and sinking of tubing at one operation, forming artesian wells, by the mechanism employed, consisting of screw *F* and nut *G*, arranged and operating in the manner described, with the auger, constructed substantially and operating in the manner set forth.

No. 14,314.—HORACE L. HERVEY.—*Improvement in the Arched Trussed Bridge.*—Patented February 26, 1856.

The clamp in fig. 2 for fastening the arch to the truss may have in it a friction roller, as shown in fig. 3, running upon the arch and wedge-shaped block, (fig. 4,) attached to the arch for the purpose of preventing friction when the camber of the arch changes; and as the arch changes its camber it will not affect the truss in a horizontal direction, but at the same time will cause the truss to rise and fall in proportion to the change in the camber of the arch.

Claim.—1st. The use of compression braces *M*, in combination with the tension braces *A*, to support alternate bearing points.

2d. The clamps, with or without slots in them, or slots in the arch with or without friction-rollers traversing the wedge blocks, or the equivalents of them, in combination with the truss, for the purpose of allowing the truss to rise and fall in proportion to the change in the camber of the arch, as herein set forth.

No. 15,873.—BALAAM G. ANDERSON.—*Improved Canal Bridge.*—Patented October 14, 1856.

When the parts *C C* of the bridge are turned round to the position represented in fig. 3, sufficient space is left for the free passage of canal boats, as will be understood by reference to the claim and engravings.

Claim.—Constructing the bridge of three parts *B C C*, the parts *C C* being connected by joints *F* to the part *B*, and having their supports *D* provided with rollers *a*, which work on curved ways *E* at the bottom of the canal, substantially as described for the purpose set forth.

No. 14,928.—NAPOLEON B. PROCTOR.—*Improved Floating Draw-Bridge.*—Patented May 20, 1856.

By working the capstan *n* the boat is moved forward to form a connected line or back into the slip, leaving the draw open. That part of the platform *h h* which rests on the boat can be raised by means of lever *o*, so that the timbers attached to the deck of the boat may pass under the platform as the boat is moved into the slip. The platform *p p* can be raised and lowered, and rests on the boat when the connexion is formed; the connexion remains, therefore, unbroken as both platforms rise and sink with the boat.

Claim.—The construction of a floating draw-bridge, by erecting a wharf or dock, on each side of or partly or wholly within rivers or other waters over or across which such bridge may be required, with a slip in one of said docks or wharves of a suitable size for the reception of a boat of proper dimensions, viz: nearly as wide as the slip and about twice the length of the open space between the docks or wharves, (through which open space vessels may pass and repass,) which boat, by steam or other power, can be readily worked forward from the slip

to the opposite dock or wharf, and thus form a connexion therewith and back again into the slip, leaving the space or channel open for the passage and repassage of vessels

No. 14,584.—GEORGE W. O. HUYGENS, assignor to Himself, CHARLES BENDER, and D. F. TIEDEMANN.—*Improvement in Bridges*.—Patented April 1, 1856.

The invention is based on the principle of compensating the result of the elastic actions in the materials, by compensating the result of compression in the material by its own action, using for that purpose the compensated effect of compression only, which compression is originated from the pressure caused by the loads on the floor of the bridge.

The diagram illustrates the compensation of the elastic action. A and b represent the arches; the dotted lines represent the curves which said arches would assume under the influence of a load W, when not compensated. The proportion between the lines $a a^1$ and $a^2 a^3$, illustrates the measure of compensation.

Claim.—The combination of and between those mechanical agencies and technical parts which constitute the herein described mode to prevent vibration in a bridge by using the compensated effect of compression only as carried out and brought in application in the herein described compensating bridge.

2d. The combination of and between the mode in which the arches are arranged and cross each other, and the mode in which they are connected with the floor, and finally, the mode in which they receive their leverage, as herein described; the mechanical effect of which said combination is, to originate the tendencies in the upper and lower arches to curve apart or asunder.

3d. The combination of and between the mode in which the arches cross each other, and the mode in which they are connected with the floor, and the mode, finally, in which they are constructed in regard to amount of material, as herein described; the mechanical effect of which said combination is, to originate the equal intensity of the said tendencies.

4th. The employment in bridge construction of the herein described arches, arranged and connected as described, as a practical substitute for upper cords, and generally for all such parts in bridges which serve to uphold the floor.

5th. The special mode in which the herein described arches are connected with the floor.

No. 15,823.—ISAIAH ROGERS.—*Improvement in Bridges*.—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—1st. The formation, substantially as described, of an arch

whose voussoirs consist of one or more ranges of tubes in vertical planes, held in position by the described radial plates, with confining flanges; the tubes of each component arc being gradually displayed and enlarged from the crown of the arch each way, the enlargement in one direction and the contraction in the other direction being such as to preserve a circular section throughout, or gradually ovaling from the haunches by a vertical enlargement towards the ends, and a corresponding contraction toward the centre of the arch, according to circumstances.

2d. In combination therewith, the described mode of staying and bracing together the several ranges of such tubular voussoirs.

No. 14,313.—PETER C. GUIOU.—*Improvement in Girders for Bridges*.—Patented February 26, 1856.

The lower part of the arch A, consisting of the angle irons $c c$, is capable of resisting great tensional strain; and the upper part, consisting of the skewbacks $d d$ and the timbers $e e$, fitted tightly between them, is capable of resisting great compressive force.

The inventor says: I am aware that a trussed girder of the bow-string kind has been made by combining the angular iron with wood, the wood being placed on the sides of the iron; and therefore I do not claim the use of iron and wood only, as above described. Neither do I claim the application of wood on the sides of the iron arch; but I do claim the application of segmental timbers $e e$ on the top of the iron arch. What I claim is the peculiar combination of parts constituting the arch A, to wit: the two angle irons $c c$, the spurs or double skewbacks $d d$, and the timbers e , all applied and united substantially as herein set forth.

No. 15,048.—LUCIUS E. TRUESDELL.—*Improvement in Lattice Bridges*.—Patented June 3, 1856.

The inventor says: The braces C and D serve to distribute the weight communicated to any part of the bridge over the whole, and thus relieve those parts immediately in the plane of pressure from undue strain.

Claim.—The braces C D, in combination with the rafters A, when arranged in the manner substantially as and for the purposes described.

No. 14,208.—HARRIET V. TERRY, administratrix of the estate of WILLIAM D. TERRY, deceased.—*Improved Mode of Constructing Cast-Iron Buildings*.—Patented February 5, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the boxes and ties when used separately, as this has been done before; but what is claimed herein

is, the forming of cast-iron hollow walls for buildings, by means of the combined use of the boxes A, plates C, and tie-pieces D, provided with rebates *c* and tongues *d*, for firmly uniting them together, substantially in the manner described and represented.

No. 15,002.—THOMAS ESTLACK.—*Improved Device and Walls of Buildings for Preventing Drainage to Goods by Water in case of Fires.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I disclaim all discharge chutes where a continuous and connected surface is employed, such as is shown in the arrangements for relieving from surface-water the decks of vessels and flat roofs of houses.

But I *claim* the combination of the receiver C in the masonry of the wall with the chute D extending over and into the receiver, secured to the floor, to be relieved and altogether detached from the aforesaid receiver.

No. 14,301.—WILLIAM BELL.—*Improved Machine for Depositing Coal in Cellars.*—Patented February 26, 1856.

The tube B is attached to a hole in the bottom of the cart, and can be opened or shut by means of a slide D. Before this slide is opened, the tube is inserted into the coal-scuttle in a side walk. The slide can then be opened to allow the coals to pass through the scuttle without dropping upon the side-walk.

Claim.—The bed-plate conductor B and slide D, with the tube attachments, in connexion with a hole in the cart or other vehicle, as set forth.

No. 14,323.—A. R. MOEN.—*Improved Mode of Constructing Walls and Floors of Cellars.*—Patented February 26, 1856.

The stones or bricks are coated on one side with asphaltum while perfectly dry. Thus prepared, they are laid into a wall with hydraulic cement, with the asphaltum sides out. The wall then receives on its outside a coat of melted asphaltum, so as to fill all the interstices.

Claim.—The mode herein described of forming walls and floors by combining into one mass the cement and asphaltum, by means of the stone or other suitable material, as herein specified, by which the asphaltum is caused perfectly to adhere to the bricks or stone of the wall, and admits the hydraulic cement also to adhere to the same stone or brick, as above described.

No. 14,273.—WILLIAM D. BARTLETT.—*Improved Construction of Cisterns.*—Patented February 19, 1856.

The cistern is made in the earth with an opening or openings to admit the water of the particular stratum in which it is located, with the hole in the earth through which it was put in filled above it, so that the water in the several strata above the apertures in the cistern will flow on, or have an opportunity to flow on, in the same strata that it did before the cistern was put in, so that the cistern will be filled with the water of the stratum in which it is placed, and the water of that stratum only.

Claim.—A cistern constructed substantially as described, or in any equivalent manner, for the purposes set forth.

No. 14,902.—EDWARD BOOKHOUT and CHARLES H. HEWLETT.—*Improvement in Water-Closets.*—Patented May 20, 1856.

The foot and waste K has an arm G projecting from each side; said arms rest in recesses formed in the shoe L L, and are held in place by means of binders O O, which enable the bowl D and waste to oscillate backward and forward.

The bowl being drawn out from the case A for use, the arms G G and faucet-plug F¹ make part of a revolution, the faucet F opens, the water enters by pipe R, and passes into a hole in the end of the arm, (on which the plug F¹ is fastened,) and out of the top side of said arm through pipe H into the bowl, when it is caused by the fan to wash the bowl.

The bowl, &c., is supported by the chain E. When the bowl is shoved back, the clean water is cut off by the faucet F, the excrement in the bowl is thrown against the pan *m*, which causes it to open. The water, &c., passes out the opening at the bottom of waste K, opens the lower pan M, and enters the soil pipe.

The inventors say: We do not claim as our invention a movable bowl, for a movable bowl is used in what is termed the "swing urinal;" neither do we claim the pan, for the pan has long been in use in what is known as the "pan closet," (the bowl is stationary); the pan also is old device.

But we *claim*, 1st, a bowl having the forward and backward motions by means of the said bowl and waste working on a shaft or arms, or their equivalent.

2d. The use of the pan in combination with a movable bowl.

No. 16,133.—J. CLAUDE WHITE and ROBERT HAY.—*Improved Apparatus for Hoisting Coal.*—Patented November 25, 1856.

The apparatus being in the position shown in fig. 1, the vibrating platform E, with its truck D and its contents, is tilted, and the coal is allowed to escape through a door at the end into the chute M, and thence into the bucket K. The latter is now hoisted by turning the

barrel H until it reaches the position shown in fig. 2, at which point the inclined planes *i* have so acted on the spring-catches *h* as to withdraw them from contact with the door *b*, and the material passes down the chute L into the receptacle desired.

Claim.—The bucket K, with its inclined base, its doors *b* and *d*, and spring latches *h* and *h*¹, in combination with the chute L and inclined planes *i* *i*¹, the whole being arranged substantially in the manner set forth and for the purpose specified.

No. 14,107.—F. H. MOORE.—*Improvement in Safety Coal-Hole Covers.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The combination of the grating E and rods *g* with the cover D, operating in the manner substantially as herein set forth.

No. 14,359.—GEORGE C. JENKS.—*Improved Guard for Coal-Holes.*—Patented March 4, 1856.

Fig. 1 represents a side view, fig. 2 a front elevation, and fig. 3 a side elevation of the apparatus. The nature of the improvement will be understood from the claim and engravings.

The inventor says: I am aware that the cover of a coal vault opening has had a solid ring-guard and standard so made and applied together and to it as not only to be capable of being raised out of the coal vault with the cover, during the act of elevating the latter, but of being set up above and around the hole or opening so as to serve as a guard to prevent a person from accidentally slipping or falling into the same; I therefore disclaim such, but rest my *claim* on my improvement, viz: a coal vault mouth-guard, made expansive, and provided with means whereby it shall or may be expanded while being elevated to a horizontal position above the opening of the vault, the said guard by such means being caused, when it is raised into a horizontal position, to extend beyond the sides of the opening, so as to lessen the danger of accident to pedestrians, as specified.

No. 15,300.—EPHRAIM MORRIS.—*Improved Apparatus for Raising and Dumping Coal.*—Patented July 8, 1856.

Fig. 1 represents the general arrangement of the apparatus. F represents the frame of an inclined railway, on which the car I supporting a bucket H runs down by its own weight, and when arrived at the lower end, the bucket H is lowered to receive the charge from the boat G. The loaded car is then drawn up and eventually discharged.

When the car is drawn up along the inclined railway, the traveller 10 runs over the rope *g*, said rope resting on the pulley *p* between the

chains 8 8, until the knot 11 comes in contact with the traveller 10, and holds the same stationary, while the farther motion of the car causes said chain to rotate the drum *p* and pulley *o*, (fig. 3,) winding the chain *n*, raising the bails *m m*, and dumping the contents of the bucket. The rope *e* is then to be lowered on, running around the pulleys *b* and *c*, which are connected by gear-wheels *d* to prevent the rope from slipping, and the pawl *i* and ratchet-wheel *h* prevent the bucket H from descending. When the car arrives at the lower end, the pawl *i* strikes against the projection 2, sets the ratchet-wheel *h* free, and the bucket descends to receive its charge.

Claim.—I *claim* the pulleys *b* and *c*, geared together so as to prevent the rope slipping, when combined with the ratchet-wheel *h*, pawl *i*, and stop 2, or its equivalent; whereby the bucket is sustained in its elevated position while being drawn along in either direction, and can only be lowered when the pawl *i* is disengaged from the ratchet-wheel *h*.

I also claim the bails *m m*, fitted with hooks to take the loops *l* on the bucket H, when the same is elevated, and dump the contents thereof by drawing up said bails.

I also claim the adjustable rope *q*, with its knot or projection 11, for taking the traveller 10, and through the chains 8 8 and *n*, and pulleys or drums O and P, drawing up the bails *m m* by the motion of the car, and dumping the contents from the bucket H.

No. 15,434.—JAMES MYERS, jr.—*Improvement in Coal-Scuttles.*—Patented July 29, 1856.

This invention consists in constructing the scuttle A with a cast-iron dish-shaped bottom B, having a supporting side flange *c* to which the sheet-iron body of the scuttle is attached, for the purpose of preventing the oxydizing of the bottom of the scuttle by the water which most coal contains, and the consequent wearing out of the same.

Claim.—Constructing the scuttle, as shown and described, with a cast-iron chambered or dish-shaped bottom B, having a supporting flange C in conjunction with and attached to the sheet or wrought iron sides or body A of the scuttle, as and for the purpose set forth.

No. 15,317.—WALDO P. CRAIG, assignor to Himself and WILLIAM R. RIGHTER.—*Improved Mode of Constructing Dams.*—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claim and illustrations. The piles, as described in the claim, are used in the construction of dams to prevent leakage, and consequently breaches in them.

Claim.—The construction and application, substantially as herein described, of the follower piles *b c*, each pile being formed from a plank having tapering sides and parallel edges, with a slanting termination at the thin end, running to one end and chamfered on each side of the slant, and with the described batten, or its equivalent, pointed from both edges

and chamfered from its outer side, one edge of the batten projecting beyond the longer edge of the pile, so as to form a rebate, fitting and overlapping the edge of the preceding pile *a*, for the purpose explained.

No. 14,117.—THOS. J. STRATTON.—*Improvement in Ditching Machines*.—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the excavating-wheel, as such has been used before for like purposes.

But I claim the secondary frame *D*, movable about the main axle *a* and constituting the support of the excavating-wheel *W* and of the earth-conveyors *P*, for adjusting the wheel to the required depth of excavation, and causing the conveyors to conform to each new position of the wheel, substantially as specified.

No. 14,047.—CHARLES E. BROWN.—*Improved Mode of Hanging Double Doors*.—Patented January 8, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

Claim.—Connecting the double doors *B B* by an endless chain *D*, passing around pulleys *C* or the shafts or axes *b* of the doors, or by gearing arranged in any proper way, so that as one door is opened or closed, the other will be moved simultaneously in a similar or opposite direction, as described.

No. 15,465.—JAMES H. BANTA.—*Improved Weather-Strip for Doors*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not claim a weather-strip applied on the bottom edge of a door or window, and kept to the sill by springs, as this has before been done; neither do I claim a double inclined latch; but I claim the bar *c* constructed with a T-head *f*, and fitted into the slot in the plate *e*, substantially as specified.

Also, in combination with said bar *c*, the double inclined latch *h*, for the purposes and substantially as specified.

No. 16,077.—REUBEN WIGHT.—*Improved Weather-Strips for Doors*.—Patented November 11, 1856.

The weather-strip *A* can be raised or lowered by means of the toothed sector *E* operating rack *D*. By unscrewing the knob *G*, the sector *E* can be turned on fulcrum *F* over cam *J*; and when arrived to the dotted

position *K*, the weather-strip can be secured in an elevated position represented in the engraving.

Claim.—The adjustable weather-strip *A* operated by the segment lever *E*, in connexion with the movable button *G* and the cams *J J*, the whole constructed and arranged in the manner and for the purpose fully set forth.

No. 16,046.—JOHN COLE and A. LITTLE O. WALL.—*Improvement in Draining Machines*.—Patented November 11, 1856.

As this machine is drawn along, the rotating coulter *F* cuts a furrow in the ground, and is followed by the stationary coulters *D* and *E*, to which the front mole *M* is attached, digging the drain, which is followed by a larger mole *N* attached to mole *M*, and provided with a fin *n* at its sole; the drain cut in the ground by this apparatus is represented in a section in fig. 2.

Claim.—1st. The combination of the brace coulter *E* and rotating coulter *F* with the mole, substantially as set forth.

2d. Constructing the mole in sections flexibly connected together.

3d. Constructing the mole with a fin or knife on its sole, to make a deep furrow in the bottom of the drain to facilitate the entrance of the water from the adjacent soil.

No. 14,025.—ORSON E. MALLORY.—*Improved Machine for Making Eave-Troughs*.—Patented January 1, 1856.

The sheet metal is inserted between the movable clasp *k* and the half-round shaft *b*; the clasp *k* is then pressed down upon the tin and the sliding bar *d*, which can be raised and kept stationary by lengthening the rods *f*, and is then pressed down by first shortening the rods *f* and then turning the shaft *h* by means of its crank. The shaft *b* is then turned by means of its crank *m*, and the sliding bar *d* presses the metal against the shaft *b*, thus forming the eave-trough corresponding with the shape of shaft *b*.

Claim.—The use of the semi-cylindrical shaft *b*, metallic sliding bar *d*, and the end rollers *e*, constructed, arranged, and operating substantially as set forth.

No. 14,762.—ASA W. CADY.—*Improved Machine for Excavating and Moving Earth*.—Patented April 29, 1856.

The machine being over the place for excavation, the detent *D* is raised till the scraper *S* descends and rests on the ground. When the load is taken up, the spur-wheel *a* is brought in to gear with the pinion-wheel *v* by means of lever *y*, whereby the scraper is raised while the team is in motion. In order to unload, the hook *p* is detached by means of lever *u*, the bridge raised by hand until loop *r* is caught by the hook *q*, and the team started till the load is deposited. The hook

q is then detached from the loop *r*, and the bridge descends to receive another load.

Claim.—The plan embodied in the structure of the bridge *G* and scraper *S*, contained in their form and method of use in the machine; and in the arrangements made for operating and controlling these, with the gearing and fixtures, as actuated by hand or horse power; and in adapting them to and combining them with a wheeled vehicle or wagon, so that the operation of excavating earth may be performed.

No. 14,068.—J. J. SAVAGE.—*Improvement in Excavating Machines.*—Patented January 8, 1856.

The nature and object of this improvement will be understood from the claims and engravings.

Claim.—1st. The connecting of the scoop and staff of excavating machines to the swinging post by vibratory or oscillating arms or links *H H*, or their mechanical equivalents, in the manner and for the purposes substantially as herein described and shown.

2d. I claim the adjustable broom *G*, in combination with the excavating scoop and staff, combined in the manner and for the purposes of an excavating machine, substantially as herein set forth and shown.

I also claim the combination of the vibratory or oscillating connecting arms or bars *H H* of the scoop-staff, with the feed-chain *m*, windlass *O*, gearing *q* and *r*, and sheave-pulley *K*, for the purpose of automatically feeding the scoop downwards, simultaneously with its forward motion, as herein described.

No. 14,933.—JOHN TAGGART.—*Improvement in Excavating Scoops.*—Patented May 20, 1856.

When both of the scoops *B B* are closed, the two dischargers *P P* lie close against the bottoms of the scoops, while the act of opening the same causes the dischargers to be raised in such a manner as to force out the contents of the scoops.

Claim.—Applying one or two dischargers within a pair of scoops, so as to operate therewith, or be operated thereby, in the manner and for the purpose essentially as described.

No. 15,102.—DANIEL JUDD.—*Improved Rotary Excavator.*—Patented June 10, 1856.

While the excavator *A* is being filled, the chains *G* are rendered to their full extent, and confine the excavator at the proper position for entering the earth, the wheels being raised from the ground, which, with the frame, rests as a weight upon the excavator. When the excavator is filled, the load is made to rest entirely upon the wheels by means of the crank *E* and ratchet wheel *F*, when the excavator is conveyed to its destination and turned bottom side up by turning the crank.

Claim.—The cylindrical form of the excavator *A*, so formed in combination with the wheels, windlass *E*, and frames, that the load bears on its centre and rotates when being raised, and also when being discharged.

No. 14,966.—CHARLES A. MANN, jr.—*Improved Excavator.*—Patented May 27, 1856.

The machine may be constructed with a suitable engine power to set it in motion upon the track and to communicate power to the driving wheels *n n*, which revolve the wheels *t t t t* and set the arms and scoops in motion. The friction disks *y z*, &c., roll upon the bowed plates or oblique cams 16, 17, 18, 19, and the disks are thereby caused to turn or change the position of the scoops or shovels *x x x*, &c. For instance, the shovels that first operate upon the obstacle to be removed are presented broadly thereto, shovel up to their capacity, and in passing upward and over, the cam-plates 16, 17, 18, 19, acting on the friction-disks, tilt or deflect the scoops when they arrive at a required point, and thereby empty themselves by throwing out and depositing their supply over the side of the machine.

Claim.—The construction and arrangement of the cylindrical chambers *u u*, formed with the inserted semi-rotating arms *v v v v v*, the scoops *x x x x*, the fingers and friction-disks *Y Z*, &c., with the combination therewith of the springs 5, 6, 7, 8, (figure 2.) The whole operated through the obliquely arranged wheels *t t t t*, in combination with the bowed cam-plates 16, 17, 18, 19, (figure 1.)

I also claim the arrangement of said devices in combination with the adjustable or graduating framing *g g*, *J J*, and the plough attachments *c c c*.

No. 15,813.—S. G. L. MORROW.—*Improvement in Excavators.*—Patented September 30, 1856.

The nature of this invention consists in constructing an excavator with the cutter *f* and elevator *D*, held by a lever *l* running across the frame and within reach of the driver, so as to be raised and lowered at pleasure; and in combining therewith a tilting chute *I* under the head of the elevator, held and operated by a lever *l'* running to the driver's seat, said chute discharging the product of excavation into a cart behind the machine.

The inventor says: Disclaiming the several parts separately, I claim the arrangement as described of the cutter, elevator, and discharge chute, with the levers *l l* regulating the same.

No. 15,875.—JAMES BOURBIN.—*Improvement in Excavators.*—Patented October 14, 1856.

Motion being imparted to the centre shaft of the apparatus, the shovels *X*, the handles of which are hinged to the ring 3, are caused to

revolve with said shaft, and rise and descend on the guide ring *o*, penetrating the soil in their lowest position, and carrying it up and discharging the load at their highest position, as represented in the engraving.

Claim.—The application of any number of shovels required, and working from one centre on the circular principle, also the different appliances by which the shovels are directed in their different movements, as described.

No. 16,081.—JOHN F. WILLEY, assignor to BENJAMIN F. MERRILL, THOMAS PHILLIPS, and Himself.—*Improvement in Excavators.*—Patented November 11, 1856.

The operation of this apparatus is as follows: The scoop is lowered so that the part *D* may penetrate the earth, and the front end of the part *E* is raised and retained in an elevated position by the chain *I*, which is wound up by the winch *J*. As the cart moves along, the earth passes into the part *D* of the scoop; when this part is filled, the front part *E* is lowered to a level with part *D*, as shown by dotted lines, and filled. The entire scoop is then raised upward by turning shaft *H*, and the implement is drawn to the desired place and delivered of its contents by turning the slats *a* in a vertical position by moving levers *F*.

Claim.—Forming the scoop of two parts *D E*, connected by joints or links *d d*, the bottom of the scoop being formed of slats *a*, which are allowed to turn, the scoop being suspended to the cart, and the whole arranged as shown and described for the purpose specified.

No. 15,561.—EPHRAIM D. FOSS.—*Improved Farm Fence for Rolling Ground.*—Patented August 19, 1856.

The pannels of this fence are attached to a post 1, which is provided with a movable base; said, base turning on a pin, can be fixed in any desired position by inserting a pin through the hole *b*, and through a corresponding one in the post; thus any desired inclination can be given to the posts and fence on rolling ground. The tenons 4 and 5 (figs. 2 and 3) are passed through corresponding mortises for making the connexion with a corner post, as represented in fig. 1.

The inventor says: I distinctly disclaim all and each of the several devices used in the construction of portable fences, which have been in common use and have been patented; but I *claim* the vertical shifting base post, in combination with the arrangement and use of the tenons, as set forth.

No. 14,518.—J. B. REYMAN.—*Field Fence.*—Patented March 25, 1856.

The boards *a a a* are nailed to the uprights *P P*¹. The middle of the wire is placed across the notch *d*, and both ends are then bent

down, passed through the hole *O*, and fastened to the ends of the stakes *n*.

I do not claim forming a crotch or bearing for the support of fences by means of angularly placed stakes, as such are well known; nor do I claim, of itself, the angular position of the stakes *n n*, separately and alone considered. But I *claim* forming a support for fences by means of the angularly placed stakes *n n*, in combination with the mode of connecting them together, and to the fence, by means of the wire *S*, or its equivalent; the stakes and the wires being so proportioned and arranged that the act of driving the stakes into the ground shall tighten the wires and bind the whole together, the different parts being arranged substantially as described.

No. 14,581.—S. G. TUFTS.—*Improved Field Fence.*—Patented April 1, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Constructing fences in distinct and separate sections, connecting the same by adjustable links and wedges *c* at their upper corners, and supporting said sections by chains *E* placed between and at right angles thereto, as described.

No. 15,188.—BENJAMIN F. LYON.—*Portable Field Fence.*—Patented June 24, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. The construction of the mortise in my fence posts, as described.

2d. The construction of my rails *A B C D* with the shoulders and ends of the dove-tail rounds, and also with the dove-tails *H* and *I*, made reverse, as shown, and on the opposite sides of the rails.

I do not claim the dove-tail mortises and rails alone, but the dove-tail mortises with the upper part cut square and the lower part dove-tailing in the manner as shown, or by any other substantially the same, and which will produce the same result.

No. 16,236.—JAMES G. HUNT.—*Improved Portable Field Fence.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The compound triangular brace, as shown and described, for the uses and purposes set forth, in combination with the projection of one or more rails in whole or part of one section or panel beyond the slats or battens, and between the slats or battens of the adjoining panel.

No. 16,265.—W. M. B. BURNETT.—*Improved Portable Field Fence*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Constructing the panels of a portable fence with alternately abutting rails, in combination with the binding clamp D, in the manner substantially as described.

No. 16,181.—THOMAS HOGE.—*Portable Prairie Fence for Stock-Pen*.—Patented December 9, 1856.

The fence, as represented in the engraving, rests on three wheels D, the bearings E of which can be raised and lowered in the eyes c, and locked by means of bolts d. When lowered, as represented in full lines, they serve as rollers on which the fence can be moved from one locality to another; and when raised, as represented in dotted lines, the fence rests on the ground and is immovable.

Claim.—The fence described, or any other which will not collapse in being moved, arranged on a series of wheels which are capable of being raised and lowered, and, when lowered, locked, for the purpose set forth.

No. 15,812.—G. R. McILROY.—*Improved Portable Fence*.—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The supporting the panels on the top of the bases or braces in the manner described, so as to allow of their being moved sidewise at the bottom sufficient to bring them into a perpendicular position on uneven ground; and securing the same by means of pins or wedges passing between the end batten of each panel immediately above the bottom rail or board, through one of a number of holes in the base or cross board at the bottom of the base, which holes are placed in a circle corresponding to that which the bottom of the panel describes, by moving it sidewise.

No. 14,152.—THOMAS J. CARLETON and STEPHEN POST.—*Improved Field Fences*.—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—A fence constructed of rails secured to each other and supported at proper distances above the ground by posts composed of iron rods, twisted alternately around each other and around the rails, as herein described, and one or both of the rods bent down from the top of the fence to brace it, as specified, to the base in which the rods are fixed.

No. 14,519.—JAMES ROWE.—*Portable Field Fences*.—Patented March 25, 1856.

The position of the battens *b b* and *b' b'* admits of the overlapping of the string-pieces *a a* and *a' a'*, while the connecting pins *c c*, in passing through the holes *d d*, allow the fence to follow the curvature of the ground.

Claim.—The construction of field-fence panels with shouldered laps, perforated as described, and with upright battens in opposite sides of the string-pieces, operating as and for the purposes set forth.

No. 16,172.—ROBERT J. BROWN.—*Improved Yielding-Joint for Portable Fences*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claims and engravings. The holes *a* through which the pickets pass are made on the top side of the rail of the same size as the pickets and of an elliptical shape, at the bottom of the rail, by which means this fence will adapt itself to unevennesses of the ground.

Claim.—1st. The double dovetail mortise and tenon joint of vertical posts, whether of square or triangular scantling; and the rails, whether horizontal or inclined at an angle, substantially as described.

2d. Enlarging the circular or square picket-holes of rails on the side facing the picket, in the manner described, and for the purposes set forth.

No. 16,187.—WILLIAM G. PHILIPS.—*Improved Approach-Opening Gate*.—Patented December 9, 1856.

The weight attached to cord *a* and hanging in case B being wound up, and the latch *n* down in the notch *o*, holds the gates shut. To open them, it is only necessary to draw upon cord *m*, which raises catch *n*; the falling weight in the case B turns the drum E, which, through its cranks *c d* and rods *e f*, runs the gates C D back until notch *o'* comes to catch *n*, which latter is operated upon by spring *r*. The operator then passes through the open way, and, catching hold of cord *m'*, again raises catch *n*, and releasing the gates, they again run together, and are there caught and held by the latch *n* falling into the notch *o*.

The inventor says: I am aware that gates have been made to turn on their hinges or supports by a falling weight. This I do not claim.

I claim opening and closing a reciprocating gate or gates by means of a falling weight, through the intervention of the cords, cranks, and rods, described and represented.

No. 14,851.—CHARLES N. COLE.—*Improved Farm Gate*.—Patented May 13, 1856.

A person or animal walking on to either platform A A depresses the same, and operates on the pinions B B and wheels E E, and winding

up the ropes or chains F F, the gate H is immediately elevated or opened. On releasing the platform from their weight, the gate will descend to its original position.

Claim.—The arrangement and combination of the parts forming a self-acting or balance-gate, for the purposes above mentioned.

No. 15,213.—GEORGE TAYLOR, assignor to HARRISON OGBORN and GEORGE W. STIGLEMAN.—*Improved Farm Gate.*—Patented June 24, 1856.

As a vehicle approaches the gate, one of its wheels comes in contact with a lever F, depressing it, and sliding the cams J so as to depress the levers D D¹, which causes the gates to run out.

The inventor says: I am aware that self-acting gates differently constructed, but operated by the wheel of the carriage coming in contact with road-levers F F, have before been employed; such parts, therefore, merely, of themselves, I do not claim.

But I *claim* the combination of a gate A with the angular lever D, or D¹, in such a manner and so related to each other that the gate shall stand upon a level either when, open or closed. And I further claim the combination of the cam J with the lever D¹, or its equivalent, for the purpose of vibrating the levers D D¹, thereby opening and closing the gate.

No. 16,243.—JOSEPH THOMAS MCINTYRE.—*Improvement in Railroad Gate for Cattle-Guard.*—Patented December 16, 1856.

f represents the crossing of a road over a railroad; should animals, in passing over this crossing, step off the bridge *f*, they will depress the tilting platforms *a*, which movement causes the ends *g* of said platforms to be raised, and the gates *b* to be moved into the elevated position, thus raising a barrier before the animals across the entire width of the railway space.

Claim.—The arrangement of the tilting platforms and the tilting cattle-guards with each other, and in connexion with the rails of railroads at the crossing of common roads, in such a manner that the attempt to pass to the right or to the left from said crossings on to the track or space between the enclosing fences, will, by the weight of the animals making the attempt, instantly raise a barrier before them across the entire width of said railway space, substantially in the manner and for the purpose set forth.

No. 14,826.—SAMUEL OBERHOLZER.—*Improved Method of Hanging Gates, Doors, &c.*—Patented May 6, 1856.

The elevation of the outer extremity of the gate will impart a rotary motion to the shaft *i*. The pawl *b* will play upon the teeth of the ratchet-wheel *a*, and retain the gate in any desired position. When it

is desired to let the gate down to its normal position again, it is only necessary to raise the outer end of the gate so as to bring the lever *g* under the pawl *b* and raise it, when the said pawl will be caught and retained by the pawl-holder *c*, which will allow the gate to descend until it is arrested by the descent of the pawl *b* upon the ratchet-wheel, caused by the elevation of the pawl-holder *c* by the action of lever *f* under the handle *d*, just before the gate in its descent reaches its normal position.

The inventor says: The ratchet-bar, the pinion, the ratchet-wheel, and the pawl, I am aware, have been combined with each other in producing an adjustable upper hinge for a gate, and therefore I do not claim such combination; but I *claim* the arrangement of the pawl *b* and pawl-holder *c* with each other, and with the levers *f* and *g*, the ratchet-wheel *a*, the pinion *k*, and the rack-bar *h*, substantially in the manner and for the purpose herein set forth.

No. 14,689.—J. FRANCIS DOWNING.—*Improved Method of Hanging and Elevating or Depressing Farm Gates.*—Patented April 15, 1856.

The grooved wheel G forms, together with the part E of the hinge, a circular opening for the reception of the rod D, whereby friction is avoided.

Claim.—The part of the hinge E E¹, and the application of the lever as a means of elevating and lowering the gate, including the manner of obtaining the fulcrum or point of purchase by attaching a rod to any convenient point on the large post C.

No. 14,131.—J. A. AYRES.—*Method of Opening and Closing Farm Gates.*—Patented January 22, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. The employment and arrangement of the double-acting self-adjusting jointed treadle J J¹ J², in combination with the self-locking catches I I, substantially as and for the purpose set forth.

2d. Opening and closing the two parts of the gate, and readjusting the driving-boards H H¹, by means of the simple arrangement of mechanism herein shown, consisting of weighted crank-shafts E E¹, elbow-links *d d*¹, and connecting rods F F¹, arranged and combined with the two parts of the gate B B and the driving-boards H H¹, as described.

No. 15,881.—DENNIS E. FENN.—*Improved Method of Opening and Closing Farm Gates.*—Patented October 14, 1856.

By turning the lever L to open the gate, the arm H and weight J move from H to h¹; and by opening the gate in a reversed direction, the arm and weight will move to *h*. In opening the gate from D to A, the

arm and weight in passing to *h* is raised up the incline of cam P, which raises the gate so that the latch N will be disconnected from the latch as soon as the gate is unlatched.

The inventor says: I do not claim lifting the gate so as to unlatch it by the same movement or device which causes it to swing open, as I am aware that such an arrangement is not new.

But I *claim* the cam P with its alternate elevation and depression, in combination with the arm H and double-jointed hinge G I, arranged and operating substantially as described.

No. 15,631.—CALEB WINEGAR.—*Improved Method of Operating Farm Gates*.—Patented August 26, 1856.

By pressing down the levers C, the rods and chains P and B operate upon the drum E, and turn it on the fixed shaft Q. The drum E is provided at its lower end with ratchet-teeth, which mesh into a ratchet-wheel F, fixed on shaft Q, and which is turned by the action of the weight K, turning the drum E in a reversed direction from that of the rods and chains B; by this motion the crank D is rotated, and the rod H operates upon chain and rod N in such a manner, that, by one-half of a revolution of the crank D, the latch-spring O is detached, and the gate opened or shut.

Claim.—The method of opening and closing gates by means of the ratchet-drum E, the weight K, or an equivalent spring to draw back the said ratchet-drum through an intervention of the chains and rods B B, in the manner substantially as described.

2d. I claim my arrangement of rod and chain N connected with the spring catch, for the purpose of detaching the latch, in the manner substantially as described.

No. 15,518.—CHESTER HUNTER and N. ISHAM.—*Improved Method of Raising, Lowering, and Operating Farm Gates*.—Patented August 12, 1856.

This gate can be raised or lowered, for the purpose of admitting small animals and excluding large ones. The bar H, and the gate attached to it, can be raised within the clasps C and D, and the bar J, pressed into the notches I by means of spring K, will slide into the upper notches I. By withdrawing the bar J from the notches I, the gate will descend by its own weight.

Claim.—The bars J J, spring K, groove I, and clasps C D, when arranged as described, and for the purpose set forth.

No. 14,351.—ELON DUNBAR.—*Self-Acting Farm Gates*.—Patented March 4, 1856.

When a vehicle approaches the gate, the act of treading upon either of the flaps I depresses the same, and the end of the bent lever G below; which causes the catch M to draw the slat portion of the gate

down with it, and the rods F F¹ to raise the ends of the vibrating levers E E¹, the opposite ends being depressed, so as to vibrate the upper beams A, to which they are connected by means of rods D D¹, and to incline them and the railway B¹, (which has by the act of vibrating raised the main portion of the gate,) so as to cause the grooved wheel C to descend over said railway with the gate, when the spring-bolt O is detached from the notch in plate P on the side upright of the gate, to allow it to thus descend to open the passage way by the front wheel of the vehicle, depressing the levers Q on either side, or by the rings S being drawn upon the rider. As soon as the gate begins to open, the hook M¹ on the slat portion of the same is detached from catch M on flap I, and the said slat portion is drawn up into the main upper body of the gate by means of weight M. After the vehicle has passed through the passage way, the flaps I are raised, and the several levers vibrated on their fulcra to their original positions by means of counterpoise weight J, and the gate is closed by the wheel C descending the (now reversed) inclination of beam A, when the bolt O and hook M¹ will also be reinserted into their notches.

Claim.—1st. The combination of the vibrating beam A and railway B¹, with the lower bent and weighted lever G, upon which the flaps rest, and vibrating levers and rods for connecting them together, and the gate suspended on the railway; the several parts named being arranged and operating as herein set forth.

2d. Constructing the gate in two parts in the manner described, and suspending the lower part K² by the weighted lever N, so as to enable the flap I to draw said lower part downward during the raising of the upper main part, to prevent a space for the passage of small animals being formed between the flaps and bottom of the gate, as herein described.

3d. The combination of the series of parts, consisting of levers, rods, shafts, and radial arms for operating the spring-bolt O, with the suspended gate, as herein set forth.

No. 15,911.—SMITH YOUNG.—*Improved Fastening for Gates*.—Patented October 14, 1856.

The gate A being closed securely by the two catches D, it can be opened inward by pressing against the lever F, and thereby forcing the spring-catch D from in front of the stop *b*, when the gate is swung open in the usual manner. As the gate swings back to its original position, it strikes against the oblique face of catch D and causes it to recede, and thus allow the gate to escape by it.

Claim.—The employment of two pivoted spring-catches on the post B, in combination with a stationary central stop *b* and two hand-levers F F on the front edge of the gate, substantially as and for the purpose set forth.

No. 14,387.—WILLIAM BUTLER.—*Improvement in Valves for Lock Gates.*—Patented March 11, 1856.

The main feature of this invention is the flange-valve A, it being so constructed and hinged on the slide-valve B, that in opening it by means of lever E and rod C, it presents a level surface upon which the water acts upon the wedge principle, and thus assists in opening the slide-valve B.

Claim.—The combination of the flange-valve A and slide-valve B, when said flange-valve A is hinged to the lower end of the valve B, and made to operate in the manner and for the purposes within described.

No. 14,456.—JOSHUA K. INGALLS.—*Improved Illuminating Grating.*—Patented March 18, 1856.

The nature of this invention will be understood from the engravings and claims.

Claim.—1st. The spheroidal lens or pane A, with rounded edge, set in grating or perforated plates B of wood or metal, as set forth.

2d. The grating of wood or metal with tapering apertures and glazed with lenses or panes, of the form, and in the method, and for the purposes set forth.

No. 14,355.—DANIEL FITZGERALD.—*Improvement in Portable Houses.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. Constructing a house by inserting the weather-boarding ends into a channel E at the corner posts A B, substantially as described.

2d. The drawing together the parts of the posts A B to secure the weather-boarding, it being held up against A by nails or screws.

3d. The inserting the ends or tenons of the girders G into the channel E in such a manner that the weight of the chamber floor, roof, &c., may bear on the weather-boarding and press the joints together as it may shrink, or allow it to rise when it swells.

4th. The setting the girder in the same slot with the weather-boarding.

5th. Setting the floor-plank ends in a channel in the girders, or between the two halves of the girders, so that no nails are required, and so that the upper part of the girder will be the base of the room.

6th. The channelling the sides of the door and window frames so that the weather-boarding can be inserted or taken out without the use of fastenings.

No. 14,952.—DANIEL FITZGERALD.—*Improved Mode of Constructing Portable Houses.*—Patented May 27, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. The constructing houses of staves held together by hoops.

2d. Combining the staves in segments or parts of the periphery (some of which shall contain the doors and windows) to facilitate the putting up and taking down.

3d. Constructing the floors in segments, as shown in fig. 2.

4th. Sustaining the thrust of the roof by a hoop which also confines the staves.

No. 15,201.—WILLIAM H. THOMPSON and EUSTIS P. MORGAN.—*Improvement in Safety-Hatches for Warehouses.*—Patented June 24, 1856.

Claim.—An elevator, having arms or guides attached to the traveling car or platform, either above or below it, together with the sliding or hinged movable doors, which remain closed when the elevator is not in use, and are opened by the action of the car, or suitable attachments to the same, as it passes upwards or downwards through the several stories of the building.

No. 14,854.—JOHN B. CORNELL.—*Improvement in Continuous Sheet-Metal Surface.*—Patented May 13, 1856.

The shape of the edges of the strips is such as to form a dovetail-shaped groove for the reception of the mortar.

Claim.—A continuous sheet-metal lath surface, formed of united strips or sections *b b*, of the shape substantially as herein set forth.

No. 14,092.—DEWITT C. CUMMINGS.—*Improvement in Lock-Gate Valves.*—Patented January 15, 1856.

The brackets 4 are permanently attached to the lock-gate, and form the bearings for the horizontal shaft 2, which is secured in the bearings by a key or set-screw. The valve 1 oscillating on this shaft takes its bearing on its upper side, so that the sand settles away from the bearings and escapes through apertures 5.

Claim.—The arrangement and construction of valve or paddle-gates for canal locks, substantially as herein described, whereby the sand and grit in the water is washed and settled away from the bearings instead of accumulating therein.

Also, the stationary axis of the paddle, so secured to the framing that it may be turned when it becomes worn, so as to present a different portion of its surface to the bearing of the paddle.

No. 15,776.—GEORGE M. RAMSAY.—*Improvement in Cast-Iron Pavements*.—Patented September 23, 1856.

This pavement is composed of hexagonal iron blocks, each block being provided with a leg at each corner; and when the blocks are joined, three legs of three blocks will meet at each corner of a pave; these legs are bound together by means of wrought or cast-iron bands, thus supporting each pave at six points in six different lines, thereby maintaining the form of a flexible arch without the aid of any support underneath, except at the ends of said arch.

The inventor says: I am aware that cast-iron voussoirs have been made into an arch for bridges and other purposes, and that the bond of connexion between has been effected by means of lugs on the voussoirs, and wrought-iron clips or bands passing over the lugs of the adjoining voussoirs. I therefore wish to be distinctly understood as not claiming broadly this mode of connexion of cast-iron blocks by means of lugs and clips; but I *claim* the iron hexagonal paving blocks, with legs or lugs below, as described, when united and secured by the iron clips or bands, so as to form the flexible pavement, as described.

No. 14,384. PELATIAH M. HUTTON.—*Improved Mode of Constructing Cast-Iron Pavement*.—Patented March 4, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—I do not claim the use of cast-iron for pavements; nei the do I claim the hexagon or any specified forms of wearing surface, to be filled with gravel or any other material.

I *claim*, 1st, making an iron pavement of double thickness, or of two courses of iron plates, one resting upon the other.

2d. I claim fastening the two courses of iron plates together vertically by means of the three-way adjustable key, as shown at D, in fig. 2, or its equivalent.

3d. I claim attaching the two courses of iron plates laterally by means of the pins E cast on the upper surface of the lower plates, and the holes F cast through the upper plates corresponding thereto, as described, or their equivalents.

4th. I also claim the manner of forming and arranging the two courses of iron plates so as to produce the following results: that the joints formed by the edges with the upper course of plates are in no case parallel to the joints of the lower course of plates; and when the joints of the two courses of plates cross each other, they do so at right angles in all cases, substantially as described and shown in fig. 1.

No. 15,479.—SOLOMON B. ELLITHORP.—*Improved Metal Pavement*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim the use of metal blocks for

pavements, nor the use of blocks with grooved arches without interstices between the arches, nor the use of cement, gravel, or sand, to fill the interstices of metal blocks for pavements.

But I *claim* a metal block for a pavement formed of a series of groined arches A, alternating in position and connected to ridge or string-pieces B, with interstices D between the arches, to be filled with cement, gravel, or sand, as herein described.

No. 14,736.—ASA P. ROBINSON.—*Improvement in Cast-Iron Pavements*.—Patented April 22, 1856.

The nature of this invention will be understood from the claims and the engravings.

The inventor says: I declare that I do not claim the application of cast-iron to the purposes of a street pavement or a street railway; neither do I claim pavement blocks of a cylindrical form, or with any particular form of surface.

But I *claim* the cylindrical form with the tangential flat surfaces raised upon its circumference for contact between the blocks.

And I also claim the peculiar manner of keying the blocks together and of keying the blocks to the rails to prevent vertical motion, and to admit of any one block or rail, or any number of blocks or rails, being moved without disturbing others not required to be moved, by means of the triangular formed spaces I, the rebates F, and the keys fig. 4, or by means of the projecting surfaces of the blocks A and the flanges or lugs on the rails D, figs. 3 and 5, and the key fig. 2, or any similar arrangement.

No. 14,054.—THOMAS DAVIDSON, jr.—*Improvement in Street-Paving Machines*.—Patented January 8 1856.

Motion is imparted to the shaft G, and by shoving the pinion J on the shaft C in gear with the wheel L a rotating motion will be imparted to the shaft P, and the arms c of the lifting-wheel Q will raise the shafts R S and rammers T, which fall upon the stones and drive them into the ground. At each revolution of the shaft G the eccentrics U and V actuate the pawls h and i, only one at a time, as one of the pawls is always thrown out of gear; and if the machine is to be moved forward, the pawl i will move the ratchet X; if it is to be moved backward, the pawl h is set in gear with the ratchet W. By turning the bar z and the hooker-fingers m underneath the projections f on the shafts R S, the rammers may be kept suspended; and by shoving the wheel E in gear with the pinions C I, and the pinion J out of gear with the wheel L, the machine may be driven along from one place to another by the motive power employed to operate the rammers.

The inventor says: I do not claim separately, the rammers T, operated by the lifting-wheels Q, for this is a well-known device, and used in many cases for pounding, crushing, &c.

But I *claim* the rammers T, operated by the lifting-wheels Q, in com-

ination with the ratchets W X and pawls *h i*, arranged as herein shown, whereby the machine is moved along, either backwards or forwards, as the rammers perform their work.

I further claim the arrangement of the gearing E C I, as shown, whereby the motive power employed to operate the rammers may, by adjusting the wheel E, be employed to drive the machine from place to place when the rammers are not in operation.

No. 14,716.—ABRAHAM FITTS.—*Improved Machine for Digging Peat*.—Patented April 22, 1856.

Having laid the truck A A alongside of where it is to dig, the digger is brought to its proper position by means of car E and crane H. Having cut the desired depth, on raising the digger the knife M catches by its adhesion to the uncut peat and turns under the ends of the others, cutting off the bottom and holding the whole between the blades *i i*, the knife M being in the position shown at J fig. 2; then raising the digger with its load up, and swinging the crane round so as to bring it over the mixer, and pulling the cord 7, it turns the knife M from under the peat and allows it to fall into the hopper W, when the crane may be swung back and another cut taken, advancing the cars as often as necessary for convenience in cutting.

The inventor says: I am aware that cranes are in common use and are old; therefore, I do not claim these as such.

But I claim, 1st, the movable knife or fork M.

2d. I claim the digger, consisting of two or more blades, in combination with a movable knife or fork, to cut the third side or sides.

3d. I claim the combination of the digger, the crane, and the platform or cars to hold them and receive the peat.

No. 14,502.—J. W. HOARD.—*Improved Pile-Driver*.—Patented March 25, 1856.

f is a piece of India-rubber, placed between the two parts *e* and *d* of the hammer B. By this arrangement the upper and heavier part *e* does not act with its full force directly upon the pile, but follows up the blow of the lower part *d*.

The inventor says: I am aware that in direct-action steam hammers an India-rubber packing has been introduced between the hammer and piston-rod, to avoid injury (on the hammer striking) to the piston, cylinder, and machinery. Also, that the piston-rod has been provided with a helical spring, and the hammer or block at the limit of its top stroke been made to hit a padded spring beam to prevent injury and assist the return hammer. But in all such cases has the striking block proper been made of a solid character; none of such, therefore, or the mere application of a spring to a hammer (irrespective of its arrangement) do I claim; but I do claim the sectional "ram" B of the driver, constructed substantially as described, for operation in the manner specified.

No. 15,099.—CHARLES E. FLAGG.—*Improvement in Platform-Supporters*.—Patented June 10, 1856.

The bar A being secured to the roof B, the slide-bar C, with the bearers E hinged to it at *f*, may be moved upward between the guides *b b*, as required, said bar being secured in position by means of rack D and notches *e e e* cut in the bar A.

Claim.—The improved platform-supporter or combination of the fastening-bar A, the slide-bar C, the bearer E, and the strut F, as applied together, and to be used substantially in manner and for the purpose as above specified.

No. 14,520.—JUNIUS M. SAMPSON.—*Improved Post-Driver*.—Patented March 25, 1856.

The weight L is raised by means of handle O, pinion A, wheels B and C, drum I, and pulley *d*. The moment the weight is raised, the wheel B clears the cogs of C, (a portion *a a'* of the wheel B being cut out,) and the weight descends.

D is the segment of a wheel corresponding to the portion *a a'*, which is placed on the side of B, in order to form a continuous gearing with A.

Claim.—The segmental wheel B, constructed as described, in combination with pinion A and wheel C, operating the drum I upon the shaft C, substantially in the manner and for the purposes set forth.

No. 14,868.—JAMES R. HILLIARD.—*Improvement in Lock-Joint for Railroad-Bars*.—Patented May 13, 1856.

The object of this invention is to unite the sections of rails by a compound lap-joint, so disposed that, whilst the joints give freedom of end play, they admit of separation without the use of screw-bolts, wedges, &c., and with no further fastening than by spikes to the cross-ties.

Claim.—The combination of the several laps, substantially such as herein described, and consisting of, first, the lapping each against the other along a central, longitudinal, vertical plane *a*, or nearly so.

2d. Lapping each on to and under the other on planes *b b'* parallel, or nearly so, with the longitudinal axis of the rail.

3d. Making the surfaces where each laps on and under the other, inclining downwards from each side of the rail towards the central, longitudinal, vertical plane of division of the joints.

No. 14,870.—WILLIAM J. HOLMAN.—*Improvement in Compound-Rail for Railroads*.—Patented May 13, 1856.

The three bars of the compound railroad bar are held together by but one bolt-hole *x*, or series of bolt-holes, for the several waves *a* in the one bar, admitting of perfect freedom of contraction and expansion, and allowing of the speedy removal of the inner bar. The waved form of the flange *a* admits the rail bearings to be arranged at great distances apart, while they secure strength as regards amount of material used.

Claim.—The extension at sundry points throughout its length or lengths by waved or irregular formations of the stem or flange *a* of the cap bar of the trip a tite rail below, and through or beyond the bottom surface of the two side or chain rails *B*. and in connexion and combination therewith by key or wedge *C* passing through the one rail only from below, for the purposes set forth.

No. 14,886.—SAMUEL RICHARDS.—*Improvement in Snow-Plough for Railroads*.—Patented May 13, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—The construction of a snow-clearer of a simple rising inclined plane *A B*, in combination with the curved pieces at *F*, so arranged that the snow shall be gradually raised at or near to the surface of the surrounding snow, and then discharged over on the top of it, substantially as described.

2d. I claim the employment of a series of pipes or other heating apparatus in the interior of a snow-clearer, for the purpose of diminishing the adhesion of the snow to the upper surface of the clearer.

No. 14,267.—C. C. HOFF, assignor to E. P. RUSSELL.—*Improvement in the Construction of Mastic Roofing*.—Patented February 12, 1856.

The canvass is to be passed through a hot solution consisting of one barrel of pitch, one gallon of rosin oil, and ten pounds of ground plaster; the whole having been well boiled, the canvass, while warm, is then passed through the flour of soap-stone, and then spread on the roof. The covering cement consists of eighteen gallons of gas tar, one gallon rosin oil, one gallon refuse oil of turpentine, one and a half pound copal gum, twenty pounds mineral paint, and ten quarts flour of charcoal. Finally, a smaltzing of sand is to be spread upon this cement covering.

Claim.—Preparing the canvass with the soluble and earthy matters in the manner set forth, and then covering the same with tarry, resinous material and carbonaceous compound, in the manner and for the purpose set forth.

No. 15,988.—WILLIAM H. TRISSLER and JOHN STEWART.—*Improved Mode of Securing Sheet-Metal Coverings for Roofs*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—We claim the double lapping joint *c* for uniting the sheets of metal without solder, substantially as described.

Also, the combination of the scroll and wing edges *a b* for uniting the strips of covering, substantially as specified.

No. 15,476.—CHARLES H. DANA.—*Improved Sash-Supporter*.—Patented August 5, 1856.

The roller *D* turning on a pin *a* of a lever *C* is inserted into a recess in the sash, said recess being formed of inclined planes *d*; and the roller, by bearing against said planes and the window-frame *A*, supports the sash *B*. If it is required to move the sash, the lever *C* is set into an horizontal position, as represented in the illustration.

Claim.—The lever *C* with the roller *D* on axle or pivot *a*, arranged and operating in the inclined groove *d*, as described, and for the purpose set forth.

No. 15,557.—CHARLES S. BRUFF.—*Improved Sash-Supporter*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The application of the above described rack *B*, corrugated in the particular form described, to one edge of a sash *A*, and a metal spring *F* catching into said corrugations secured in the jambs or on the stop-bead, as before mentioned, for the purpose of holding up window-sash at any desired elevation.

No. 15,390.—J. W. RODEFER.—*Improved Scaffold for Shingling Roofs*.—Patented July 22, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Constructing the scaffold, as shown, viz: having the platform *A* hinged to the sleepers or string-pieces *b*, and having segment braces *B* attached to the sleepers or string-pieces; the braces having holes *d* made through them and passing through the bars *a* of the platform, whereby the platform, by means of pins passing through the holes *d* in the braces, may always be adjusted in a horizontal position, whatever the pitch or inclination of the roof may be.

No. 14,764.—JOHN M. DEARBORN.—*Improvement in Scaffolding*.—Patented April 29, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The improvement in the construction of movable scaffolds, which consists, first, in constructing the upright standards *a a* of two planks or boards, leaving a space between them; in which spaces the ledgers *cc* can be moved up or down and secured in any desired position. I also claim constructing the upright standards, with tenons on the top, which fit into the bottom space, strengthened by an iron sleeve between the planks of the upright standards of the next upper section, whereby I am enabled to extend the staging vertically.

No. 14,156.—CHARLES FOSTER.—*Improvement in Scaffolds*.—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim, separately, either of the several devices constituting the scaffold herein described; but I *claim* a scaffold consisting of the combination of the adjustable uprights A A A, the movable brackets B B for supporting the foot-board, and the horizontal adjustable ties D D, the same being arranged, combined together, and operating as described, and also held or secured in a perfectly steady position near the building which is to be repaired or painted, without direct contact with the wall of the same, by means of the jacks E E and the braces F F, constructed, applied, and operating substantially as set forth and described.

No. 14,809.—JOHN GUSTINE and J. M. RANKIN.—*Improved Road-Scraper*.—Patented May 6, 1856.

If the scraper is to be unloaded, the pin G is withdrawn, and the upper beam E slides through the bands H H, thus loosening the chains D and allowing the scraper to turn.

Claim.—The beam E sliding through bands H H upon the tongue B, attached by the chains D to the scraper, and operated and made fast by withdrawing or inserting the pin G, or its equivalent.

No. 14,817.—MATHEW S. KAHLE.—*Improvement in Dumping-Scrapers*.—Patented May 6, 1856.

When the scraper is to be unloaded without stopping the machine, the handles F are removed, the rod b is pushed forward to release the catches e e, the front of the scraper drops and catches against the ground, whilst the machine, still moving on, pulls over the body D, the axle C turning in its wheels to admit of this. The machine continuing to move on, the rear of the body is thrown down, and catching against the ground turns it around again in proper position, and so on.

Claim.—So attaching the body of the scraper D permanently to a bent axle C, supported in a pair of wheels, as that said body may be dumped and returned back to its original position, and ready for its next load, without stopping the horses or changing their direction.

No. 14,050.—IRAHA CHASE, jr.—*Improvement in Scuttle Covers*.—Patented January 8, 1856.

The rim A is bedded into and flush with the side-walk; the cover B is hinged to it by means of hinges I. The ring C is hinged at E E to the cover B. When the cover is raised, it will be held in its proper position by the hoop C, being supported by prop D. H is a little pro-

jection welded or riveted to the hoop C, so that when the cover is shut down, it will drop under the ear G, and form an automatic hasp, rendering it impossible to raise the cover from the upper side.

Claim.—What I claim as my invention, and desire to secure by letters patent, is—

1st. Hanging to the cover B a circular hoop C, constructed substantially as described, in combination with the prop D and receiving hole E, operating as set forth.

2d. The arrangement by which the cover is fastened down—that is, by making the projection H of the hoop C and the ear G operate as an automatic latch, substantially as described.

28- 921

No. 14,185.—JOHN COOK. | *Improvement in Lugs for Cast-Iron Shingles*.
Patented February 5, 1856.

The inventor says: I do not pretend to have invented cast-iron shingles, or giving them any particular form or external shapes; nor do I claim them with the rib a, or the half-round flange b, or the lap c, or the elevation g, as all these contrivances have been heretofore in use.

But what I *claim* is, the projection e, with the nail-hole f on the under side of the shingle, for fastening the same to the rib, either on its upper or lower edge, at choice, and for securing the nail from the wet, thereby preventing it from rusting and becoming loose.

No. 11,798.—CHARLES S. BRUFF.—*Improvement in Double Panel Shutters*.—Patented May 6, 1856.

The stationary part of the shutter is composed of the stiles a, top and bottom rails b, and back panel c; the movable part is the front sliding-panel d, the rails and stiles being grooved to receive the panels. The back panel is pierced with openings, so that when the sliding-panel is moved the distance of the size of the opening in the direction designed, the openings of one panel will correspond with the openings of the other.

A proper allowance is made in the grooves to accommodate the wire netting, which is inserted between the sliding and stationary panels, and of such size as will remain stationary in its position.

The inventor says: Being satisfied that the construction of double panel shutters and the application of wire netting as a mosquito-bar are not my invention, I do not, therefore, claim either of them separately as such.

But I *claim* the combination of the double panel shutters, with the wire netting inserted *between* the panels, as an effectual bar against the admission of mosquitoes or other insects into buildings, and sparks and cinders into railroad cars, &c.

No. 14,021.—MOSES W. S. KENDALL.—*Improvement in Smoke-Houses.*—Patented January 1, 1856.

The smoke generated by the fire in the closed space A escapes through the apertures *n* of the vault *j*, thence passes out at the open ends of the furnace as it is arrested by a second solid vault, and passes around the meat to be smoked. The meat hangs above the metal roof *i*, and the grease which might drop down is collected in the gutters of the roof, and flows through the pipe into the receiving vessel *r*.

Claim.—What I *claim* as my invention, and desire to secure by letters patent, is, the smoke furnace, or its equivalent, and its application to smoke-houses thereof; which will prevent the fire from reaching the meat, or the grease from reaching the fire, thereby preventing damage and destruction to the meat and smoke-house.

No. 15,647.—JOHN F. DRIGGS.—*Improved Street-Sprinkler.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I am aware that fixed perforated pipes have been employed for the purpose of sprinkling in many branches of manufacture, and that waste-cocks have been provided in shower-baths, which open and drain the pipe with the closing of the main cock or

But I am not aware that any have attempted to employ such purpose of watering streets, or have ever attempted so to connect and connect an awning-pole or a sign-pole that it may serve this purpose.

I *claim* the peculiar arrangement of the perforated and slightly inclined pipe A, in connexion with the uprights C and B, or with equivalent brackets from the neighboring building, and with the valve D, the waste passage F, and the water-main E, when arranged in such a manner that it may serve the double purpose of supporting awnings, signs, lamps, &c., and of rapidly and effectually sprinkling the streets.

No. 14,341.—TIMOTHY ALDEN.—*Machine for Sweeping Streets.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. The arrangement and use of the sliding-boxes *k*, springs *e*, and levers *l*, in combination with the broom-handles and crank-shaft, substantially as hereinbefore set forth, for the purpose of making the brooms self-adjustable, under all circumstances, to overcome the inequalities of the pavements to be swept.

2d. The use of the guard board *q*, arranged longitudinally of the machine, for the purpose of collecting the dirt in wind-rows, in combination with the brooms for sweeping the dirt against the said guard-board, substantially as hereinbefore set forth.

3d. The use of the collecting and elevating wheel *s*, in combination

with the guard-board *q* and revolving brush *r*, arranged and used substantially as set forth and for the purposes described.

4th. The use and arrangement of the shield-board *u* for the purpose of holding the dirt within the buckets of the collecting and elevating wheel till ready to be discharged therefrom; hopper-boards Y and endless carrying-band *w*, in combination with the collecting wheel; the said combination of parts arranged and operating substantially as hereinbefore set forth.

No. 14,512.—JOSEPH MILLER.—*Machine for Sweeping Streets.*—Patented March 25, 1856.

The nature of this improvement will be understood from the claim and the engravings.

Claim.—Arranging the main driving-shaft U, its clutch-lever Y, and clutch X, in the upper and front part of the cart-body A, in order that the shaft may not only be unobstructed by the earth piled in the body, but have its clutch-lever disposed within easy reach of the driver.

No. 15,253.—D. H. RICHARDS.—*Machine for Sweeping Streets.*—Patented July 1, 1856.

One end of arm G enters the spiral cam groove *f*, while the slotted end receives the pin *i* of arm F. As the carriage proceeds, (the cylinder B being clutched with the shaft B,) the brush E is vibrated from side to side. In order to throw all the dust outwards into one row, the plate L is placed in either of the positions represented in dotted lines, (fig. 3,) so that the end of the brush-lever, when moving in one direction, passes over the plate, but when returning it is guided down under the plate, and the brush is thus raised up from the pavement.

Claim.—The brush E, operated by means of the cam groove *f*, in the manner substantially as set forth.

2d. The plate L, operating in the manner substantially as herein set forth, for the purpose of raising the brush upon the return stroke when sweeping at the sides of the streets, as described.

No. 15,710.—ROBERT A. SMITH.—*Machine for Sweeping Streets.*—Patented September 9, 1856.

This machine is attached to the rear of an ordinary cart. The rotation of the large spur-wheel G gives motion to the shaft *g*, producing movement of chain *b*, and rotating main brush-cylinder B. This sweeps the dirt directly upon the endless conveyor *z*, and the dirt thus carried upwards falls into the cart. Meantime the gutta-percha brush B, adjusted to the proper inclination, revolves by a chain connexion *a*¹ with the main brush, and, by reason of the spiral arrangement of its broom, carries the dirt from the gutter into the path of the main cylinder-brush. The gutter-brush is adjusted by means of the box *y*, screw *t*, and guides

x , and prevented from moving in any other manner than rotating on its shaft.

Claim.—1st. Placing the main broom-cylinder under the axle of the travelling wheels, substantially as and for the purposes set forth.

2d. The curved guides f of broom-cylinder axle, concentric with the driving-pulley, for keeping the driving-band tight in all portions of the said cylinder.

3d. Hanging the conveyor on its driving-shaft, with its lower extremity resting on wheels running on the surface of the ground, as specified.

4th. The arrangement of screw, box, and guides, with the shaft of the gutter-brush, for regulating the inclination and preventing the oscillation of said brush, as specified.

5th. The combination of the cylinder-brush and gutter-brush with the elevator, arranged and operating substantially as specified.

No. 14,651.—J. B. CRIGHTON.—*Improved Stump Extractor*.—Patented April 14, 1856.

By turning the sweep O , the nut F will turn, and consequently cause the screw to rise, whereby the stump is drawn out of the ground. The balls in the grooves support the upper plate i and nut F above the bearing-plate h , to prevent friction.

The inventor says: I do not claim the use of balls running in grooves for the purpose of destroying friction; but I *claim*, 1st. The combination and arrangement of the vertical screw, the nut, and the rollers, with the bearing-plate and frame, substantially as described and for the purposes specified.

2d. I do not claim the use of the wheels or levers, or any of the parts, separately; but I *claim* the lever H , carrying a wheel, in combination with the frame, so as to expedite and facilitate the transportation of the machine; the whole being constructed and arranged as described.

No. 14,830.—SOLOMON W. RUGGLES.—*Improved Machine for Extracting Stumps*.—Patented May 6, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The lever frame c , operated by the lever G , pawls f H , ratchet F , and strap E , when the above parts are attached to the sled A , and arranged as shown, and used in connexion with the frame or strut I for the purpose specified.

No. 14,937.—GEORGE W. ZEIGLER and MANASSEH GROVER.—*Improved Mode of Extracting Stumps*.—Patented May 20, 1856.

When the tree begins to fall, the chains i i^1 tighten, and the weight of the tree lifts the roots r , extracting the stump as the tree falls.

The inventors say: The several parts of this apparatus may be varied in many respects without changing the principle of action; this right of change we therefore *claim*.

Without claiming the separate parts of our apparatus, we *claim* utilizing the weight of the tree, while falling, for extracting its stumps, by the combination of chains c i and hooks f f^1 and adjuster n , substantially as herein set forth.

No. 15,537.—WILLIAM O. THOMPSON and LEONARD HARRINGTON.—*Improved Mode of Extracting Stumps*.—Patented August 12, 1856.

The lever A of the fulcrum C is placed over the stump B , and the root E being connected by means of a chain D to lever A , said lever is operated upon by a chain F from windlass H , which latter is operated by the power applied to the rope on the tackle K .

The inventors say: We do not claim the use of a lever and pulleys, or their application to our machine.

But we *claim* the combination and arrangement of lever A and galleys-frame I , in connexion with the pulleys or power applied, when constructed and operating in the manner and for the purposes set forth and described.

No. 15,566.—WILLIAM H. KING, assignor to Himself and ISAAC HYNE-MAN.—*Machine for Sweeping Gutters*.—Patented August 19, 1856.

Motion is imparted to the revolving brush from the driving-wheel A by means of the cogged wheels F and G , pulley I , cord L , and pulley J . The journals of the brush K are supported in brackets M , which are so placed on the frame of the carriage as that the shaft of the brush shall stand oblique to the frame. This obliquity is designed for getting the brush close into the curb, and conveying the sweepings out towards the centre of the street. But this would be imperfectly done, were it not for the guiding or directing board N in front of the brush, against which the sweepings are thrown, and by which they are more readily brought into a wind-row at the side of the machine.

Claim.—The combination of the skewed revolving brush and guiding board, arranged, located, and operating together substantially as described, for the purpose of making a side or gutter sweeping machine, that will leave the sweeping in the wind-rows, as set forth.

No. 14,264.—JAMES WHITCOMB.—*Improvement in Railroad Switch*.—Patented February 12, 1856.

The two rail-bars a and b of the switch are of unequal length, and are connected together at c ; so that when the pressure of the flange of the wheel acts on the outside of the long switch-bar, (when a car is passing out of the switch,) the switch-bars will be moved to the right position to allow the cars to pass on to the main track. The

switch-bars may be held to their place by a spring or counter balance weight.

Claim.—The enlargement, substantially as described, for the long switch-rail, when connected with a short switch-bar.

No. 14,180.—CHARLES H. BUSH.—*Improvement in the Bell Stench-Trap.*—Patented February 5, 1856.

This is an improvement upon the ordinary stench-traps which have their cups D attached to the plate E. In these, when water is poured directly into the waste-pipe H, both the plate E and cup D require to be removed, and the funnel G inserted in the upper end of tube C, which, of course, allows the effluvia to escape into the apartment in which the sink is placed. Such is not the case in this improved arrangement.

The inventor says: I do not claim as new, in themselves, the perforated plate or grating, and bell or cup, with surrounding chamber and central exit pipe, arranged as described, to form in combination a stench-trap for sinks, as such is old, and commonly known as the bell stench-trap; but I do *claim* providing the said grating or perforated plate E of the sink with a funnel-neck or tube F, arranged centrally over, or in combination with, the bell or cup D, made separate or detached from the grating for operation together, as shown and described, for greater convenience in the use and better cleansing of the trap, with total exemption from escape of effluvia in the apartment wherein the sink is placed, under every use of the trap, by funnel or otherwise, as set forth.

No. 14,755.—IRA MERRILL, assignor to Himself and ARTHUR MAXWELL.—*Improved Machine for Tunnelling and Quarrying.*—Patented April 22, 1856.

Attached to the posts B¹ B² B³ of the secondary frame are the proportionate levers D¹ D² and the cross-bar D³, connected by the vertical bars D, which, being operated by the crank-wheel E, cause at each revolution of the crank-wheel E an alternate elevation and depression of the secondary frame B, which latter has attached to it the chisels C and the vertical slide-rods a.

The inventor says: I do not claim the working of rock in quarries or "tunnelled avenues" by means of serial grooving, nor the construction of a machine for such purpose, nor the cutting of duplicate grooves by the rearrangement of the working parts of such machine upon each side of its principal frame alternately.

But I *claim* the arrangement of the proportionate levers D¹ D².

No. 14,483.—CHARLES WILSON.—*Improved Machine for Tunnelling Rocks.*—Patented March 18, 1856.

The cylinder d being immovably fixed by the jack-screws e e, the second cylinder f cannot turn therein on account of its feathers (see

fig. 4), but simply slides out, carrying with it the cross-head l, arms 15, shafts K i i and h, and also the drum C, shaft g, and parts attached, moving forward simultaneously; as the cutter-wheel D is now rotated, the drum C and shaft g are slowly rotated by means of the pinions and gears 11, 12, 13, 13, 14, 14, 17, and 18, 18, causing the cutter-wheel to act in its semi-spherical end in a series of nearly radial lines relatively to the axis of the tunnel. The screw n may be turned in either direction by a gearing and the auxiliary shaft i; 20 is a worm pinion driven by a key and slot in the shaft i, and confined in its place by the supports 21 of the shaft; m is a wheel with a second worm 22 to a wheel 23 on the screw n; by this means the screw n can be rotated in either direction, according to the twist of the worm pinion 22.

The inventor says: I do not herein claim a revolving or rolling cutter in itself, as this has before been used for a variety of purposes; but I am not aware that a concave or short, hollow, truncated conical cutter for cutting stone or similar material, has ever before been made use of. Thereby I am enabled to use much thinner steel than if the cutter were a flat disk; because the slightly conical form stiffens and strengthens the cutter so very much, and therefore said cutters are of less cost and require less material ground away to keep them sharp, and also allow of the head holding the same being within the cutter, so that the head will not touch the rock, even when the cutters are worn away almost as small as said head, and the cutting edge also will remove the stone on either side of the cutter, thereby providing for cutting off the centre core of the tunnel.

I am also aware that cutters have been set on arms or wheels to cut by an alternating or semi-rotary motion, therefore I do not claim the same, neither do I claim a continuously revolving cutter-wheel in itself; but I am not aware of any machine having heretofore been constructed with a continuously revolving cutter-wheel, having cutters attached thereto at an angle of 45°, or nearly so, with the shaft of the cutter wheel, and alternately in opposite directions, and acting in the semi-spherical end of the tunnel with a continuous cut of two offsets, as set forth; thereby I have a continuous motion, and avoid the loss of power by any alternate motion consequent on overcoming the inertia of the ponderous apparatus. I am also aware that rolling cutters have been adjusted by screws, therefore I do not claim the same; neither do I claim the compound feeding motion in itself, as this is well known; my invention simply relating to the peculiar cutter-wheel, and its action when receiving this compound motion.

What I *claim* is, 1st, the circular cutter t, formed as a short, hollow, truncated cone for acting on stone or other material, substantially as and for the purposes specified.

2d. I claim a continuously revolving wheel D, provided with circular rolling disks or cutters E, the axes S of which cutters stand alternately in opposite directions, or nearly at an angle of 45 degrees, with the shaft h² of said cutter-wheel, thereby acting to excavate the rock or other material, substantially as specified.

3d. I claim the arrangement of the alternating inclined tapering

planes *o o* and stocks *p*, for the purpose of sustaining and adjusting the alternate rolling cutters, as specified.

4th. I claim the construction of the shaft *s*, cylinder *q*, and parts attached, when used in connexion with the socket 29, set-screw 30, and binding-strap 31, for the purposes and as specified.

5th. I claim the general arrangement of the cylinders and shafts *d, f, g, h, i i, k, and k k*, and gearing attached, for rotating the drum *C*, and pressing the same forward, in the manner substantially as specified.

No. 14,281.—JOHN B. CORNELL.—*Improvement in Vault Covers*.—Patented February 19, 1856.

The gutters *b* serve to carry the water off.

Claim.—The flat-faced panes of glass *a* secured in positions that bring their exposed surfaces flush (or a little above) the upper faces of the bars of the metallic frame, when said bars have grooves *b* between their said upper faces, which form gutters around the panes of glass, for the purposes herein set forth.

No. 14,680.—WILLIAM D. TITUS.—*Improvement in Vault Covers*.—Patented April 15, 1856.

The cross-bar *C* is pivoted at *a*, so that it may be moved out of the way when required. The vertical stem *G* of the vault-hole cover *F* is provided with two recesses *e e*, in which two pivoted spring-catches *f f* are fitted. When it is desired to raise the cover, the lever *H* is swung up by means of cord *I*, whereby the prongs of said lever force the spring-catches *f f* into the recesses *e e*.

Claim.—The combination of the pivoted cross-bar *C* attached to the underside of the top of the vault, and the spring catches *f f* fitted to the stem projecting from the underside of the cover *F*.

I also claim the employment of the hinged forked drop-lever, arranged and operated substantially as described, for the purpose of releasing the spring-catches, as set forth.

No. 16,161.—THOMAS FLOYD, assignor to Himself and GEORGE H. MERKLIN.—*Improvement in Vault Covers*.—Patented December 2, 1856.

The cover *A* with guides *D* passes down in the grooves *e* until the notches in said guides come parallel with catches *d*, when they spring into the notches and fasten down the cover, rendering it impossible to open the vault from above. By pulling the cords *k*, the catches *d* and springs *b* will be pressed back, when the spring *h* presses up the cover, leaving a sufficient space open for light and air. If required, the cover can then be entirely removed and replaced again by simply pressing it down.

Claim.—The guides *D* working in grooves *e*, in combination with cross-bar *f*, spring *h*, and rod *g*, for the purpose of elevating the cover, as described. Also guides *D*, in combination with catches or bolts *d* and springs *b*, for fastening the cover down, as described.

No. 15,474.—WILLIAM S. CARR.—*Improvement in Water-Closets*.—Patented August 5, 1856.

The nature of this invention consists in the peculiar construction of the cock, which is opened by the motion of the seat *u* of the water-closet, and allows but little water to run into the pan *r* of the closet, until the weight is removed from the seat, when the cock, gradually closing of itself, allows the water to run for a limited and regulated time, sufficient to wash out the basin. Also, in the use of a peculiar arrangement of the lever *p* and latch *l* in connexion with said cock, to throw and empty the pan *r* of said water-closet.

The inventor says: I am well aware that cocks have heretofore been fitted in such a manner as to avoid any sudden motion in either opening or closing; therefore I lay no claim to so doing. I am also aware that a given amount of water-leakage has been used to prevent a sudden motion in cocks, balances, meters, and a variety of other instruments; therefore I do not claim the same.

I claim the valve *g*, with its cylinder 3 and openings *x*, constructed and acting in the seat 2, in the manner and for the purposes substantially as specified.

I also claim the cup leather *m* in the cylinder *k*, fitted with the required amount of water-leakage, when combined with said valve or cock *g x 3*, and spring *i*; the whole constructed and operating substantially as specified.

I also claim unlatching the pan *r* from the lever *p*, to empty the contents thereof, and then retaining said pan in its depressed position while being washed out, by providing the notch 10, pin 11, and hook 12; the whole constructed and acting in connexion with the gradual motion of the stem *h* of the valve, substantially as specified.

No. 15,758.—BENAJAH C. ENGLISH.—*Improved Mode of Adjusting the Slats of Window-Blinds*.—Patented September 23, 1856.

The parts, as represented in the illustration, after being attached in their respective places upon the window-frame and blind, are operated in the following manner: By shutting the blind, the rack *T* is brought in connexion with the gear-wheel *A*; and by pulling the knob *G* slightly towards the operator, it releases the clutch *J* from the clutch-pins *K*; the knob *G* can be turned now, communicating motion to the gear-wheel *A*, which gives motion to the rack *T*, thus causing the slats of the blind to move. The slats can be held firmly in any desired position by releasing the knob *G*, when the spiral spring *I* will throw the clutch *J* upon the clutch-pins *K*, and stop the motion of wheel *A*.

Claim.—1st. The manner of adjusting the slats of window-blinds by the use of the gear-wheel and rack.

2d. The method of fastening the slats at any required angle by the use of the clutch.

3d. The whole in combination, as set forth.

No. 15,000.—JOHN CASEY.—*Improvement in Window-Frames.*—Patented June 3, 1856.

By pressing the lower sash B sidewise, so that the side of the sash will press inwards the part C of the stile, the opposite side of the sash may be brought out free from the bead on the opposite stile, whereby the lower sash will be detached from the casing. To detach the upper sash B¹, it is brought down to the lower part of the casing, and taken out in the same manner as B.

The inventor says: I do not claim having a portion of one of the stiles made adjustable or movable, irrespective of the arrangement of the same, or the manner in which said portion is operated.

But I *claim* having the portion C of one of the stiles *e* of the casing provided with curved slots *h* at its upper and lower ends, and having lugs *i*, which are attached to the stile, fit in the slots *h*, whereby the part or portion C is rendered adjustable, as shown.

No. 15,578.—FRANCIS E. SESSIONS.—*Improved Window-Sash.*—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

The inventor says: I do not claim the principle of connecting two pieces of metal by casting metal on both while they are in a mould; nor do I claim making a window of separate bars, united by brazing, soldering, or riveting them together, when they abut against one another.

But I *claim* the described new or improved combination or manufacture of window-sash, as made not only of rebated and tenoned side and cross-bars, but of separate rebated corner-pieces, or combinations, cast in manner as specified on the tenoned ends of said bars, and not only constituting rebated angular continuations thereto, so as with said bars to complete the sash-frame, but serving to connect the bars together, in manner as explained.

No. 14,744.—ALFRED SPEER.—*Improved Weather-Strip and Lock for Windows, &c.*—Patented April 22, 1856.

By moving the pin I in the curved slot J, the rods F F¹ are caused to rise and shift the position of the links G G G¹ G¹, whereby the weather-strip E is caused to rise and E to descend, and enter the grooves C C in the top and bottom of the sashes.

The inventor says: I am aware that hinged flanges have been attached to doors and door-frames so as to operate by the door-knob, and to produce the double effect of a weather-strip and lock; I therefore do not claim all contrivances that produce this double effect.

But I *claim* the combination and arrangement of the devices for operating a weather-strip or strips to effect the double purpose of a weather-guard and lock at the same time.

No. 15,447.—CROMWELL P. WEAVER.—*Improved Mode of Hanging Window-Sash.*—Patented July 29, 1856.

The sliding-bars D and E being placed in the recesses formed on the inside of the jambs, and the cords connected to the same, as represented in the illustration, the two bars are first slid up to the top, as seen in fig. 3. The sash F is then put into place by inclining it so as to catch the metal strips *e e*; it is then easily pushed home, so that the bottom of the sash rests on the strip *f*; the sash G is now connected to the sliding-bar F in a similar manner, and the points of the spring latches *m* allowed to catch into the holes in the strip *j*.

The inventor says: I do not claim the employment of a single weight for the balancing of sashes; but I *claim* the employment, in connexion with window-frames and sashes, of the sliding-bars D and E, the same being arranged and constructed substantially in the manner set forth, for the purpose of removing and replacing said sashes with facility.

No. 15,528.—JOHN SHOPLAND.—*Improved Spring-Pulleys for Window-Sashes.*—Patented August 12, 1856.

The spring-pulley B is hung in the frame A; it is open at one end, and contains a coiled spring *e* wound upon drum *c*. On the face of the closed end of the pulley-wheel B is cut a cam-groove *f*, of a helical form, in which a small stud *i* in the bar *d* takes. The bar *d* passes through suitable openings in the arms *a a*¹, its lower end resting upon a spring *n* fastened on the underside of the lower arm *a*¹. When the pulley-wheel is turned so as to wind up its enclosed spring *e*, the stud *i* and bar *d* are carried by the helical groove *f* towards the spring *n*, the end of said bar pressing against said spring, so that one spring shall compensate for the increasing power of the other one as it continues to be wound up.

Claim.—In combination with the pulley and spring the self-acting compensating brake for holding the pulley at any fixed point, regardless of the increased power of the coiled spring as it is wound up in drawing down or raising up a sash, door, or other thing to which it may be attached, substantially as described.

X.—LAND CONVEYANCE.

No. 14,345.—JOHN M. BURKE.—*Improved Skein for Axle Arms*.—Patented March 4, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Constructing the skein C of a metal plate, which is bent in conical or taper form, with a space or opening *a* in its upper part, the skein being secured to the arm B by means of the bolts E E, substantially as herein shown and described.

No. 16,153.—WILLIAM H. SAUNDERS.—*Improved Axle Box*.—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—A lining of a thin tube of condensed and hardened ductile metal or composition, substantially such as specified, introduced and secured within the box, and presenting a hard, polished surface to the axle itself, substantially in the manner and for the purposes described.

No. 14,579.—EZRA M. STRATTON.—*Improvement in Axle Boxes for Carriages*.—Patented April 1, 1856.

The nature of this invention will be understood from the claims and engravings.

The inventor says: I do not claim the lateral grooves in the large part of mail-axle boxes, in which to fit the heads of short bolts to supercede long bolts, as described and claimed by William H. Saunders. Nor do I claim long bolts passing through carriage hubs, to fasten them upon mail axles, the same being outside of and disconnected from the box, as heretofore used.

But I *claim* plain longitudinal channels *i* across the enlarged portion of mail-axle boxes, adapted to and in combination with long bolts *g*, for fastening carriage wheels upon mail axles, by which combination the long bolts are brought close to the small portion of the box *b*, and the whole so compactly grouped together as to adapt mail axles, and boxes, and long bolts to small hubs, such as are now required for light and fashionable carriages, as described.

2d. The combination of plain, longitudinal channels, made across the enlarged portion of mail-axle boxes, with reverse channels made in corresponding portions of the hub, when the box *b* and hub *c* are fitted for and combined with the long bolts acting therein as keys between the box and hub, as seen in fig. 2, for the purpose of securely fastening the box in the hub by means of the long bolts, which thus

perform the functions of keys, and dispense with the necessity for injuring the hub by splitting and wedging the same, as has heretofore been necessary in all cases for fastening axle boxes in carriage hubs, whereby I preserve the whole strength of the hub, and materially cheapen the cost and labor of fitting and fastening the box therein, as described.

No. 16,099.—PIERRE ETIENNE PROUST.—*Improvement in Lubricating Car-Axle and other Journals*.—Patented November 18, 1856.—France, April 15, 1853.

As soon as the undue rotary friction of the axle journal X or the temperature of the atmosphere causes a sufficient heat to melt the lubricating matter, the water in the reservoir A is also heated sufficiently to exert by its steam a pressure which causes a certain quantity of water to pass through the syphon H into the bottom part G of the grease box, where also the melted greasing matter is collected. The water and grease thus heated mix very easily and form a soapy liquid, in which all foreign matters which may have got into the greasing apparatus settle down, at the same time that the axle journal is prevented from becoming overheated.

The inventor says: I do not claim the mere introduction of steam or water into the lubricating chamber; but I *claim* the application to the greasing or lubricating apparatus of axles, shafts, and other rotating portions of carriages and of machinery, of an air-tight reservoir containing water, which, being heated by the friction of the rotating portion, is caused to pass through a syphon into the box containing the lubricating matter, and there to mix it, for the purpose described and in the manner exemplified.

No. 14,232.—P. G. GARDINER.—*Improvement in Railroad Car-Axles*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The improved car axle, composed of a sheet of metal *a*, wound into a tubular form, with its ends welded to solid journal pieces, substantially as herein set forth.

No. 16,113.—DAVID CUMMING.—*Improvement in Boxes and Axles, Journals, &c.*—Patented November 25, 1856.

The nature of this improvement consists in making the box of axle-journals *x y* in two or more segments, joined together by screw-threads cut upon them; and in turning out a conical groove on the inside of the box, in which works a corresponding conical collar *a b* on the spindle. The conical collar is adjusted directly in the centre of the wheel, and is to be the only bearing part of the journal, the hole through the box

surrounding the other parts of the spindle being made large enough to allow it to revolve without touching.

Claim.—I claim the V-collar, or bearing *a b*, running in a V-groove, as described; and the construction of the box in two separate parts, with the oil receptacles, as described.

No. 14,415.—ALFRED E. SMITH.—*Improved Boxes for Axles.*—Patented March 11, 1856.

In this box *a* the axle can fit closely throughout its entire length, and it will yet be fully lubricated, and without waste.

The inventor says: I am aware that the flies have been cast with grooves in them, and that one of these grooves has been made to connect, by a tube along the outside of the box, with the face of the hub, so that oil might thereby be poured in, to avoid the necessity of taking the wheel off. These grooves cannot be said to act as reservoirs strictly; and they also have taken away too much of the bearing surface, so that the axle wears into the box along the sides of the groove.

I do not claim making slots in the box in the line of the axle or reservoirs, communicating with the axle by holes or funnel-shaped apertures.

But I *claim* the combination of two or more longitudinal narrow slots cut in the direction parallel to the axis of the box, with longitudinal cavities, substantially as described and for the purpose specified.

No. 14,639.—JULIUS BEVIN, assignor to Himself and SAMUEL N. STILLMAN.—*Improvement in Boxes for Axles.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I am aware that hub-boxes with a flange to partially close the hole in the end of the box, without a score behind it, have long been in common use; therefore I do not claim a box with a flange without a score behind it.

But I *claim* the new manufacture of a hub-box for wheels which turn upon their axles, to wit: A hub-box *B*, with a score or groove *G* on the inside of the box, within or behind a flange *C*, which partially closes the end of the box, said score affording room for the washer *H* to play within the flange; and it also receives a packing *I*, to prevent more effectually the escape of the lubricating matter, and to exclude the dirt from the box and axle *D*, substantially as described.

No. 14,953.—KINGSTON GODDARD.—*Improvement in Securing Nuts to Carriage Axles.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The method of securing screw-nuts on axles *a*, by combining with the nut a spring-friction brake *f*, to act on the thread *c* of

the screw by the tension of the spring *h*; the lever or arm of the said brake being made to extend beyond one of the faces of the nut, so that the brake may be withdrawn from the thread of the screw by the act of putting on the screw-wrench to take off or put on the nut.

No. 14,747.—RICHARD VOSE.—*Improvement in Divided Axles for Railroad Cars.*—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the use of an embracing tube for holding the inner ends of a divided axle, as that has been similarly used before.

But I *claim* the connecting segments *c c*, when combined with the inner ends of a divided axle and the embracing tube *d*.

No. 14,096.—ALLEN GREENE.—*Improved Mode of Attaching Thills to Axles.*—Patented January 15, 1856.

The shaft or thill-iron *a* is attached to a piece of leather *b*, and the latter is attached to the axle *c* for the purpose of preventing any rattle at the point of connexion between shaft and axle.

Claim.—The use of the leather, gutta-percha, or other similar substance, in attaching the thill or shaft to the axle.

No. 15,169.—WILLIAM COX.—*Improved Mode of Securing Shafts to Axles.*—Patented June 24, 1856.

By turning the thumb-nut *f*, the two jaws *c e* may be secured over the rod *b*; and by unscrewing *f*, the elastic plate *F* will spring down and separate the jaw *e* from the jaw *c*, so that the shaft may be detached from the rod *b*.

Claim.—The two bars *E F*, with the jaws *c e* attached to them; the bar *F* being elastic, and having a screw *G* passing through it, on which a nut *f* is fitted. The bars *E F* being attached to the shafts *D*, and the rods *b*, around which the jaws are fitted, being attached to the axle *A*, substantially as shown, for the purpose specified.

No. 14,468.—DAVID R. PERKINPINE.—*Improvement in Boxes of Railroad-Car Axles.*—Patented March 18, 1856.

The groove *e* receives the projections *f* of the bottom *h* of the movable piece *B*. *i* is a hole for the admission of a bolt, which, screwing into the hole *j*, secures *B* to *A*. *K* is a circular recess for the reception of the collar *n*.

The inventor says: I do not claim, in connexion with axle-boxes, a movable reservoir with lubricating substances, or the method of con-

structing the box with a loose bottom; but I *claim* the movable piece B, the vertical portion of which forms the front, and the horizontal portion the bottom of the box, in combination with the preparations *a* and *b* and groove *c* on the latter, for the purpose of quickly exposing the whole interior of the box for examination or cleaning, and as quickly covering the same.

No. 14,560.—WILLIAM B. GAGE.—*Improvement in Journal-Box for Railroad-Car Axles*.—Patented April 1, 1856.

I represents the inner box with the projecting lips L L. B is the cap-box, in which the inner box slides. S S are the springs which press the inner box against the journal J.

The inventor says: I am aware that boxes for railroad axles have been made with an outer and an inner cell below—the inner one to contain cotton waste and oil, and provided with springs to keep the waste up against the journal to lubricate it. And I am also aware that one-half of the box has been made movable and self-adjusting to the journal by springs; and therefore I do not claim broadly the use of an adjustable cell for containing cotton waste and oil, nor do I claim broadly the use of a self-adjusting half box. But I *claim* making the inner box or cell with projecting lips, as herein described, which embrace the lower half of the journal, to fit and slide in recesses in the sides of the brass or cap-box, as described; so that when the journal is inserted, and the inner box or cell is forced up against the journal by the springs, the whole circumference of the journal shall be embraced, to prevent the entrance of dirt and waste of oil, and yet permit the inner box or cell to approach the upper box, as the surfaces wear, as described; the fitting of the lips of the inner cell within the recesses of the cap-box, permitting the two to approach and recede from each other, without a break for the escape of oil, in the circle of the surfaces which embrace the journal, as herein described.

No. 14,291.—CHARLES S. PITMAN.—*Improved Mode of Applying Shafts to Axles*.—Patented February 19, 1856.

The inventor says: I do not claim the mere use of rubber, either to act as a spring or to prevent wear and noise; but what I do *claim* as my invention is, the manner in which I have applied such to a shaft and axle, the same consisting in extending the India-rubber bolt-protector each way beyond the holding-strap, in combination with extending it entirely around the bolt, as specified, whereby, under any upward or downward movement of the shaft, not only the bolt, but the connexion fork, will be protected from wear and liability to make a noise while under sudden starting or stopping of the draught animal connected to the shaft, and the strain on the bolt and fork will be eased by the spring or elasticity of the bolt-protector.

No. 14,417.—MATTHIAS SOVEREL.—*Improved Mode of Securing Thills to Axles*.—Patented March 11, 1856.

The catch E prevents the bolt D from moving endways, unless the catch is unlocked by forcing it up into the horizontal opening of the spring-chamber A. The portion of the catch inside the chamber A forms the nut into which the bolt D is screwed. When the catch and spring are forced sufficiently far along the chamber, the bolt being carried with them, the thill *e* can be taken out.

Claim.—The combination of the spiral spring F, and the catch or nut F E, and the eye of the bolt H, (figure 2,) and the spiral chamber and slots C, (figure 1,) substantially as described in the above specification.

No. 16,294.—ALFRED E. SMITH.—*Improved Mode of Connecting Shafts with the Axletrees*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim an engraving.

Claim.—Connecting the thills or shafts of a carriage with the axletree by means of journals of greater diameter than the thickness of the plate from which it projects; the said journals being fitted to holes in the ears, one of which ears is provided with a slot of less width than the diameter of the journal fitted to its hole, and large enough to allow the plate to slide in it freely, for the purpose and in the manner described.

No. 15,217.—D. FRANKLIN BREED.—*Improved Brake for Wagons*.—Patented July 1, 1856.

In descending a hill, the yoke *a* is drawn back, which causes the brakes to be drawn up to the wheels by means of lever *c* and connecting-rod *d*. The revolving eccentric blocks *f* are so arranged that they fall entirely clear of the wheels when the brake is not in use.

The inventor says: I would state that I am aware that a self-relieving brake in backing is not new, nor is it new to so arrange the gearing that a progressively increasing power is applied in the application of the brake to the wheels; I therefore do not claim to be the first to apply such arrangement of parts as will effect either of those objects.

But I *claim* the combination and arrangement of the revolving blocks *f*, rubbers *g*, connecting-rods *b* and *d*, crank-lever *c*, and neck-yoke *a*, for the purposes specified.

No. 14,681.—BENJAMIN T. TRIMMER.—*Improvement in Railroad Brake*.—Patented April 15, 1856.

Any pressure on the brake-rods R R will communicate to the secondary rods R¹ R¹ and elevate the tumblers T T, which will afford an abutment for the brake-rod of the next car, and so on.

If it be desired to back without braking, the engineer leaves the tumblers on the tender down, which will leave all the brake-rods free. The brake-rods act on the brakes through the intervention of the main lever L acting on the combination of levers *l l l*.

The brake-rods and levers are kept in a tense state by the action of the racks *m*. On the forward motion of the engine, however, the chain C, being extended, will act on the lever *e*, rock-shaft *d*, and raise the rack out of gear by the lifter *f*. The spring S will then operate to relax the brakes.

Claim.—1st. The combination of the secondary brake-rods *R¹ R¹*, with the tumblers T T, said tumblers being firmly attached to the truck, and supported by it.

2d. The combination of the hand-wheel H and secondary brake-rods *R¹ R¹*, said combination performing the double function of braking the wheels of the car to which it is attached, and raising the tumblers to operate the other brakes.

3d. The combination of the rock-shaft with the extensible and elastic chain, whereby the forward motion of the engine relaxes the brakes without danger of breaking said chain.

No. 14,385.—VINCENT BARNES.—*Improvement in Railroad-Car Brakes.*—Patented March 11, 1856.

The rubbers G are held clear of the wheels B by the spring H, causing lever E to stand in a vertical position. When the brake is to be applied, the lever E is pressed in the direction the wheels are running; and so soon as the curved rubbers G are brought in contact with the wheels, the wheels catch on the same, and, by means of the links *a*, they are pressed forward, hugging the periphery of the wheels with the same degree of power that they are pressed forward, thus becoming a self-acting brake.

Claim.—Attaching the frame or brake C to the truck B by the parallel levers *a*, so as to form a self-acting, reversible brake, operating as herein set forth.

No. 14,640.—R. M. EVANS, assignor to Himself and CHARLES S. GALE.—*Improvement in Railroad-Car Brake.*—Patented April 8, 1856.

The upper end of each lever *c b* passes through a longitudinal slot *a* in the brace G, so situated that when the brake-rod is at rest, the levers will be in contact at the most distant ends of each pair of slots.

When a train is to be stopped, the engineer, by any suitable contrivance, brings a block, situated on the rear end of the tender, in line with the foremost brake-rod. Then, by checking the engine, the cars are forced together, so as to move the brake-rods backward proportional to the momentum of each car. The action of the brake-rods will be readily understood from the engravings.

Claim.—The arrangement and combination of slots *a a* of the brake-

rod D with the chains *f g* and brake-levers *b c*, in such a manner that one of each pair of levers will be operated immediately by the brake-rod at the end of its respective slot, while the other lever of each pair will be moved in the other direction by the action of said chains, in whichever direction the cars may be moving, substantially as herein described.

No. 16,011.—DENNIS HARRIGAN.—*Improvement in Railroad-Car Brake.*—Patented November 4, 1856.

By the introduction of the compensating toggles K and J and compensation rods G, the play in the shackling W, which is constantly causing a variation in the distance between the cars, does not affect the tension of the cord F, which runs through the entire length of the train; for when the bumpers V come together, and crowd the bumper-rods *p* back, the compensation toggles J K spring out, and spring the cord with them, so as to preserve a uniform tension of the cord F in all cases; the bumper-plates H will also be constantly held together by the tension of the cord. By winding up the cord F, the stops *y* can all be withdrawn from the bumper-rods *p*, as represented in fig. 3; and when the speed of the locomotive is checked, the momentum of the train will bring the bumpers together, and force the bumper-rods *p* back, which, by the arrangement of chain *k* attached to bumper-rod *p* and lever *h* and rod *f*, will apply the brakes *e* and *d* to the car wheels.

Claim.—The compensation rods G, in combination with the levers J and K, or their equivalent, operating in the manner and for the purpose substantially as described.

No. 16,004.—WILLIAM G. CREAMER.—*Improvement in Railroad-Car Brake.*—Patented November 4, 1856.

The spring in the drum E can be wound up by turning the hand-wheel P in the proper direction, and is prevented from reacting by means of pawl L engaging the ratchet-wheel F. In ordinary cases, the brakes are applied to the wheels by simply turning shaft I, as in common car-brakes; but should an accident occur which would require a sudden stopping of the train, then the engineer, by simply pulling the branch-lines P, disengages the pawl L from the ratchet F, and the reserved power of the spring in drum E operates on shaft I and applies the brakes instantly.

The inventor says: I disclaim generally any and all plans of reserved power for closing brakes in cases of emergency that is not identified and in direct combination with the apparatus that is used for ordinary cases, and, if used from the engine, that is not in combination with the usual bell or signal cord of the train.

I do not claim, directly or indirectly, the use of weights or springs for closing brakes, nor as a reserved power.

Nor do I claim any powerful attachment to any one car by the brake-shaft, and transmitting its power from car to car by means of chains,

levers, pulleys, &c., as invented by Crawford, even considering it as a reserved power.

I claim no apparatus whatever involving a connexion of brakes from one car to the other.

But I *claim* generally the attachment of a reserved power for applying the brakes in sudden emergencies connected to and identified with the present brake-shaft, as used in eight-wheeled platform cars, and operating in combination with the common bell or signal cord of the train.

I claim the combination of the cross-bar D with the spring-drum E and circles of ratchet teeth F and H, operating in connexion with the vertical brake-shaft I, or the equivalent of a loose pulley with a double circle of ratchet teeth arranged in the same way, but actuated by a weight or spring, operated as described and for the purposes mentioned.

I also claim the combination of the jointed pawl L M and disconnecting lever N with the drum E, as specified, for retaining and disengaging the reserved power, when required, while the brakes are being operated by hand, if necessary.

No. 16,042.—FRANCIS ARMSTRONG.—*Improvement in Bumper-Brakes for Railroad Cars*.—Patented November 11, 1856.

When the speed of the train is checked, the bumpers a^1 of the cars are operated upon, and the rod m is pressed backwards, which, being in connexion with lever u , turns said lever on its fulcrum g ; the rods K which connect the brake rubbers with lever u are operated upon, and the brakes are applied to the wheels. When the train is started, the cars do not touch each other, and the bumpers a^1 are free from pressure, thus keeping the car wheels free from the action of the brake rubbers L.

Claim.—The employment of the yielding force made by the pull on the cars to adjust the apparatus and place it in position that the force acting by the cars coming in contact with each other will secure that force to act on the brakes, and close them on the wheels; and the force made by the pull on the cars when allowed to react, reversing the position of the apparatus in the placing it, so that the pressure of the cars acting against each other can operate on the apparatus, and have no action on the brakes. This is claimed, whether done by the described apparatus, or any other analogous mode producing the same effect.

No. 15,038.—MAHLON S. FROST.—*Improvement in Railroad Car-Brakes*.—Patented June 3, 1856.

The lever A connecting with the rod B is used in all ordinary applications of the brakes. The lever A^1 connecting with the rod B^1 is used only for extraordinary emergencies, or when the speed of the train is required to be diminished suddenly, and when the train is backing; the other lever when the train is going ahead. Its operation is as fol-

lows: The levers A and A^1 , on being thrown backward, move the sliding blocks opposite to the ends of the rods E and E^1 , by means of rods B B^1 and elbow-levers C and C^1 . The rods E and E^1 , connecting with the cross-bars F and F^1 , move the rods E and E^1 on the other end of the car. The rods E and E^1 are attached by toggle-joints to the levers L L, which apply the brakes in the ordinary mode; but the balance beams O O O O O are jointed together by the rods H H H H H H. The ends of these rods pass through the balance beams O, and through the elliptical springs K K K K K K, which regulate the pressure applied against the wheels. The sliding rods E and E^1 also connect by toggle-joints j and j^1 with the levers M and M^2 , which levers are bent around the common centre P P, and by means of the levers M^1 and M^2 connect with the sliding blocks N and N^1 .

Claim.—The arrangement of the sliding blocks D D^1 and N N^1 at the ends of the car platforms for engaging and operating simultaneously a set of through bumper and traction rods for applying the brakes; the said sliding blocks being under the control of the engineer, and capable of acting upon both sets of rods, or either separately, as may be desired.

No. 14,515.—LUCIUS PAIGE.—*Improvement in the Levers of Railroad Car-Brakes*.—Patented March 25, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The above described improved arrangement of levers and springs, and their application to the brakes of a railway carriage having swiveling truck frames; the same consisting in arranging two levers S S U U so that they shall cross one another, and work on one common fulcrum T, applying springs V and W between said levers, and on opposite sides of the fulcrum respectively, connecting both arms of the one, or the longer of said levers, with the draft chain or rods of two windlasses $b c$, situated at opposite ends of the carriage body or platform A, and respectively connecting the two arms of the other levers to the draft-rods R and Q, or chains of the brake levers N and M.

No. 14,766.—EDWIN J. GREEN and MOSES H. WHEELER.—*Improvement in Joint-Bodied Buggies*.—Patented April 29, 1856.

The axles C and D are united by a spring-reach E; the front end of which reach is secured to the bolt i , so that the axle may turn on said bolt. The body of the carriage is made to rest on the reach E by means of a bolt n .

The two sections, A and B, of the carriage are hinged together by a bolt a .

Claim.—Supporting the front or seat section A of a joint-body carriage on a spring-reach E, by means of a bolt i , or equivalent support, whereby we avoid the use of a spring as heretofore used under the seat, but still have the advantages of said spring by using the spring-reach as such.

No. 15,909.—JOHN C. WARD.—*Improvement in Railroad-Car Coupling*.—Patented October 14, 1856.

The end of the coupling-bar D is inserted into the opening C of the tumbler T; and by this operation the slide B is raised and the stud H is set free, causing the arm A to turn on its fulcrum into the position represented in fig. 2, thereby turning the tumbler T, and causing the head of the bar D to be retained behind the same. The arm A is lifted by a line attached at F; the slide B falling in front of stud H, after said stud has passed through the groove *a*, secures the tumbler for the reception of the bar D.

Claim.—I make no claim to a tumbler where a partial rotation effects the coupling, when such rotation is produced by hand; neither do I claim the fastening produced by the rotation of either socket or link, and known as the "bayonet-joint" fastening.

But I *claim* the weighted arm A, stud H, and slide-catch B, in combination with the partially rotating tumbler, when said tumbler constitutes the securing socket, constructed, arranged, and operating, substantially as described, for constituting a self-acting car-coupling.

No. 15,997.—D. LYNHON and C. J. WING, assignors to D. LYNHON.—*Improvement in Railroad Car-Coupling*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The device couples itself, and the disconnection is readily effected by drawing upwards either of the pins D and cross-bars C, by hand.

Claim.—The construction of the coupling, as shown, viz: having the cross-bars C, with pins D, attached and encompassed by springs *b*, the bars and springs being placed in the boxes B, as described; and the shackles E, formed with inclined planes *d d* at their ends, for the purpose set forth.

No. 14,083.—JOSEPH S. BROWN.—*Improvement in Extension Railroad Car*.—Patented January 15, 1856.

The sides S of the car can be moved outwards to the position represented in the engraving, by means of racks B and pinions on shafts D. The portions N of the floor can then be swung outward so as to form a continuous floor N A N. The extended car will serve the purposes of a store or similar object.

Claim.—Extending the floor and sides of cars outwards, laterally, by means of the racks and pinions and other machinery connected to them or otherwise, so as to give a larger area to the floor, and also enlarge the capacity of the car, essentially in the manner and for the purposes set forth.

No. 14,841.—GEORGE WILLARD, assignor to Himself and NATHAN W. C. JAMESON.—*Improvement in Railroad-Car Seats*.—Patented May 6, 1856.

To throw the chair backward, the chair body is lifted until the tenon *i* is raised out of the vertical mortise. Then by pushing back the chair a little, the inclined mortise *h* is forced over the tenon, and the tenon is permitted to pass up into the said inclined mortise.

The lateral supports F F and G G relieve the journal *e* and socket *d*, as well as the tenon of said journal, from injurious lateral leverage or strain. The two independent foot-rests *m n* are so applied to the stand B, that while one of them may serve to support the feet of a person who may be in the chair, the other may be used to give support to the feet of a person sitting in a chair placed in rear of the first.

Claim.—The combination of the divergent mortises *g h*, or their equivalent, the guide groove *l*, and the projection *k*, as applied to the seat-holder *c*, and the journal *e*, provided with a tenon, as specified and arranged in a stand B.

I also claim combining with supporting socket or stand B and the chair seat or chair, the lateral bearers F F and legs G G, each provided with feet *m n*, the same being for the purpose herein before specified.

No. 16,160.—THEODORE T. WOODRUFF.—*Improvement in Railroad-Car Seats and Couches*.—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—In combination with the movable frame *g* and the fixed frame *f*, substantially as described, the employment of the movable seats at the ends of the several divisions, substantially as described, to give the required number of seats when the couches are not used for the purpose of reclining, as set forth.

Also, converting the back of the side seats into an elevated couch, as set forth, by connecting the upper or back edge of said back to the side of the car, or to the partitions *e e*, by hinged joints or other equivalent means, and holding it up in the required elevated position by means of catches or other equivalent means, as described, in combination with the movable frame *g* and fixed frame *f*, or any equivalent therefor, as described.

Also, the manner of connecting the upper or fourth couch with the car, substantially as described, so that it may be let down, to be used as a couch, or thrown up to the roof of the car when not required to be used, as set forth.

And, finally, in combination with the said upper or fourth couch, the hinged or suspended step, substantially as described, for the double purpose of a step to give access to the said upper couch, when used as such, and as a means of securing said couch when thrown up out of the way, as set forth.

No. 16,159.—THEODORE T. WOODRUFF.—*Improvement in Railroad-Car Seats and Couches*.—Patented December 2, 1856.

The movable frame *j* may be used as a seat when raised; and when lowered, the frames *j* of the two opposite seats, in combination with the stationary frames *i*, can be used as couches. The hinged back *n* of the seats, when raised to a horizontal position, will form, in combination with the frames *t*, an elevated couch; and lastly, the hinged cushioned frames *v* and *w* are arranged in such a manner that they can be converted into a couch above the car windows, and folded together, when not in use, as represented in the engraving.

Claim.—The combination of the movable and fixed frames on one side of each compartment with the movable and fixed frames on the opposite side thereof, to form each of two depressed couches when unfolded and connected, and which may be converted into two opposite seats when the two movable seats are thrown up and over the permanent frames, substantially as described.

Also, combining each of the hinged folding backs on one side of each compartment with each of the corresponding hinged backs on the opposite side of the same compartment, by means of the folding or connecting frames, or equivalent therefor, substantially as described; whereby the same may be used as backs for the seats, or as couches, as set forth.

And finally, forming an elevated couch above the windows by the combination of the two sets of hinged frames, substantially as described, so that when not required to be used as a couch, the two sets of frames may be folded up out of the way, in the manner substantially as described.

No. 15,233.—JOHN HENNON.—*Improved Method of Turning Carriage, &c., Axletrees*.—Patented July 1, 1856.

The rules are not given here, as they would occupy too much space.

Claim.—The turning of spindles on axles for wagons, carriages, or all other similar vehicles, and the rule or principle of ascertaining the lines on the timber, and of finding the centre in accordance therewith, and of so adjusting a movable centre, or slide point A, in any common lathe, as to give an axle B any desired degree of inclination for the bottom or pitch line, and at the same time obtaining more or less gather at will, substantially as described.

No. 14,443.—THOMAS CHOPR.—*Improved Carriage Coupling*.—Patented March 18, 1856.

The inventor says: The turning of a vehicle provided with this improvement is easily accomplished, as there is only five inches bearing; the bearing is also kept continually on the axle and turns in a small space; the slides O *a* (figs. 3 and 4) work with each other as the front gear is turned, throwing the body away from the front wheels.

This invention also obviates all king-bolt holes, which weaken considerably the front axle.

Claim.—Attaching the perch of a vehicle to the front axle in a manner which will enable it to turn or rock by means of a slotted T-shaped bar, which is attached to the front axle by means of clip *g* and the slides O and *a*, both working in the slots at right-angles, as clearly shown in fig. 2, substantially as shown and described.

No. 14,607.—WILLIAM GREENLEAF.—*Improvement in Carriage Coupling*.

When the carriage is turning, the bolt O moves the body N P Q R until the end of the moving-rod at F or E is at the end of the T-plate C D, which throws the body out of the way of the fore-wheel, thereby allowing the carriage to turn short round. The bolt O slides at the same time to the front end of the mortise J, which prevents the fore-wheel from coming in contact with the body, and lessens thereby the liability of upsetting.

Claim.—The application of the moving-rods E F G H, the circular T-plate C D S, and the half-circle A O B, as above described, or any other apparatus substantially the same, and which will produce the same effects.

No. 15,345.—CYRUS W. SALADEE.—*Improved Three-Wheeled Pleasure Carriage*.—Patented July 15, 1856.

The nature of this invention can be understood by reference to the claim and illustrations. The object in using a three-wheeled wagon is to obtain greater facility in turning short round, and to get in and to alight from the vehicle without having the front wheel in the way of so doing.

Claim.—The longitudinal braces A A A, in combination with the double circle B, by which means the third wheel is firmly connected to the hind-axle and wheels.

No. 15,097.—REUBEN W. BENEDICT.—*Improvement in Carriages*.—Patented June 10, 1856.

The springs E are connected to the springs F by loops G. These loops are firmly fastened to the spring F, but are allowed to turn in bearings upon the springs E. This is done in order that the heavier springs E may not be effected by the torsional motion of the body of the carriage.

The circle-plates H are placed back of the centre of the axle, to give more room for the wheels in turning.

Claim.—The combination of the springs E with the springs F and concomitant parts, in such a manner that the torsional motion of the body shall affect the spring E.

No. 15,923.—DANIEL FREEMAN.—*Improvement in Carriages*.—Patented October 21, 1856.—Canada.

In the construction of these carriages, the springs $D D^1 D^2 D^3$ are suspended by means of loops E on the jacks B , which latter are supported by the axles $A A^1$. The suspension-bar F is bolted to the spring D , and to the ends of it the back corners of the carriage body are attached by the body-loops G . The middle of the back end of the carriage body is hung to the spring D^1 by the body-loop G^1 , and the front end is suspended in a similar manner. The circle-plate H , which is usually attached to the front axle, is attached to the spring D^2 ; and the circle-plate H , which rests upon it, supports the suspension-bar F^1 , to which the front corners of the body are hung by the loops G^2 . The middle of the front axle is connected to the middle of the cross-bar N , which connects the two shafts to each other by a draw-wheel L jointed to the axle at one end, and securely attached to the bar N at the other. The circle-plate H is placed upon the lower one of the two front springs, and lastly the head-bolt M , upon which the circle H is placed, is made elastic; which arrangement affords the means of screwing down the circle-plate H^1 upon the circle-plate H sufficiently snug to prevent any rattling or jarring motion between them.

The inventor says: I am aware that the bodies of carriages have previously been supported upon springs arranged in pairs, both above and below the axles.

I am also aware that the draw-brace arranged directly behind the point of draught, and connecting the swingle-tree with the body of the carriage, is not new; I therefore do not claim broadly either the arrangement of the double springs, or of the draw-brace.

But I *claim* the combination and arrangement of the body, supported by and distributing its weight upon all four springs, when placed above the axles, as described; also the arrangement of the draw-bar and brace, by which the former is connected directly with the centre of the fore axle; also the arrangement of the fifth wheel or circle H upon the lower of the two front springs; also making the head-block M elastic, as set forth.

No. 14,395.—ROBERT D. DWYER.—*Improved Apparatus to Prevent Horses in Carriages from Falling*.—Patented March 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The application of a suitable projecting frame attached to the most convenient part of the carriage, or to the carriage and front axle, projecting over and between the horse or horses sufficiently far, and at a suitable distance above, so that straps, chains, or other suitable fastenings, can be attached to the harness round the body of the horse and to the collar, as shown, for the purpose as described.

No. 14,231.—DAVID N. FLANDERS.—*Improved Adjustable Carriage Seat*.—Patented February 12, 1856.

A second seat or stool B is provided for the driver of a carriage by hinging the leg of the said seat B to the bed-piece of the main seat at D , so that it may be brought round under the ordinary seat $A A$ when not required for use. (See position of seat B , shown by dotted lines.)

Claim.—The additional revolving seat B , hinged upon the bed-piece so that it will turn and assume the two positions already described, and thus make the carriage convenient for the accommodation of two or three passengers, as desired.

No. 14,931.—JAMES D. SARVEN.—*Improved Carriage-Shaft Coupling*.—Patented May 20, 1856.

q (figure 3) represents the spring-key, which is used for the purpose of covering the opening O in the top clip-iron D , for the purpose of oiling the journal.

The inventor says: I am aware that the ball and socket or universal joint coupling is old, and that a journal with a spherical enlargement in the centre is old; and therefore I do not wish to be understood as claiming either the one or the other. But I *claim* the improvement upon couplings for carriage shafts or tongues, which consists in enlarging the journal of the shaft iron $g g$ in the centre, so as to form a globular, ellipsoidal, or double conical bearing surface, and clamping the same between the clip-irons C and D , countersunk, as described, by means of screws or other equivalent devices, so that the wear is entirely upon the enlarged surface, and all lateral play and rattling of the clip-irons are prevented.

Also, in combination therewith, the leather packing, for the purpose of retaining the lubricating material.

No. 15,979.—WILLIAM S. LORD.—*Improved Perch-Coupling for Carriages*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Coupling the fore axletree of a carriage or other vehicle to the perch, by means of a cross-bar B , attached to the perch at a suitable distance in rear of the axle, in combination with connecting links C , arranged and operating substantially as described.

No. 14,197.—RICHARD MONTGOMERY.—*Improvement in Carriage Springs*.—Patented February 5, 1856.

This improvement consists in substituting for the extra leaves of the ordinary elliptic spring an internal corrugated spring, the thickened

angles of which give the necessary strength, and the thin sides the requisite elasticity.

Claim.—The corrugated spring D, when used in connexion with the elliptic spring A, substantially as described.

No. 15,126.—JOHN U. FIESTER.—*Improved Carriage Spring.*—Patented June 17, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—Forming elastic twisted springs *a a* with an elliptical curve, for the purpose of giving to the same greater strength and elasticity, and also a lateral and vertical motion.

No. 15,914.—THOMAS DUTTON, assignor to JOHN R. ELVANS.—*Improved Brace for Carriage Springs.*—Patented October 14, 1856.

This invention consists of a combined brace and lever, which are self-regulating, said lever being composed of a toggle-joint, one leg of which extends past the fulcrum *a* which is attached to the carriage-spring, so forming a lever *b*, to which a brace-rod *c* is made fast by a joint, while the other end of the said brace-rod is made fast, by a similar joint, to any required place on the perch of the vehicle.

Claim.—The combination of the brace-rod with the toggle-joint and lever, or any of their equivalents, substantially in the manner and for the purpose set forth.

No. 15,234.—M. G. HUBBARD.—*Improved Mode of Adjusting Carriage Springs.*—Patented July 1, 1856.

When the fulcrum irons *a a* are affixed to the springs they are placed back to back, and a bolt *c* is passed through the whole; the ribs *x x* fit into each other, thereby permitting the two irons to be put together at any angle, which enables the operator to place the two bars at the proper position, and to shift as the springs require to be set up.

Claim.—The double fulcrum iron with a changeable angle, constructed and arranged in the manner and for the purposes set forth.

No. 15,189.—RICHARD MURDOCK.—*Improvement in the Running-Gear of Carriages.*—Patented June 24, 1856.

The nature of this invention consists in connecting the inner ends of short, independent axles *a a* with boxes *b* sliding upon a swivel-bar *c*, in order to give the requisite strength to the system, and at the same time admit of the free movement of the said axles about their attachment. And further, in making this attachment of a bolt perpendicular to the axle, and passing through the same and the permanent cross-bar of the forward portion of the running-gear.

The inventor says: I disclaim the short axles and the manner of turning them about their attachments, such constituting no part of my invention.

I also disclaim supporting the extremities of the axles on stationary tram-ways during their movement.

But I *claim* the swivel-bar *c* and boxes *b b*, in combination with the short axles *a a*, connected with the extremities of the cross-bar.

No. 15,297.—ALEXANDER B. LATTI.—*Improved Wheel for Steam Carriages.*—Patented July 8, 1856.

The spokes B and C are screwed into hub *a*; the angle-iron *d*, which is in place of the felloes in common wheels, is riveted inside the rim *c*; the spokes pass through the angle-iron and rim from the outside, and are provided at their outer end with a conical head, the rim and angle-iron being countersunk to fit the taper. The spokes are tightened inside against the angle-iron by means of the jamb-nuts 5 and 6, for the purpose of strengthening and bracing the spokes. The wearing tire *f* is cut apart in four places, in order to allow this tire to stretch as it runs over hard pavements.

The inventor says: I am aware that the different parts composing the wheel have been separately used before; which I disclaim, when taken separately.

But I *claim* the combination of the tire *e*, angle tire *d*, sectional tire *f*, cross-spokes B and C, and jamb-nuts 6, for purposes mentioned in the foregoing specification.

No. 15,567.—F. A. JEWETT.—*Improvement in Thorough-Braces for Carriages.*—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Combining with a thorough-brace *a* a right-and-left-threaded screw *c d*, working in nuts *e f*, substantially as described, whereby the thorough-brace can be tightened and the slack taken up at the same time.

No. 15,071.—JOHN H. GOULD.—*Improvement in Three-Wheeled Carriages for Children.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The curved arms B B, resting upon the arms or bars A A, forming a support for the body of the carriage, and terminating in sockets, both in front and back, for the reception of the arms C C of the frame C C D, for the purpose of permitting the carriage to be drawn and pushed from either the back or front position.

No. 16,122.—GEORGE KENNY.—*Improvement in Turning-Circles for Carriages*.—Patented November 25, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

a represents the axle of the carriage, *b* the head-block, *c* the perch, *d* a circular box containing a leather-washer *e*; the annular plate *f* moves between washer *e* and friction-roller *g*.

Claim.—An annular box-plate, composed of two circles, one attached to the head-block or rocker, and the other to the axle, and so constructed as to form a box for excluding dirt and grit from the bearing surfaces of the circular plates, in which box is inserted a washer of oiled leather; the box-joint serving to exclude all dirt and grit from the bearing surfaces, and thereby preventing their rapid wear, and the leather-washer preventing the squeaking noise and friction common to all other modes of connecting turning-circles, and preventing the jar which would otherwise be occasioned by two metallic surfaces striking together, as set forth.

I also claim combining with a circle a rubber or other elastic friction-roll, upon which the said circle turns, to lessen the friction and noise and diminish the wear, as set forth.

No. 14,400.—HENRY HAYES.—*Improvement in Carriage-Tops*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

f e d b are the slat-irons, and *g* represents part of the body of the carriage.

Claim.—The plate or circle *c*, having the slat-iron of the front bow projecting from it, working on a pinion on the standard *h*, in connexion with a spring-latch or pawl *m* fitting into notches in the plate, by means of which the top of the carriage is sustained in an elevated or half-elevated position, substantially as described.

No. 14,735.—ALANSON QUIGLEY.—*Improved Apparatus for Raising and Lowering Carriage-Tops*.—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The box *B*, cog-lever *A*, pawl *D*, and cog-wheel *C*, in combination.

No. 15,725.—CYRUS W. SALADEE.—*Improved Mode of Adjusting Carriage-Tops*.—Patented September 9, 1856.

By pressing on the rod *D* at *G*, the top props *A* are drawn back and the top is let down; this operation can be performed by the pas-

senger without moving from his seat, and the carriage-top can be raised in a similar manner.

The inventor says: I disclaim the use of one straight rod or bar of iron, when placed on the inside of the back to the seat, with both extremities passing through a square hole in the lower end of the top props, and operated upon by a lever; as that forms no part of my invention.

Neither do I claim the long perpendicular rods at the back of the seat, and connected to the back bow; as that is patented by Mr. Huntington.

But I *claim* the lateral rod *D D*, in combination with the top props *A*.

I also claim the perpendicular rods *E E*, in combination with the lateral rod *D D* and the back of the seat, for the purpose of throwing back or raising up the top while seated in the carriage, substantially as set forth.

No. 14,066.—CHARLES PHILLIPS.—*Improved Machine for Loading Dirt Cars*.—Patented January 8, 1856.

An opening or cut being made in the hill to be excavated, it receives the framing *A*. The outer ends of the aprons *H H* rest upon the sides of the cut. The shaft *G* is so turned that the inner ends of the boxes *B* will rest upon the button *F*. The boxes *B* are then filled with earth; when the boxes are filled, the shaft *G* is turned so that the button *F* will be turned free from the inner ends of the boxes, and the shaft *C* is turned by means of horse-power, and the boxes will tilt, the earth falling into the car, which is backed underneath the boxes, and represented in dotted lines.

Claim.—The framing *A* with boxes *B*, and aprons or levers *H* attached to it, and arranged substantially as herein shown and described, for the purpose specified.

No. 14,364.—GEORGE T. McLAUTHLIN.—*Improvement in Railroad Car Seats*.—Patented March 4, 1856.

P is an India-rubber ring. The nature of the improvement will be understood from the claims and engravings.

Claim.—Connecting the back of a railroad-car seat with the body of the chair, by means of springs and catches *K* and *m*, or their equivalents, whereby the back is made self-elevating when relieved from the catch *m*, which holds it, in the manner substantially as herein set forth.

2d. In combination with the chair seat and its support, the annular ring *P*, for the double purpose of a spring for the seat, and to prevent the seat from unnecessarily moving or rocking on its support when occupied, substantially as herein described.

No. 15,698.—DANFORTH JOHNSON.—*Improvement in Metallic Car-Spring*.—Patented September 9, 1856.

The nature of this invention consists in arranging any number of steel springs in a metallic box *a b*, of a circular, square, or polygonal

form, the base of said springs being secured by a metallic flange *c*, which latter is also secured to the box *a b*. The springs are cut in radiating leaves; the central parts are elevated in a conical form around a pillar *e*. A plate *f* rests on the elevated central parts of the springs, and upon this plate the car has its bearing.

Claim.—The combination and arrangement of a number of springs radiating from a central stud, and secured at the circumference or rim to a box or bed-plate.

Also, the arrangement of the convex bed-plate *a b*, over which the springs bend, in combination with the stud or pillar *e* to resist the lateral motion of the car or carriage; the whole combined, arranged, and operating substantially as set forth.

No. 15,869.—CARLOS FRENCH.—*Improvement in Coiled Springs for Railroad Cars.*—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Composing the coiled leaf of two or more leaves *a b c*, placed the one below the other, said component leaves being welded together at one or both ends thereof, substantially as set forth.

No. 15,699.—JOHN KULINSKI.—*Improvement in Collision Apparatus for Railroad Cars.*—Patented September 9, 1856.

The apparatus represented in the engraving is attached in front and in the rear of a train of cars; and upon a collision taking place, the shock is first communicated through the bumpers *N* to the foremost shield *B*, then falling back upon the next shield *A*, the interposed springs *E* give way, all the balance of the shields retaining their distances because of the rigid obstructions of the bars *F* not being unlocked. But as soon as the pipes *L* of *B* have wedged up the slides *H* of the shield *A*, the bars *F* of shield *C* cease to resist, pass through the pipes *L* of *B*, and the shield *A* falls back upon the next shield *C*. The momentum of the shock turns now to overcome the springs of the shield *C*, until the pipes *L* of shield *A* have wedged up in their turn the slides *H* of shield *C*; when in their turn the bars *F* of the next shield *B* cease to resist, pass through the pipes *L* of *C*, and the shield falls back upon shield *B*. Thus, by combining a number of shields *A B C*, the momentum of the shock, by overcoming the power of the springs *E*, will be so exhausted as to become harmless to the cars of the train.

Claim.—Protecting railroad trains against the injurious effects of collision, by the attachment to their front and rear of a series of shields *A B C*, kept at a distance from each other by elastic and rigid resistances *E* and *F* in such a way that, a collision taking place, said shields are to fall back successively upon each other from the fore to the rearmost; the resistance to yield to the shock alternately and in suc-

cession by the operation of tubes and snap locks *H I*, or their equivalents, being constructed, arranged, and operating substantially as and for the purpose specified.

No. 15,833.—JOAB BUCK, assignor to Himself, H. S. BUCK, J. W. KIMBALL, and D. H. THOMPSON.—*Improvement in Disconnecting Railroad Cars and Applying Brakes.*—Patented September 30, 1856.

The manner of disconnecting the cars of a train is as follows: When the cars are coupled together in a train, the only hook which is in position to be operated upon by the dog *z* is that which is connected with the rear buffer of the last car *a y*. On turning the shaft *R* this hook will be depressed, and by its depression the coupling *q* is withdrawn, and the last car of the train is separated from the others by the force of the spring *O*. The manner in which the brakes are applied to each car after it is detached from the train is as follows: The lever *H*, by the raising of which the brakes are thrown into operation, rests upon the top of the lever *V*, which carries the coupling pin; consequently, as the latter is raised for the purpose of uncoupling the rear car, the lever *H* is raised, and the brakes of this car are thus applied at the same instant.

The inventor says: I do not claim the application of all the brakes by the engineer; nor do I claim the mere combination of a brake and coupling apparatus, as that is well known.

But I claim the within described combination and arrangement of the shaft *R*, dogs *Z*, hooks *Y*, and levers *H* and *V*, operating in the manner substantially as set forth, for the purpose of uncoupling whichever car may be last in the train, simultaneously with the application of its brakes, as set forth.

No. 15,581.—WILLIAM B. SLAUGHTER.—*Head-Rest to be used in Railroad Cars.*—Patented August 19, 1856.

The yoke *A B* is fitted to the shoulders, and held there firmly by the girth *G*. The standard *C*, which is inserted in the socket *S*, supports the head-rest attached to it by means of hinges *h*, to allow the pad *D* to adjust itself to the position of the head, the apparatus serving to support the head of a person while travelling in a railroad-car.

Claim.—The yoke set forth, together with its mode of attachment to the person, and the combination of the head-rest with the yoke, in the manner described, so that it can be attached to the person, and made to serve the purpose of a head-rest, without any other attachment, substantially as set forth.

No. 14,154.—HENRY N. DEGRAU.—*Improvement in Machine for Replacing Railroad Cars.*—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim as new any of the devices, separately considered, making up the combination.

But I *claim* the combination of the self-adjusting packing wedge D, attached to an elastic or yielding rod C, with the bars B and A, operating levers I K, and gripping jaws F F, constructed and arranged for operation together, in such a manner that while upon the depression of the hand lever, which effects the movement of the car or locomotive wheel, the gripping jaws are made to firmly grasp the rail to secure a steady fulcrum for the operation of the lever, the packing wedge follows up the movement of the wheel to retain it in the place to which it has been moved, and upon raising the hand lever the gripping jaws are released, and the whole implement may be run forward on the rail for a further joint action of the self-adjusting wedge and gripe of the jaws as a prop, to follow up the work repeatedly and progressively, as set forth.

No. 14,331.—JOSEPH WOOD.—*Improved Method of Excluding Dust from Railroad Cars*.—Patented February 26, 1856.

The nature of this improvement consists in attaching to each side of the platform B, or bottom of the car, a slatted frame C; the slats *b* being in a vertical position, and capable of being turned either to the right or left, according to the direction in which the car is going.

Claim.—The employment or use of the slatted frames C attached to the sides of the bottom or platform of the cars, substantially as shown, for the purpose specified.

No. 14,981.—WILLIAM D. ARNETT.—*Improvement in Replaceable Axle-Box for Railroad Cars*.—Patented May 27, 1856.

The nature of this invention consists in the manner of constructing the box case 5, as shown, together with the flange 3, on which the lower part of the rubber spring 2 is made to rest, so that in order to remove the box case from the pedestal 1 the truck only needs to be elevated a little, so as to loosen the rubber spring sufficient to take it out, after which the rubber flange is elevated, thus leaving the box case free to be removed out at the front of the pedestal, instead of the tedious process heretofore used. The rubber flange has two lock lugs 4 4, that project down into recesses made in the box case on each of its sides at the top, for keeping the box case in its position.

The inventor says: I am aware that boxes have been made so that the bearings and other parts can be taken out separately, without removing the stay bar; this therefore I do not claim.

But I *claim* the arrangement by which the entire case can be removed with the enclosed oil-box and bearings, said box or case being slid into place, and attached to the piece upon which the spring rests, by means of the lugs 4 and recess 1 1, substantially as above described.

No. 14,014.—JOHN G. CROCKER.—*Improvement in Safety-Guard for Railroad Cars*.—Patented January 1, 1856.

The nature of this invention consists in providing railroad cars with shields upon each side on the outside of the wheels and between the bottom of the car-body and the track, extending sufficiently beyond the lap upon the shield of the next car when at its greatest running speed, thus forming a continuous shield from the engine to the rear end of the train; and also providing the cars with a movable or yielding platform to cover the space between each pair of cars when running, for the purpose of preventing accidents and loss of life on railroads.

In fig. 1, C represents the side shields attached to the car by means of hooks and rods; and in fig. 2, F represents the yielding platform between two cars.

Claim.—I do not claim the first discovery of the idea of preventing accidents by covering the wheels of railroad cars, nor do I claim the invention of any part of the car, nor will I make any claim to any separate part of the shield or movable platform.

But I do *claim* as my invention, and desire to secure by letters patent, the shield and the movable platform to be attached to railroad cars for preventing accidents, as hereinbefore set forth; and though both are necessary to effect this purpose fully, yet I claim them separately as well as in combination, to be made and used as hereinbefore more fully described and set forth.

No. 14,665.—JAMES KLINE, jr., and SIMON V. KLINE.—*Improvement in Safety Platforms between Railroad Cars*.—Patented April 15, 1856.

The slats A and C are framed into the cross-heads D in such a manner as to slide into the spaces B and E when the cars butt together.

Claim.—The peculiar construction of a connecting safety platform between railroad cars, operating substantially as described.

No. 14,508.—CHARLES H. LEWIS.—*Improvement in Spring Platform for Railroad Cars*.—Patented March 25, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Connecting the guard C to the box-platform B by elastic band-springs D D and a check-chain E, or its flexible equivalent, arranged substantially in manner as described, and so as to enable the guard not only to adapt itself to the movements of the carriage, but to maintain its place, or be arrested in its outward movement in the platform, as stated.

No. 15,839.—WILLIAM O. GEORGE.—*Improvement in Bumper Arrangement for Uncoupling Railroad Cars*.—Patented October 7, 1856.

By operating the crank-shaft *c* so as to wind up the chain *i*, it will cause the butt end of the rod R to strike against the head of the corres-

ponding rod of the rear car, and as it is pressed back, striking against the rod R of the front car, pushing it before it, and dragging with it, in its retrograde movement, the chain D, to which the spring-bolt I is secured, withdrawing the latter from the mortise in the connecting-rod H, and detaching the rear car from the front car.

Claim.—The arrangement of sliding rods running longitudinally beneath the platforms of railroad cars, so connected with the coupling pins of the different cars that they may be simultaneously detached from each other by simple contact of the sliding rods, at the same time that the engineer or conductor is enabled to disconnect one or more of the cars, if desired, substantially in the manner set forth.

No. 14,139.—WILLIAM H. MEDCALFE.—*Method of Ventilating Railroad Cars.*—Patented January 22, 1856.

K is the water level, L the opening to the register, P the faucet for emptying the water-box, M the water safety-pipe, O the roof of the car.

Claim.—The passing of a current of air, the force of which is regulated by the motion of the car, and a self-regulating bonnet A through a body of water, which water is retained within a certain space by a certain number of wire screws B, placed as shown in the drawings. The air thus freed from water, dust, cinders, &c., is carried directly into the car, through registers, or by pipes around the stove, and out of the car by a similar apparatus, (emptied of water,) after the air has been used.

No. 14,945.—JAMES BEETLE.—*Improved Car Window.*—Patented May 27, 1856.

By this arrangement the window frame may be caused to turn outward, into an angle with the plane of the side of the window opening, as shown so that when the carriage is running, air shall be caused to flow out of the window.

In order to maintain the window frame in connexion with its opening, or to prevent it from dropping out of place, in case both sets of bolts should be moved backward simultaneously, and out of their bolt-holes *ff*, the window is confined to its frame by means of the hinged arms I K and L M.

Claim.—Combining with the movable window frame A, and its socket-frame or opening B, four bolts E F G H, and four sets of socket holes *ffff* or bars, provided with such holes, the whole being arranged so as to operate together.

I also claim combining with the window frame A, and its socket frame or opening B, made in the side of the carriage, two sets of hinged arms I K and L M, applied to opposite sides of the frame.

No. 16,147.—JAMES H. MORLEY.—*Improvement in Railroad Chairs.*—Patented December 2, 1856.

This chair is made of two parts, which are bolted together by means of screw bolts C, by which the two parts can be forced together, and are caused to grip the bottom flange of the rail on its top side and bottom.

Claim.—Fishing the joint of railroad bars with a divided chair, to ease the grip of the chair to the rail, on the bottom flange of the rails, when so constructed, that the divided bed of the chair shall not come into contact with or impinge upon each other, so as to bear any part of the strain of a weight upon the rails, but leave the upper jaws free to bite with the whole strain of the bolts, whereby they are made to gripe the rail joints more firmly, as the cars move over them, without the necessity of being supported upon ties or bearers, as heretofore, in the manner substantially as described.

No. 15,355.—JOHN B. WITHERLE.—*Improvement in Car Couplings.*—Patented July 15, 1856.

The operation of this car coupling is as follows: The shackle pin I, (fig. 2) is connected to the draw bar of one railway carriage, while the coupling apparatus is applied to that of another carriage. The retractor B (fig. 1) coming in contact with the shackle pin, is moved backward, and the pin L, (fig. 1,) drives backward the graspers C, which by that movement approach one another and lock upon the shackle pin I.

The inventor says: I do not claim the employment of a sliding retractor for opening nipper C C, moving on a stationary fulcrum; but I *claim* applying the sliding retractor and the curved graspers together, so that the fulcrum of the latter shall be movable with the retractor, and the whole be made to operate in other respects.

No. 14,311.—STACY A. GARRISON and DANIEL C. MOREY.—*Improved Coupling for the Joints of Felloes.*—Patented February 26, 1856.

The flange B is let into the rim A under the tire, with the tongue C to be let into a slot in the ends of the rim; the bolt F and clamp E serve to hold the whole together.

The inventors say: We do not claim of itself a mere overlapping brace tightened by a separate bolt, as is used for stiffening joints.

But what we do *claim* is, the stay-bolt, composed of head, stay and bolt, as described, in combination with the embracing cap-piece, tightened as specified, for securing the joints of felloes from lateral movement in addition to security against radial action.

No. 14,985.—HARVEY MINER, HENRY M. STEVENS, and WILLIAM H. SAUNDERS.—*Improved Coupling for Vehicles.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—A ring of vulcanized rubber *h*, or some other yielding and more or less elastic material, applied in combination with a divided eye *f f*¹ and a bolt or pin *d* fixed in the clips, either immovably or in such a manner that it can be taken out and replaced; the whole being applied to a vehicle.

No. 16,230.—CHARLES FLANDERS.—*Improvement in Railroad-Car Couplings.*—Patented December 16, 1856.

By pressing downward the arm *h* of the bent lever *E*, and by moving it laterally underneath a catch *l*, the lifter *D* of the shackle-pin *a* will be raised. When two cars come together and the shackle-pin of the approaching car has entered the chamber *b*, the momentum of said car will press backward the draw-bar *C*, and so as to move the lever *E* in such a manner as to discharge it from catch *l* of catch-plate *F*; as soon as this takes place, the lifter *D*, with the shackle-pin *a*, will be drawn downward by the action of the spring *G*, and in such a manner as to cause the shackle-pin *a* to pass through the coupling-link and thereby connect the two cars together.

The inventor says: I do not claim the mere application of a lever to the shackle-pin for the purpose of elevating the same.

Nor do I claim connecting such lever to such pin by a chain or any other flexible equivalent, but for the purpose of steadying the pin, maintaining it in its proper position with respect to its hole in the draw-bar, and enabling it to be drawn downwards.

I *claim* combining and arranging the lifter *D* and the spring *G*, with the pin *a*, the draw-bar *C*, and the elevating lever *E*, so as to operate therewith substantially as specified.

I do not claim the combination of a horizontally acting hook with a vertically moving box arranged in a draw-bar, made to slide longitudinally and against springs, and merely for the sake of disengaging the hook from its fellow, such having been patented by Joseph Miller, November 14, 1854.

But I *claim* the same, consisting in arranging the draw-bar itself, so as to rock or tilt on a bearing *I* and to slide through a stirrup *K*, applied to a system of levers *L M*, whereby the draw-bar itself may be moved vertically, so as to properly adjust its receiving mouth with respect to that of another draw-bar, as may be necessary in order to couple two cars together.

No. 14,256.—EDWIN F. SHOENBERGER.—*Improved Safety Spring-Coupling.*—Patented February 12, 1856.

The shaft-iron *F* is vertically inserted into the box-iron *A*, attached to the axle of the carriage, by passing the key *G* down the slots *E* until it has reached the circular recesses *H*, when the shaft-iron may be turned down into a horizontal position. The spring *I*, attached to *F*, bears against the points *C*, so that the joint operates quietly and firmly, and assists in retaining the position of the joint.

Claim.—The shape and construction of the coupling so that the carriage can be attached to the axle by merely dropping the ends downwards into the boxes in a vertical position, and their combination with the spring to prevent noise or rattling, substantially as described.

No. 15,351.—PETER TEAL.—*Improvement in Detachable Shaft-Coupling.*—Patented July 15, 1856.

The screws *F F*, being turned, draw the pressure plate or ring *D* upon the cone *f*, and force the sleeve *a* into the cavity of the hub *e*, thus causing the contraction of the split sleeve *a* and binding upon the ends of the shafts *B B* introduced into the body of the hub, and coupling the same.

The inventor says: I do not claim the split sleeve for coupling shafts constructed with single or double conical surfaces, as that is well known; but I *claim* the plate or ring *D* for the purpose of operating the coupling of the shafts, and also for releasing the coupling.

No. 14,265.—S. W. WOOD.—*Improvement in Railroad-Car Couplings.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Constructing the buffers *A A* of railway cars in such manner that the coupling rod *e* may be dropped into its place from the upper surface or sides, said connecting rod consisting of a single piece of wood or metal, being independent of and not in any way fastened to the buffers, while it is retained in position by its own gravity, substantially as herein described.

No. 16,044.—GEORGE BRADLEY.—*Improved Steam-Drag.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The arranging of the driving wheels *R S* of a steam carriage in a truck frame *N*, that can turn independent of the engine frame *A*, so that the engine frame shall follow or be drawn by the truck frame, instead of the latter being controlled by the former as has heretofore been done.

Also, transmitting the power of the engine to the driving-wheels, in the truck frame so arranged through swivelling point or axis *K* of the truck frame, that there shall be no cramping or twisting of the frames or connecting rods, substantially as herein set forth.

No. 14,802.—S. BOOK and WM. H. BOOK.—*Improved Machine for Sawing Felloes.*—Patented May 6, 1856.

The outer end of the saw frame *F* is elevated, and the stuff *H* secured between the uprights *e e*; the frame is then lowered, and motion given to the shaft *E*, and the shaft *B* and saw-sash *F* work with *a*

reciprocating motion, the saw G cutting a strip or felly off of the stuff H. The saw is fed to its work by the weight of the saw-sash, and the size of the strips may be varied by adjusting the side pieces *c c*, so that the saw may be the requisite distance from the shaft.

Claim.—Hanging the saw by means of adjustable arms to a horizontal shaft or axle, thereby allowing the saw to descend by its weight through the circular path forming the curvature of the felly.

No. 14,407.—HENRY NYCUM.—*Improvement in Carriage Hubs.*—Patented March 11, 1856.

The spokes are lettered S D.

The inventor says: I do not claim a hub the central portion of which is provided with mortises or recesses for the reception of the spokes, as I deem such a hub impracticable from its very nature, as it limits the number of spokes in the hub or wheel to less than are actually necessary; nor do I claim a hub composed of concentric rings of alternate iron and rubber, with the spokes abutting against the outer ring, which would so enlarge the hub as to make it useless for my purpose.

But I do *claim* a hub composed of a back and front section A B, and having a thin metallic tube or ring E, independent of each, centrally placed between them, against which the inner ends of the spokes abut when said sections are so made as that in removing the back one A, the pipe or box of the hub shall also be removed or removable with it, to facilitate the properly introducing of a new spoke, substantially as described.

No. 14,310.—ALFRED C. GARRATT.—*Improved Box for Carriage Hubs.*—Patented February 26, 1856.

The nature of this improvement will be understood from the claim and engravings. A represents part of the hub, and R part of the axle.

Claim.—The combination and arrangement of this peculiar lubricator, or its equivalent, with the recess groove or oil chamber *g* of the box, in the manner set forth and shown in the drawings, so as to form an improved combination wheel box for carriage axles.

No. 14,294.—JOSEPH SMITH.—*Improvement in Hubs for Carriages.*—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—I am aware that friction-rollers have been used for relieving the friction on the hubs of vehicles, and this I do not claim.

But I do claim the combination with the axle of vehicles of a segmental-box *c c*, slotted cylinder *d*, and friction-rollers *i i*, all arranged and operated as substantially set forth.

No. 15,770.—ROBERT MOOR.—*Improvement in Securing Spokes in the Hubs of Wheels.*—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim as my invention the device of two screw-nuts working on one bush, for the respective purposes of securing the spokes in the hub and the hub on the axle.

Neither do I claim the dove-tailing of the spoke within the hub; knowing these devices to be old.

But I *claim*, first, the described oblique form of spoke-mortise, enabling all the necessary bevelling and taper of the spoke to be on that side which is in advance when the wheel is rotating forward, leaving the rear side straight for its entire length; thus adding to the strength, and reducing the labor of constructing the spoke, as fully explained.

No. 14,371.—HORACE B. SIMONDS.—*Improved Mode of Attaching Hubs to Axles.*—Patented March 4, 1856.

The nature of this improvement will be understood by reference to the engraving.

Claim.—Securing the hub A upon the arm (*b*) by means of the clutch C, screw D, and cup or box E; the inner end of the clutch being of semi-cylindrical form, and having a flange (*f*) on it, which flange is fitted in a groove C, in the outer end of the arm; the screw D passing through the outer end of the hub into the clutch. And the back part of the arm having a collar (*d*) upon it, which collar is fitted into the back end of the hub; said collar being covered by a cup or box E, having a washer (*g*) within it, substantially as shown and described.

No. 15,818.—JOHN M. RILEY.—*Improved Mode of Attaching Hubs to Axles.*—Patented September 30, 1856.

By this arrangement, as represented in the engraving, the box I is allowed to rotate on the arm B with the smallest possible degree of friction, as the collars F H are interposed between the axle and bearing surfaces of the box, and a certain degree of lateral play or elasticity is allowed by the springs *k*, so that all lateral jars or concussions are avoided. In consequence, also, of the conical portion *f* of the collar G, and the flaring end of the collar H, which fits over it, the arm and axle are prevented from being injured by the lateral concussion of the box.

Claim.—I do not claim separately the collars F H, irrespective of their arrangement, as shown.

Nor do I claim springs interposed between the collar G and the inner end of the box; for they have been previously used, although arranged in a different way from that shown.

But I *claim* the collar F H, placed upon the arm B, in combination with the tube E, nut C, key D, and elastic ring K, when the above parts are constructed and arranged as shown, for the purpose specified.

No. 15,769.—D. O. MACOMBER.—*Improved Omnibus.*—Patented September 23, 1856.

The first two features of this invention will be understood by reference to the claims and engravings. The third feature consists in com-

necting the brake-levers *i* with the shaft *m* of the ratchet-wheel *o*, so arranged that the driver with one foot can apply the stop to the wheel to hold the brake on, or remove it to liberate the brakes; just above the stop-wheel there are projecting arms *p* on said shaft, to enable the driver with his foot to turn the said shaft and apply or liberate the brakes. To the strap *l* is attached another strap *q*, which passes through an eye *r* in the body of the carriage; and the end of said strap is provided with a ring *s*, by means of which the passengers can operate the brake as well as the driver.

Claim.—The arrangement, substantially as specified, of two series of independent seats on each side of the carriage-body; but this I claim only when the backs of the seats are curved, and the front edge set obliquely, as set forth, and for the purpose specified.

Also, connecting the body with the frame of the running-gear, so that it will rock thereon, substantially as described, in combination with the screw-bolts *f* and adjusting nuts at the ends, or equivalent therefor, for the purpose of setting the body at any desired inclination with the frame of the running-gear.

And finally, connecting the brake-levers with the shaft of the stop and foot-wheel, substantially as specified, in combination with the strap which passes into the inside of the carriage-body, to be operated by the passengers if required, substantially as described.

No. 14,470.—JAMES RODGERS.—*Improvement in Omnibus Registers.*—Patented March 18, 1856.

The nature of this invention will be fully understood from the claim and the engravings.

The inventor says: I do not claim the general plan of an omnibus register acted on by a strap to the conductor or driver, or fitted with any other means for moving the register. Neither do I claim the indicating dials or hands, or any arrangement of the same; neither do I limit my invention to use with the peculiar arrangement of dials or other indicating parts.

But I claim the mode of blocking the ratchet-wheel *K* by making the operating pawl *D* pass at the end of its motion beneath or against a fixed back-stop *E* by which said pawl or its equivalent is held against the ratchet-teeth so as to lock the wheel in place, substantially as specified.

No. 14,652.—LEVI CROMWELL.—*Improvement in Omnibus Registers.*—Patented April 15, 1856.

A is the principal wheel upon which the draw-catch *4*, connected by a wire *w* with the stop, operates; the stop *10* prevents the passing of the tooth of *A*, except when the stem *L* and the dog *4* are thrown entirely up to its full stretch; *S* is a spring for throwing the dog into the recess of the tooth on *A*. This arrangement prevents the bell from being struck twice, and prevents also the register from being moved by the jolt of the coach when passing over gutters.

Claim.—The use of the bar *10* for the double purpose of a stop by which the operating pawl shall at the end of its thrust be confined within the circle of the ratchet-teeth of the wheel *A*, and thus lock it,

and of a medium by which to apply a strong force through the sliding lever or drop-leaf *6*, or its equivalent, to the spring of the pawl, substantially as herein set forth.

No. 15,050.—GEORGE W. N. YOST.—*Improved Steam Land-Propeller.*—Patented June 3, 1856.

The nature of this invention consists in arranging the gearing (which communicates the rotary motion of the rotary steam engine *e* to the propelling shaft *a'*) directly on the two main shafts *a* and *a'* by means of the wheels *f f*¹ *f*² *f*³ *f*⁴ *f*⁵; the spur-wheels *f* and *f*⁵ being of course keyed to their shafts *a* and *a'*, while *f*¹ and *f*², *f*³ and *f*⁴ work loosely on the same.

The inventor says: I wish it to be distinctly understood that I do not broadly claim the combination of the rotary engine with the driving wheels by means of cogged gearing; neither do I claim any arrangement of cogged gearing separately.

But I claim the combination and arrangement of a rotary engine with the driving wheels of a land-propeller, by means of the described combination and arrangement of cogged gearing, in the manner and for the purposes substantially as herein set forth.

No. 15,036.—DAVID L. DAVIS.—*Improvement in Elastic Bearings for Railroad Chairs.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Covering the India rubber *D*, or other elastic substance, with the metallic cap *E*, constructed and applied to the chair *C*, so as to be independent of the control of the spikes which secure the chair to the sleeper, that the plate may be left free to vibrate in a vertical direction independent of the chair.

No. 15,480.—JOHN W. FOWBLE.—*Improvement in Mechanism for Compressed Air Railroad-Signals.*—Patented August 5, 1856.

This apparatus is operated upon by compressed air escaping from bellows, which are placed near a railway, and are operated upon by a train of cars as it passes by. The pipes *3* leading from the bellows are connected with air chest *24*; and when the air is forced into said chest, through one of the valves *25*, it opens the lever valve *26*, the end of which operates the lever *33*, which latter draws out catch *34*, thus liberating pendulum *15*, which latter swings between the segments *16*, by means of the weight attached to its end. The top portion of the pendulum strikes against a system of catches, which operate the clapper-hammer *17* against a bell *7*. The signal *8* is caused to rise, when liberated from pin *42*, and rod *41* attached to the axis of the signal by means of the counter balance *31*.

Claim.—The arrangement of the valves *25*, and lever-valve *26*, with the

air-chest 24. when acted upon by compressed air, for the purpose of setting in motion the alarming apparatus, for the purposes before mentioned.

Also, the arrangement of levers 18, rods 22, levers 27, 20, and 28, rods 40, and lever 39, catch-plates 36, 37, and 38, and springs 29 and 30, and these arranged with the shafts 9 9, and levers 10 and 11 for the purpose of resetting the alarming and signal apparatus, as before described, when operated on by the lever-valve 26, for the purposes mentioned in the foregoing specification.

No. 16,005.—EDWIN A. DAVIS.—*Improvement in Railroad-Station Indicators*.—Patented November 4, 1856.

Before the train starts, the apron F is wound up on one of the drums C; and as the train stops at each station, the lever R is pressed inward, and the bar Q will be moved in consequence of the bar pressing against one side of the recess m, in the plate l, and one of each of the pawls k j will be thrown free from their respective shafts, and the apron F will be moved by the coil spring I, the cylinder E rotating one revolution, and bringing the name of the station directly opposite the glass B, in the box A, when the cylinders have made one revolution, the crank p strikes against the spring n, and moves the bar Q, so that the pawls k and j again catch into their respective ratchets, and stop the motion of the apron.

Claim.—I do not claim the endless apron F, operated by a spring; for that has been previously used for the same purpose.

But I *claim* the bar Q connected with the pawls j j k k, and operated by the lever R and crank p, arranged specifically as shown and described, for the purpose set forth.

No. 14,169.—RILEY ROOT and SAMUEL G. HOLYOKE.—*Improvement in Machine for Clearing Snow from Railroad Tracks*.—Patented January 29, 1856.

The blower I upon a shaft C is placed upon and in front of an open car A, and is driven by an engine placed on the car and connected to the wrist-pin H on fly-wheel G, while the car is impelled forward by a locomotive. The blower is provided with four radial arms, the outer edges of which are mounted with knives L for clearing away the snow. The blower, which works at right angles with the track, can be driven either way so as to take advantage of the wind.

The inventors say: We do not claim a revolving track clearer, driven by the running gear of the locomotive, as we are aware that various forms of such have been proposed. But we *claim* the arrangement of a rotary fan blower, provided with knives, and made sufficiently large to sweep the entire width of the track.

The said rotary blower is to be driven by a power independent of the locomotive wheels, and is capable of being revolved in either direction at right angles to the direction of the track.

No. 16,300.—ALLEN B. WILSON.—*Improvement in Portable Head-Rests*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

Claim.—1st. A head-rest composed of a pad, or other piece, to rest upon the back and shoulders, or either, supporting a pad of proper form to receive the back of the head, as described, or otherwise constructed in a substantially similar manner, to support the head without any attachment to the seat or any fixed object.

2d. Making the said head-rest with its pads flexible, and its supports consisting of a number of independent or unconnected ribs C C, substantially as specified, so as to give the greatest ease to the wearer, and enable it to be rolled or folded up when not in use.

3d. The sling combined with the head-rest, as specified, to receive the arm, for the two purposes of keeping the rest in place and protecting the pockets.

No. 15,991.—WILLIAM WENTZ.—*Improvement in Shaft-Tugs*.—Patented October 28, 1856.

The nature of this invention consists in making a metal ring A for the reception of the shaft of a carriage, with a projection B on one side, for the bar C of a buckle D, provided with a score for the loop of the buckle-tongue E, with a loop F on one side of the ring A for the trace to pass through, and with a second loop G on said ring for the belly-band strap.

Claim.—The new manufacture of shaft-tug described, to wit: A metal shaft-tug provided with a buckle for the back-strap and a loop for the trace, either with or without a loop for the belly-band.

No. 15,737.—GEORGE KENNY.—*Improved Mode of Attaching Shafts to Sleighs*.—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving. The shaft C may be readily shifted in either of the two positions illustrated, and the sleigh made to answer either for country roads, where two tracks are generally made, or for roads which are smooth throughout.

Claim.—Attaching the shafts C C to the runners of the sleigh by means of the eyes F F and rods G H, said eyes and rods being attached to the cross-pieces B D, provided with springs I I, the whole being arranged as shown, for the purpose set forth.

No. 15,558.—OSCAR L. COWLES and ALLEN L. DENRING.—*Improvement in Clamping and Upsetting Tire*.—Patented August 19, 1856.

The heated tire being placed in a horizontal position, the clamping-bars A, fully open, are dropped over it, and brought together by rotating the slotted lever M, which is attached at its centre to the top of

the saddle H, nearly a quarter of a revolution, causing the studs E to traverse the slots L from the periphery towards the centre. By this movement the levers D, turning on the fulcrum F, act against the bars F like two pairs of tongs, and draw the clamping-bars A together, which thus upset the tire.

The inventors say: We are aware that machines have been in use for clamping and upsetting tire by the use of levers and screws for that purpose, requiring several distinct motions by hand to effect it; and we therefore do not claim clamping tire or iron for the express purpose of upsetting it when so clamped.

But we *claim* the combination of the lever (figure 1) with the auxiliary clamping-levers D D, (figure 2,) the carrying studs E E, the connecting bars F F, the saddle-piece H, and the slotted clamping-bars A A, for the purpose of clamping and then upsetting tire by a single continuous motion of the slotted lever, (figure 1,) as set forth.

No. 15,214.—WILLIAM A. ASHE.—*Improved Mode of Securing Tire on Wheels*.—Patented July 1, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I wish it to be distinctly understood that I do not claim securing tire on a car-wheel after the method illustrated in fig. 2, as this is quite old,

But I *claim* making the tire B with a narrow tongue A at the centre of its width on its inner circumference, and the outer periphery of the circle of felloes with a groove C, to receive said tongue, for the purpose of confining the tire on the wheel, and in order that the metal on the tire on either side of said tongue may be made quite thin and of unvarying thickness from the tongue to the side edges of the tire.

No. 15,272.—HENRY BARRINGER.—*Improved Machine for Upsetting Tire*.—Patented July 8, 1856.

By raising the lever M, the bar C, together with plate g, is raised to its proper height; the long end of the lever n being raised, the short end with its clamping surface is lowered and carried from the bearing y on plate g, by which operation the clamping surface of the lever r is also moved from the lower bearing y by means of slotted lever t; the tire is then inserted between the clamping surfaces, the long arm of the lever n is depressed, the tire clamped, and the sliding clamp i is also forced against the tire to prevent it from kinking. The lever m is now forced down, and carries the bar C and plate g downward, pressing the tire endwise or upsetting it as much as required.

The inventor says: I do not claim clamping iron for the purpose of forcing the clamps together and thereby upsetting said iron.

But I *claim* the combination of the slotted bar t, the clamping-lever n, and sliding-plate g, with the clamping-lever r, for the purpose of clamping and unclamping the tire with one motion of the lever n.

No. 15,908.—NOAH WARLICK.—*Improved Arrangement of the Thills of Vehicles*.—Patented October 14, 1856.

The frame, composed of the bars a b and braces c, swings to the front of the vehicle by means of the eyes e. When one horse is to be driven, the thills t are inserted into the sockets d; and when a pair is to be used, a pole is inserted in the socket f and keyed therein.

Claim.—The swinging frame, composed of bars a and b, and braces c, adapted to the reception of either thills or pole, substantially as and for the purposes specified.

No. 14, 653.—ABRAM J. GIBSON.—*Improvement in Attaching Thills and Poles to Vehicles*.—Patented April 15, 1856.

In the engraving, a represents the axle, b b the stationary parts of the movable hinge made fast to the axle a; the movable part d d d of the hinge is fastened to the thills or poles of the bolts g g g.

The inventor says: I do not confine myself to the material used for the hinge-joint; neither would I confine myself to threaded bolts passing through the hinges, as a plain bolt would answer, or the precise point of attaching to the vehicle.

But I *claim* the manner of attaching thills to vehicles by means of broad iron hinges independent of each other, without a cross-bar, for the purpose and in the manner and form substantially as set forth.

No. 14,484.—JAMES H. WILSON.—*Safety Apparatus to be applied to Harnesses and Thills of Vehicles*.—Patented March 18, 1856.

The bottom piece h is fastened to the side piece g by means of catches i i, the projecting ears j j, and the spring l; K is a bar connecting the upper ends of the catches. By pulling the reins l, which are fastened to the bar K, the bottom piece will swing open and cause the vehicle to be detached instantly from the horse.

Claim.—Attaching the horse directly to the shafts C of one-horse vehicles, by means of the boxes A A, which are secured to the harness as shown, a box at each side of the horse; the boxes being constructed as shown, with two hinged or jointed sides, so that they may be opened when necessary by the driver, for the purpose specified.

No. 15,692.—GEORGE H. GRAY.—*Improved Mode of Attaching Horses to Vehicles*.—Patented September 9, 1856.

The plates C form the connexion between the harness and the shafts of the vehicle by means of the traces c and d, and the strain is entirely upon the loops a. The pins h of the levers D merely sustain the shafts and keep the plates C in the loops, and are not subjected to any strain. By drawing the cords j they actuate the levers G and pawls F, which cause the levers D to be thrown outward, and thus withdraw the pins h from the plates C B on loops a, allowing the plates C to pass

out of the loops; the vehicle is thus detached from the team in case of accident.

Claim.—The plates C, attached to the harness as shown, and the plates B on the shafts A, with loops or clasps *a*, attached to the levers D, with the pins *h* on them, and the dogs F, levers G, and rods H, as described.

No. 15,288.—FRANCIS J. FLOWERS.—*Improved Mode of Attaching Shafts to Vehicles.*—Patented July 8, 1856.

By screwing up the nut *b*, the cap D will be brought snugly down upon the rod B; and by screwing up the nuts E E, the flanges *d* on nut E will be fitted over the ledges *c*, and the rod B will be firmly secured in the eye and prevented from working or playing therein.

Claim.—The rod B, on the goose-neck or bar A, fitted in the eye C¹, on the bar C, the cap D attached to the bar C, and the nuts E E¹ on the rod B, the nuts E having flanges *d* attached to them, and fitting over circular or annular ledges *c*, on the ends of the cap and eye.

No. 15,179.—FRANCIS M. ENGLISH.—*Improved Mode of Detaching Horses from Vehicles.*—Patented June 24, 1856.

The nature of this invention consists in the combination of a lever L, hinged to and resting against the pin P in the end of the whiffle-tree W: so that when drawing the load, the long arm of the lever will be drawn against the pin by the trace; and when the long arm is lifted by connexion with the cord leading to the driver, the trace will be disconnected.

Claim.—The combination of pins P P¹ with the levers L L¹, constructed, arranged, and operating as shown, and for the purposes set forth.

No. 15,191.—HENRY PHELPS.—*Improvement in Running-Gear of Vehicles.*—Patented June 24, 1856.

This invention refers to a simple method of giving light vehicles ease of motion in a longitudinal direction. It consists in combining with a perch composed of elastic rods united midway between the axles by a joint *f*, two elastic rods running from this joint, the one *i* to the front end, and the other *m* to the rear cross-bar supporting the body.

The inventor says: I disclaim spring-coupling for vehicles, broadly considered; as various devices have been employed for that purpose. But I *claim* the combination of the elastic rods *i* and *m* with the rods *c c d d* and *e* jointed at *f*.

No. 15,103.—GEORGE B. KAIGHN.—*Improvement in the Mode of Attaching Horses to Shafts of Vehicles.*—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—Supporting and controlling the ends of vehicle shafts A A¹ by means of the loops or tugs *b b¹* secured to the harness B B¹, making the breeching (consisting of the band E and the adjustable holders *e e¹* or their equivalents) a permanent and adjustable part of the said shafts; and attaching the back ends of the traces D D¹ together at the back end of the said shafts, so as to bear against and move on the pulleys *a a* in accordance with the forward motions of the horse; the whole being arranged and operating together substantially as described and set forth, and for the purpose of dispensing with the usual saddle, belly-bands, crupper; breech, supporting straps, and whiffle-tree, and thus facilitating in connecting and disconnecting horses and vehicles.

No. 14,190.—ELISHA S. FRENCH.—*Improvement in Three-Wheeled Vehicles.*—Patented February 5, 1856.

The nature of this improvement is sufficiently indicated in the claim and engravings.

Claim.—The combination and arrangement at the rear of the vehicle, substantially as shown and described, of the caster-hung swivelling-wheel F in such connexion with the perch or body, that while in the forward run of the vehicle the said wheel runs in a parallel course central to the other two (advance) wheels, and at a considerable distance behind them, it, in backing the vehicle, is caused to occupy a like parallel and central position with its rim or tire in the direction of the travel, but in closer proximity to the fore wheels, and on the reverse side of the swivel towards the front end of the vehicle, and out of the way, as it were; whereby additional facilities are afforded for backing the vehicle in a crowded thoroughfare, and the other advantages specified are obtained.

No. 15,987.—WILLIAM B. TWIFORD.—*Improved Dumping-Wagon.*—Patented October 28, 1856.

By turning the end *f* of lever M towards the front axle of the wagon, the latch bar O, which grips the bent rear axle G at the projections *h*, is disconnected from said rear axle, and then, by taking hold of the lever P, the wagon can be dumped as represented in the dotted position, the body I moving forward as the rollers L move over the stationary reach bars F, while the axle G, connected to the body I by means of links *b*, is turned downwards.

Claim.—The so hinging of the reach bars F F and the bed I to a bent axle, that when said axle is allowed to turn in one direction in the hubs, the wagon-body shall dump, and when turned in the opposite direction be raised up horizontally, without one part being disconnected to slide or run on the other part, as set forth.

No. 14,304.—BENJAMIN B. BUNDY.—*Improvement in Wagons.*—Patented February 26, 1856.

The axles A are made in halves, which meet in the bearings C. The half-elliptic springs *d d* are fastened to the axles at *c c* by clips with

nk-joints. The rear spring is attached to the body at *f*, and the front spring to the under half of the circle at *g*, thus allowing the forward wheels to turn.

Claim.—The mode of combining the springs and axles of wagons, substantially as herein set forth.

No. 16,060.—HENRY KRUSE.—*Improvement in Wagons.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The application to wagons of wheels made buoyant by the use of disks, that will cause the wagon to be supported in water from such buoyancy; with the application of propelling blades on said wheels to cause the wheels to be available in propelling the wagon in water; and the same wheels, by removing the propelling blades, can change the wheels so that they are available in their uses in the transporting of substances on land similar to common wheels of wagons.

No. 14,174.—THOMAS WINANS.—*Improvement in Buggy-Wagons.*—Patented January 29, 1856.

Claim.—The combination of bent-bars and springs, arranged substantially as herein described, to connect the fore and hind axles, support the seat with both the requisite firmness and elasticity, and permit the front wheels to pass under the seat in turning short round.

No. 14,831.—EPHRAIM D. ROZENCRANTZ.—*Improvement in Extension Wagons.*—Patented May 6, 1856.

This invention consists in so connecting the axles B and A of the front and hind wheels, that by the use of slide-bars *a b c*, and clasps connecting said axles, they may be extended or contracted in making changes from a single to a double seat vehicle; said bars serving the purpose of a reach or coupling, admitting of the employment of the ordinary stay-rods or braces required in giving strength to the rear axle, and admitting of the turning of the front wheels under the body without interference.

Claim.—The employment of the slide-bars *b c a*, constructed as described, when used with the bars K K, in the manner and for the purposes substantially as set forth.

No. 15,885.—M. G. HUBBARD.—*Improved Arrangement of Springs for Side-Spar Wagons.*—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The mode described of combining the two semi-elliptic springs with the side-spars of light wagons, by bringing one above and the other below the end of said spar.

No. 14,794.—J. T. BAUGHMAN.—*Improved Wagon Tongue.*—Patented May 6, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—1st. Constructing the tongue in two separate parts A and B. 2d. I claim the arrangement and combination of the hounds J J and S S, for the purpose of connecting the tongues A and B together.

No. 15,109.—LUCIEN H. ALLEN, assignor to Himself and EDMUND M. IVENS.—*Improvement in Casting Car Wheels.*—Patented June 10, 1856.

A core which forms the eye of the wheel, made with a conical hole to fit the nozzle E, is placed on the centre of the mould and supported in the sand in the usual way; the molten iron is then poured into the flask, filling the space from the core to the periphery all round, when a volume of steam is blown through nozzle E by opening the cock F, which displaces the core and causes the red hot wheel to contract very rapidly, whilst the chill B contracts the periphery.

Claim.—Passing a volume of steam through the eye of a cast metal wheel whilst the periphery is in the chill, whereby the contraction of the wheel as it cools is equalized.

No. 15,759.—S. B. FULLER.—*Machine for Painting Carriage Wheels.*—Patented September 23, 1856.

The tub B is supplied with the requisite quantity of paint, and the wheel N to be painted is placed on the upper end of the spindle C; the spring E keeping the wheel N above the surface of the paint. The spindle C is then depressed by shoving down the outer end of the lever L, and the wheel N is immersed in the paint and then allowed to ascend to its original position; the wheel J is then rotated and the superfluous paint is thrown from the wheel N by means of centrifugal force.

Claim.—The vibrating and rotating shaft C, passing into the tub B, and arranged and operated as shown, or in an equivalent way, for the purpose specified.

No. 14,434.—CHARLES SCHMIDT.—*Improved Method of Boxing Carriage Wheels.*—Patented March 11, 1856.

In working the machine, the wheel W is fastened to the wheel plate *p*; the rest R is then fastened to the bench E, to the right of the centre of the hub, according to the size of the box. The bit T is regulated by the crank *c*, while the wheel is turned by the large crank C.

Claim.—The method of boxing carriage wheels, as hereinbefore substantially described.

No. 15,049.—GEORGE W. N. YOST.—*Improved Driving Wheels for Steam Drags and Propellers*.—Patented June 3, 1856.

The inventor says: I do not claim the combined arrangement and construction of devices, as set forth in the case of Heuermann & Reeves, for alleged improvements in grain and grass harvesters, as this could not answer my purpose. Neither do I claim the devices described in the case of J. K. Babcock, for a similar purpose.

But I *claim*, 1st. The combination of the double angular flanges *b b* with the surface of a driving wheel.

2d. Also, in combination with the flanges *b b*, the clearers or cleaners *d* and *g*.

No. 15,554.—THOMAS BROWNFIELD.—*Improvement in Wheels for Carriages*.—Patented August 19, 1856.

The plate B of the hub is provided with grooves for the insertion of the spokes; to this is attached a rim consisting of four, six, or eight sections H, each provided with two grooves, according to the number of spokes which the wheel contains; and both rims with the spokes fastened between them are secured together by a third plate (shown at figure 3), by means of screw-bolts passing through the holes *g*.

Claim.—The rim of the hub, which is made in sections, which, being constructed in this manner, will press on all the spokes, and hold them all firm in the hub; and the iron plate which covers these sections, which will bend and let the sections fit the spokes, with the pressure of the screws, and hold the sections in their places, and the nuts on the spokes which hold the felloes and tire to their proper places.

No. 15,339.—A. C. KETCHUM.—*Improvement in Railroad-Car Wheels*.—Patented July 15, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Connecting the hub C and rim A of the wheel by fitting a flange D, attached to the hub within a flange B attached to the rim, providing the said flange D with a shoulder *b* and groove *c*, and applying a divided clamping ring E to the said groove *c*, substantially as herein set forth.

No. 15,935.—JOHN M. SIGOURNEY.—*Improvement in Cast-Iron Railroad-Car Wheels*.—Patented October 21, 1856.

This invention consists in the mode of constructing cast-iron car-wheels in the manner represented in the engraving, where figure 1 represents a side view and figure 2 a cross-section, for the purpose of producing the uniform cooling of the whole wheel in every direction and every part when cast.

Claim.—The formation of the hub of an iron wheel cast in one piece, in the manner described, viz., recessing the same by means of annular flanges bordering it inside, outside, or both in and outside, when combined with the single plate and braces, as set forth.

No. 15,092.—WILLIAM R. THOMPSON.—*Improvement in Constructing Railway Car-Wheels*.—Patented June 10, 1856.

The butts B are welded together as shown in figure 1.

The inventor says: I do not claim forming the hubs of car-wheels in sections, and welding said sections together, irrespective of the peculiar form of the sides of said sections or butts, as herein described.

But I *claim* having the butts B made the entire length of the hub, and the sides of the butts inclined, curved, or made in zig-zag form, so that they form, when placed together, dove-tail joints, for the purpose of preventing any lateral movement of the butts, and to ensure the perfect welding of the same at all points of contact, whereby a solid and perfect hub is obtained.

No. 15,670.—N. N. SELBY.—*Improved Whiffle-tree for Detaching Horses from Carriages*.—Patented September 2, 1856.

The whiffle-tree *a* is constructed in the usual manner with tug-pins *j* at each end. The tug-loops *c* are placed and detached by depressing the spring *b* to the dotted position, or to the shoulder of bolt *f*, the bolt passing through an aperture *m* in the spring *b*.

Claim.—The application of the spring *b* the whole length of the whiffle-tree, and turned over at each end, forming loops for the harness tugs, in combination with the bolt *f*, pins *j j*, and fulcrum *d*, operated by the levers *g* and *h*, substantially as described.

No. 15,460.—GEORGE KENNY, assignor to Himself and GEORGE N. DAVIS.—*Improvement in Whiffle-trees*.—Patented July 29, 1856.

The bolt *c* is held stationary in the draw-bar *b*; attached to the under part of the whiffle-tree *a* is a plate *d* having a circular flange *e*, which plays upon the flanges *f* of plate *g*. In the box thus formed by flanges *e* and *f*, a piece *i* of vulcanized rubber is inserted around the bolt *c*. The head of the bolt *c* is protected in a similar manner by means of box-cap *k* attached to the brace *j*, which plays upon the circular flange *l* of plate *m*; in this box a piece of India rubber is inserted, fitting around the king-bolt *c*.

Claim.—The combination of rubber washers with the whiffle-trees, and about the king-bolt and the boxes arranged with the same, substantially as described, so as to protect the rubber and boxes from the entrance of water, dirt, &c., thus preventing the wear of the parts.

No. 15,461.—GEORGE KENNY, assignor to Himself and GEORGE N. DAVIS.—*Improvement in Whistle-trees*.—Patented July 29, 1856.

a represents the whistle-tree, *b* the draw-bar, the two being connected by braces *c* and *d*; *e* is the bolt upon which the whistle-tree turns, a tubular piece of India rubber is placed around it and enclosed by a cylindrical strap *h*. The India rubber is thus protected on all sides, excluding all dirt from it, and the wear upon the bolt and the rattling noise which is generally produced are prevented.

Claim.—The combination of rubber about the bolt on which the whistle-tree turns within the cylindrical strap and between the braces *c c*, *d d*, so that it may be compressed, and thereby operate as a spring, as specified, as well as serve to keep out the dirt and prevent the wear and noise.

XI.—HYDRAULICS AND PNEUMATICS.

No. 14,526.—WILLIAM THOMAS, assignor to ABNER VAN HORN.—*Improved Cock for Steam, Water, etc.*—Patented March 25, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim any part of the invention patented to J. Griffiths, February 14, 1844, it being no part of my improvement.

Neither do I claim the fixed screw-thimble *c*, or the fixed screw-nut *e*, of itself, which are in common use for the support of the faucet-stem, and are made by others as well as ourselves. I therefore wish to be understood as not claiming the combination set forth and used by J. Griffiths.

But I *claim* the position in which the method is employed or used to raise and lower the valve 3, viz: in having the screw-thread cut upon the opposite end from the hand-wheel and inner end of the valve-stem 5 at 6, and a corresponding screw-thread cut within the fixed screw-nut *e*, which is of sufficient depth to allow the screw upon the stem to work sufficiently far to raise and lower the valve, without disconnecting itself, whereby the whole arrangement can be better and more easily and substantially constructed, kept in order, and operated, as set forth and fully described.

No. 14,628.—CHARLES HARRISON.—*Basin Cocks*.—Patented April 8, 1856.

When the plug *e* is screwed down by turning the bent pipe *f*, the valve 3 is compressed on the seat 4, shutting out the supply of water. The screw-stop 6 enters a groove above a collar 7 in such a manner that the screw-plug *e* can only receive a quarter turn, in order to prevent its being turned the wrong way.

The inventor says: I do not claim either a screw-valve or a basin-cock operated by the pipe that passes the water, as these separate articles are well known; but I am not aware that the screw-valve and bent pipe have ever before been combined with the stop 6, that insures the said pipe being turned off from the basin in that direction which is necessary to screw the valve down on its seat, instead of further opening it, as described.

But I *claim* the screw-plug *e* and its valve 3 actuated by the bent pipe *f*, when combined with the stop 6, in the manner and for the purposes substantially as specified.

No. 15,771.—THOMAS McDONOUGH.—*Improvements in the Air-Engine*.—Patented September 23, 1856.

A detailed description of this invention would take up too much space to be given here; the main features of it will be understood by reference to the claims and engraving.

The inventor says: I am aware that the alternate expansion and contraction of atmospheric air and other permanent gases have been employed as a motive agent in engines of various constructions.

And I am also aware that the gases so employed have been made to pass alternately in opposite directions through a vessel presenting large amount of metallic surface—so that in passing in one direction, such metallic surfaces should take up caloric from the heated gas when passing in one direction, and transfer it back to the said gas when passing in the opposite direction.

And I am also aware that such metallic surfaces have been composed of a series of metallic disks or sheets of wire-gauze, but so arranged that the air or gas had to pass through the meshes of the wire-gauze, which had the effect of impeding the passage. I do not, therefore, wish to be understood as making claim to any of these things.

I *claim* combining the hot and cold cylinder, or cylinders 1 and 3, by an interposed cylinder 2, substantially as described, to prevent the one from being affected by the temperature of the other, as set forth.

Also the working piston or pistons 9 working in the cold cylinder 3, in combination with the dummy piston or pistons 7 and 8 which extends from the cold to the hot cylinder, substantially as and for the purpose specified. Also the vertical position of the pairs of cylinders, substantially as described, that the heated part of the engine may be above the cold parts, for the purpose set forth, in combination with the means herein described for keeping the lower part of the engine cold, substantially as described.

Also, the arrangement of the metallic surfaces through which the air or other gases pass, by making such metallic surface of sheets of wire-gauze *n* rolled up and placed in a surrounding vessel 4, so that the air or other gas shall pass in films between the several coils, substantially as and for the purpose specified, in contradistinction to passing through the meshes of wire-gauze, as set forth.

No. 14,922.—AUGUSTIN MILLER.—*Improved Hydraulic Engine.*—Patented May 20, 1856.

The valve V being in a position as shown in figure 2, the rod R which is attached to the cross-head H moves the tumbler past the centre of tension of the spring S; the tumbler T shifts the valve to the opposite side. Now, in regulating the force, it becomes necessary to close the induction valve before the piston has arrived at the end of the chamber, and the piston still advancing would form a vacuum behind it, and to avoid this each chamber is furnished with a relief pipe *c c*, leading up a little above the top of the water in the flume B.

The inventor says: I do not claim the invention of hydraulic engines, as they have been used before.

But I *claim* the combination of the cut-off motion with the relief pipes *c c*, for the purpose of cutting off the stroke at any desired stage, without being compelled to waste the power by working the piston against atmospheric pressure.

No. 14,690.—JOHN ERICSSON.—*Improvement in Air-Engines.*—Patented April 15, 1856.

The present invention relates to an improvement of the air-engine for which the inventor obtained letters patent, bearing date the 31st day of July, 1855. The leading feature of this improvement consists in operating with one piston *b*, within a cylinder *a*, in such a manner that one side of it shall compress the cold air which on the previous stroke entered one end of the cylinder, and cause it to pass through the regenerator and heater *l* or either, at the same time that the other side of said piston is receiving the motive force of the heated air; which simultaneous operation will result in avoiding friction on the packing of the piston, and also that leakage through the packing of the piston will not occasion any loss of air out of the engine, as the compression on one side of the piston, and the motive action of the heated air on the other side take place simultaneously at the time that all communication with the atmosphere is closed.

The inventor says: What I *claim* as my invention in the engine producing motive power with heated air is, by means of a piston *b* working within a cylinder *a*, under a mode of operation substantially such as described, performing the successive combined operations of simultaneously discharging the heated air, and taking in the charge of cold air, compressing and transferring it to a regenerator and heater or either, and thence to the opposite end of the cylinder, to act upon and impel the piston.

No. 14,089.—JOHN P. COWING, PHILO COWING, and GEORGE COWING.—*Improved Method of Operating Fire Engines.*—Patented January 15, 1856.

The operation of this machine will be understood from the claim and engravings.

Claim.—The arrangement of the toggles G G, shaft D, arm F, and rods *r* operating the pistons H H, substantially as shown and described.

No. 14,429.—MOSES WOODBURY.—*Improved Faucet.*—Patented March 11, 1856.

The nature of this invention consists in so constructing a stop-cock that it will open and let the water out whenever the pressure exceeds a certain limit.

The spring *s* regulates the required pressure. The piston rod terminates in an eccentric, with a throw sufficient to raise the piston, and turns between two projections T T on the cap C, which projections serve to keep the eccentric in its proper position. By carrying the lever L to the position represented by broken lines, it will remain in this position until turned off.

Claim.—The combination of the handle L, constructed as specified, with the stem and spring, when the latter is placed behind the valve V, substantially as set forth.

No. 15,459.—JOSEPH GOODRIDGE, assignor to the BOSTON FAUCET COMPANY.—*Improved Faucet.*—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Combining with the valve B and its stem C the dove-tailed recess *d*, the expander *h*, shoulder *g*, and screw *e*, or the equivalents thereof, whereby the foot of the spring packing D may be fastened into the valve, substantially in the manner and for the purpose as specified.

No. 15,719.—JOSEPH GOODRIDGE, assignor to the BOSTON FAUCET COMPANY.—*Improved Faucet.*—Patented September 9, 1856.

This invention consists in applying a metal ring *c*¹ to be inserted between the India-rubber spring C and the cap *d* of the cock, for the purpose of preventing said India-rubber from becoming fixed to said cap by oxydation of the metal, or otherwise; and also in giving the India-rubber spring C a conical shape, for the purpose of preventing a contact of said spring with the sides of the neck.

Claim.—Arranging between the caoutchouc spring and the screw cap of the neck of the faucet a metallic annulus or guard ring, in order to prevent the adhesion of the cap to the India-rubber spring; not meaning to claim a metallic washer, as ordinarily used, but the specific application of a metallic ring to prevent a difficulty incident to the peculiar relation of parts, as described.

Also, the arrangement of the annular groove in the stem of the valve, and with reference to the sides of the spring or valve chamber, in manner and for the purpose, or so as to produce the new and useful

result, as specified, the said groove being intended to receive the foot of the spring made tapering, or frusto-conical, in manner and for the purpose of preventing it from being caused to adhere to the sides of the said chamber by oxydation of the metal, under circumstances as expressed.

No. 16,043.—FREDERICK H. BARTHOLOMEW.—*Improved Anti-Frost Faucet*.—Patented November 11, 1856.

The nature of this invention consists in providing the barrel of a cock with two grooves A C, extending about one-fourth around the internal circumference of the barrel, so as to form passages between the discharge end of the cock and the water-way B of the plug when the plug is in a shut position, the groove A acting to admit air into the plug, and the water being discharged from the water-way B through the passage C. By this arrangement the cock is prevented from freezing, as there is no water retained in the passage B.

Claim.—The application of a waste way to draw-cocks, arranged and operating substantially as and for the purpose described.

No. 16,232.—GEORGE H. FOX and HENRY J. SELLER.—*Improved Filtering Faucet*.—Patented December 16, 1856.

The water enters the pipe H, and ascends through the groove *b* of plug B, and passes through filter E, leaving its sediment on the lower side of the filter, fills chamber D, flows over the top of pipe G and down through it and the opening in the centre of plug B and out at nozzle J. When the plug B is turned, by means of the handle C, part way around, the groove *b* (fig. 2) is moved away from pipe H, and the flow of water up through the filter is stopped, the groove *b* is brought in correspondence with groove *e*; the passage *d* being also opposite the lower part of groove *e*, thus a passage is established from the lower side of the filter through *b*, *d*, and *k*, to the outlet J, allowing all the water contained in chamber D to flow back through the filter and out at the nozzle, washing off any sediment that may have collected on its lower side.

Claim.—Causing a portion of the water which has passed through the filter to return in the opposite direction whenever the cock is closed after using it, for the purpose of cleansing the filter, as set forth.

No. 14,734.—EDWIN A. PALMER.—*Improved Measuring Faucet*.—Patented April 22, 1856.

The knob E is raised up to the hub C, whereby the valve *b* is opened. The piston F is then raised up, which is done by continuing to elevate the knob until raised to the desired place indicated by the index. The knob E is then allowed to sink and close the valve. Thus the desired quantity is divided off.

The inventor says: I do not claim any of the principles involved in

the common faucet or stop cock, which is generally known; but I claim the perforated piston F in combination with the valve *b* and knob E, arranged substantially as described, and for the purposes set forth.

No. 15,263.—JAMES H. WRIGHT.—*Improved Filter Attachment for Faucets*.—Patented July 1, 1856.

When the valve F is closed and cock D open, the water will pass into *f* up through the filtering material G, and out through the pipe C; but when D is closed and F is open, the water will escape through the pipe E. The filtering material is kept clean by means of the bars *b*, which direct the water from the pipe I over the whole under surface of the filtering material.

Claim.—Placing the filtering material or medium G within the chamber B of the faucet, and above the pipe I, and having a pipe C and cock D at the upper end of the chamber, and a pipe E and cock F at its lower end, substantially as described for the purpose specified. I also claim placing the filtering material or medium G upon the bars *b*, arranged as shown for the purpose specified.

No. 15,430.—PATRICK MIHAN.—*Improved Method of inserting Faucets into Fluids under Pressure*.—Patented July 29, 1856.

The tube A is fastened to the cask, and the thimble B, which is open at one end and shut at the other, is provided with a screw thread corresponding with the screw thread *b*, and can thus be screwed into the socket tube A. The faucet can also be screwed into the socket tube by means of the screw *c*, and the projections *i*, fitting into the recesses *h*, will screw the thimble B in the same direction with the faucet. The flanch *e* fits in the corresponding recess of the socket tube A. If the faucet is to be inserted into the cask, it is screwed into the tube A, thereby screwing the thimble B also inward; and when the holes *g* are past the socket tube the fluid will flow through these and out of the faucet.

Claim.—The faucet receiver, as composed of the socket tube A and the perforated thimble B, applied together by means of screws and operated by the action of the faucet, substantially in manner and for the purpose as specified.

No. 15,027.—CHAPMAN WARNER.—*Improved Filter*.—Patented June 3, 1856.

The water in A to be filtered will pass through valve I and tube C, up through the filtering materials F H into B, wherefrom it may be withdrawn by pump J.

When the filtering material becomes foul, it is cleaned by closing valve I, inserting pump J in the tube D, and drawing the water in B through the filtering materials up through tube D.

The inventor says: I do not claim withdrawing the fluid in the opposite direction from that by which it entered, for the purpose of cleaning the material; nor do I claim combining two vessels so as to allow the fluid to descend from the one below the filtering material and thence upwards through it into the other vessel, irrespective of the method described. Therefore, I *claim*, 1st. Constructing the cistern, vessel, or reservoir A, with an inner well or vessel B, the lower part of which projects below the bottom of the cistern or vessel A, and is provided with any proper filtering material; the lower part of the well or vessel B communicating with the lower part of the vessel A by a tube C, provided with a gate or valve I and a suction tube D, also communicating with the lower part of the well or vessel B.

2d. The flanch G attached to the inner side of the well or vessel B, between the layers F H of charcoal and sand.

No. 15,646.—DAVID N. B. COFFIN, jr.—*Improved Filter*.—Patented September 2, 1856.

The fluid to be filtered passes through the opening *b* of the filter case, which can be fastened to a proper vessel by means of its screw. The fluid strikes the filter C in an oblique direction, so as to prevent the impurities from adhering to the filter; said impurities can be washed out through the opening *e*. The filtering medium consists of a diaphragm composed of one or more layers of cloth, filtering paper, &c., which are fastened to the filter case as illustrated in the engraving; the filtered water passes out through the opening *m*.

Claim.—The method, substantially as described, of applying the filtering diaphragm, and also combining therewith the additional layers, as and for the purpose set forth.

No. 15,363.—WILLIAM WICKERSHAM.—*Improved Filtering Medium*.—Patented July 15, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—1st. The use of a disk in water filters, formed of flattened wire or narrow strips of metal grooved transversely by either milling or engraving, in such a manner that when said strips are formed or wound into a disk, said grooves will form apertures for the water or other fluids to pass through said disk in the process of filtering, as herein described.

2d. The method of making the filter disk less liable to injury, and more firmly, by inserting pins from the edges to or nearly to the centre through the different layers of metallic strips of which it is made, to hold them in their places; this method of fastening the disk together I claim only in combination with the spiral-filter disk.

No. 14,692.—R. L. HAWES.—*Improved Diaphragm Fluid Metre*.—Patented April 15, 1856.

This invention consists in the use of a diaphragm or sack of India-rubber, of a capacity greater than that of the portion of the metre in which it operates; this sack D, as it fills with water and expands, being allowed to press against and give motion to one of the disks E and E², to which the registering apparatus is connected.

Claim.—The elastic diaphragm D, so constructed and arranged as to operate without attachments to the moving parts and without being subjected to strain.

No. 16,284.—WILLIAM MASON.—*Improved Device for Operating Fluid Meters by Hand*.—Patented December 23, 1856.

To operate this meter the faucet plug E is turned to open the passages, and the fluid entering the chamber C or C¹ exerts a pressure on the India-rubber diaphragm B, and forces the same towards the disk A¹ or A until it fits closely thereto, thereby causing the fluid in the other chamber to be expelled through the outlet. As soon as one chamber is thus filled and the other emptied, the faucet plug E is turned half way round, and the fluid is then admitted to the chamber previously emptied, and the same operation repeated.

Claim.—The two concave flanged disks and the flexible diaphragm, combined as described, and provided with any suitable arrangement of passages and with a faucet, or its equivalent, to change the passages to admit water to each side of the flexible diaphragm alternately, the whole operating as and for the purpose set forth.

No. 14,982.—I. WILLARD FOX.—*Improved Method of Drawing Fluids from Bottles*.—Patented May 27, 1856.

The socket A, which is made circular, is connected with a square box C¹, which contains the plug D and its India-rubber packing E. When this faucet is applied to the nose of a bottle, the end of the bottle nose is screwed against the packing, so as to pack the space tight between the end of the nose and the plug of the faucet.

The inventor says: I am aware that the plugs of faucets have been surrounded with leather, gutta percha, and some other similar substances, to pack them; therefore I do not claim broadly surrounding them with such substances.

But I *claim* packing the plugs D of faucets with India-rubber, gutta percha, leather, or some other similar substances, when the same piece which packs the plug is made to pack the end of the bottle nose, pipe, tube, or other articles to which the faucet is applied.

No. 15,853.—SAMUEL KRAUSER.—*Improved Method of Measuring Fluids while Drawing*.—Patented October 7, 1856.

The operation of this apparatus is as follows: The pin *m* being first properly placed for the quantity which it is desired to measure and

draw, and the valve *c* being over the opening *b*, the tube *C* and plunger *F* are raised up by their levers *E L*, and then the tube is brought down to its seat, and the quantity which it cuts off from the mass of liquid in passing through it, and which it contains between the plunger *F* and the valve-plate *c*, is the measured quantity for which the pin *m* was set. By opening the valve *c* the measured quantity will run out.

Claim.—Severing or separating a given quantity of liquid from a mass or column by a travelling tube and plunger, operating together substantially as set forth.

Also, the gauge-plates *N N N*, in combination with the valve-seat or packing of the plunger fitting thereto for adjusting the measuring apparatus to the exact quantity to be drawn, substantially as specified.

No. 15,177.—F. ESPENSCHADE.—*Improved Method of Cooling and Drawing Fluids from Casks, &c.*—Patented June 24, 1856.

The chamber *E* is filled with ice; the faucet *H* being open, the liquid in the barrel *A* will pass down the pipe *G* and fill the vessel *C*. The liquid in the vessel *C* is drawn therefrom by opening the faucet *O* and depressing the treadle *L*, the piston-head *J* forcing the liquid through *O*, and at the same time closing the valve *N*.

Claim.—The vessel *C* provided with an ice chamber *E*, and having a pump connected with it, and the vessel communicating with the barrel *A* by means of the pipe *G*, the above parts being arranged substantially as shown for the purpose specified.

No. 15,385.—JAMES P. S. OTTERSON.—*Improved Method of Tapping Fluids under Pressure.*—Patented July 22, 1856.

The flange *F* of the chamber *C*¹ is tightly attached to the vessel or pipe to be tapped, and the hole is drilled by means of the drill *D*¹ of shaft *D* working in screw-threads *S* and *S*¹. When the hole is drilled, the chamber *C*¹ becomes filled with water, but is kept tight by the stuffing-boxes *g* around the spindles *D*, *E*, and *I*; the plate *C* is then turned by inserting a lever into the hole *o*¹, so as to bring the tap *E*¹ opposite the hole made by the drill *D*¹, and said hole is tapped out to correspond with the screw of the cock *I*¹. The tap is then withdrawn, the plate *C* turned another part of a revolution to bring the cock *I*¹ opposite the hole; it can be screwed into said hole by turning the rod *I*, and this done, the entire apparatus can be removed, leaving the cock *I*¹ in the drilled hole.

Claim.—1st. The employment of a chamber *C*¹ of sufficient capacity to contain the cock *I*¹, together with the necessary tools for inserting the same in any pipe or vessel containing water under pressure.

2d. The employment of the rotary plate *C*, or its equivalent, working in or forming part of the chamber *C*¹, for the uses and purposes specified.

I do not limit my claims to the particular form of plate or chamber as shown, but extend it to any other substantially the same.

No. 15,716.—ROBERT F. BROWER, assignor to SAMUEL A. BROWER and J. L. BROWER.—*Improved Method of Drawing from Manufacturing Enclosures Waste Gases, Steam, &c.*—Patented September 9, 1856.

The nature of this invention consists in drawing the unhealthy air, gases and steam from rooms, by the use of a ventilator *C*, drawing said air from a receiver *A* and, through a pipe *B*, and discharging the same outside the building, for the purpose of avoiding unhealthy currents of air, the fresh air passing in through any open spaces in the wall.

Claim.—The operation of drawing off waste steam or gases, by mechanism or heated currents, from buildings or apartments where drying, steaming, or chemical operations are conducted, after the manner substantially as set forth.

No. 15,256.—DANIEL ROBINSON.—*Improved Balance-Gate for Flumes in Water-Power.*—Patented July 1, 1856.

As the gates *B B* are connected by the bars *c*, the pressure exerted against one gate is counteracted by the pressure on the other gate, and the gates may be operated with but little power. The tube *C* and valve *d* serve to admit the air, in order to prevent the water from suddenly rushing into it when the gates are opened.

Claim.—The two sliding gates *B B* placed at opposite sides of the penstock *A*, and connected by bars *c*, substantially as shown, for the purpose specified.

I further claim the tube *C* and valve *d* applied to the penstock, as shown, for the purpose specified.

No. 14,602.—GEORGE W. FLANDERS.—*Improved Flood Gate.*—Patented April 8, 1856.

a a represent the gudgeons of the gate, and *b b* the sockets. The gate is stiffened by means of the rail *c*. *C C* are posts attached to the flume, which serve as bearings for the elevated gate.

Claim.—Constructing the gate *B* of one part, and hanging or hinging its lower end to the apron or bottom of the flume *A*, substantially as described.

No. 15,846.—S. M. FERRY, assignor to JAMES T. AMES.—*Improvement in Hose Coupling.*—Patented October 7, 1856.

The flange *b b* of the cylinder *B* is inserted into the hook-shaped flange *a a* of the cylinder *A*, and the flanges *k* are fastened to flange *a*¹ by passing a wedge through the staple *c*. The two cylinders are pressed firmly against the packing *l*, thereby making a water-tight joint; the cylinders *A* and *B* can be used as hose-couplings by attaching to them the hose in any well known manner.

The inventor says: I do not claim any of the parts separately.

But I claim the combination and the application of the various devices described, for the purpose of coupling firemen's hose.

No. 14,090.—C. J. COWPERTHWAIT.—*Improved Hydrant*.—Patented January 15, 1856.

The cap K is made elastic, to permit the rod H to be operated by means of hand-lever I. This hydrant may be readily disconnected from the main by merely turning rod E. The valves or any parts of the hydrant can be examined and withdrawn from the case A, by removing the cap N. O is a small valve operated by an arm *f* attached to rod H. Valve O is open when valve G is closed, and *vice versa*.

Claim.—The cylinder F fitted over the conical projection on the case A, said cylinder having valves G O within it, and an elastic cap or covering K through which the valve-rod H passes, and to which cap said rod is attached, the cylinder being secured on the conical projection by means of the bent rod M and cap N of the case A, substantially as shown for the purpose specified.

No. 14,557.—HENRY ENGLISH.—*Improved Hydrant*.—Patented April 1, 1856.

The valve-box A is divided into an upper and lower chamber, which communicate with each other by means of a passage which is controlled by the hanging-valve *b*. *c* is a leather washer. When the valve is pressed down from its seat *g g*, the water passes into the cavity *d d* of the cap-piece D, and thence through the openings *ff* into the circular channel *e e*, which latter communicates with the discharge-pipe C.

The waste-vent *h* connects with the groove J in the valve-stem G. This shank G is made four-sided, so that the side which contains the groove J can be placed in such a position as not to connect with the waste-vent *h*.

The downward motion of the coupling H closes the vent *h* by means of the leather washer K and opens the valve *b*, and its upward movement will close the valve *b* and open the waste-vent *h*.

Claim.—The combination of the square-shanked valve and its seat with the cap-piece, in the manner and for the purpose substantially as described.

No. 14,805.—C. J. COWPERTHWAIT.—*Improved Hydrant*.—Patented May 6, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—1st. The employment or use of the case or protector J, so connected with the valve-rod G that the valve F will be opened when the case or protector J is moved aside to expose the nozzle C, and the valve closed when the case or protector is moved over the nozzle.

2d. I claim the slide-valve F, arranged or applied to the cistern E, as shown, viz: the valve being fitted within the cistern, and connected with the rod G, through the waste-water passage *a*, whereby the valve

is made to work water-tight, and the use of a stuffing-box and packing avoided.

3d. I claim securing the cistern E, with the pipe D and valve F attached within the case A, by means of rod M, whereby the above parts may be readily detached from the case and secured within it.

No. 14,962.—CHARLES K. LANDIS.—*Improved Arrangement of Means for Operating the Valves of Steam Hydrants*.—Patented May 27, 1856.

When the float *d* rises, it lifts the rod *l*. When the ball and lever *n* have passed their vertical position, the crank *m* lifts the lever *o o* with the rod *p*, and opens the slide-valve *i*. Steam is then introduced, which opens the top and closes the bottom of the double valve *q*, and the water will be forced through the valve C and pipe *a a* up to the required level. When the float reaches the bottom of the reservoir F, it brings the lever and ball *n* to their former position by means of stud *r*, rod *l*, and crank *m*; thereby closing the slide-valve *i* and opening the double valve *q*, allowing the surplus steam to escape. The remaining steam will now be condensed, and the water W W will be forced up through the strainer *g*, valve C, and pipe *b b*.

The valve *q* will be closed again by the pressure of the atmosphere.

Claim.—The combined mechanism of the float *d*, slide-valve *i*, and double valve *q*.

No. 14,592.—EDWARD JOHN BAKER.—*Improved Waste Attachment to Hydrants*.—Patented April 1, 1856.

The object of this invention is to obviate the disadvantages (freezing and wasting of the water) which arise from the use of a waste vent.

The chamber E absorbs the contents of the discharge pipe F when the piston G is raised. The downward motion of the said piston forces first the water back into the pipe F, and then opens the valve C between the main pipe B and the discharge pipe by means of the piece *q*.

Claim.—The application to a hydrant of the receiving chamber and piston, constructed and operated in the manner and for the purpose substantially as described.

No. 14,712.—JOHN CULVER.—*Improved Waste Device for Hydrants*.—Patented April 22, 1856.

The lifting of the plunger G to position shown in fig. 1 causes spring H to act upon valve C, and to force packing I close to the seat, and thus cut off a further supply. The water left in the discharge pipe flows back into the chamber formed by the elevation of the plunger, and remains there, together with a portion at the same level in pipe E, beyond the reach of frost.

Claim.—The described arrangement of the plunger G relative to

the discharge pipe E, and capable of elevation proportional to the capacity of said pipe for forming a chamber in the lower portion of the hydrant for the reception of the contents of the discharge pipe.

No. 16,061.—ROBERT LAWSON.—*Improved Waste Valve for Hydrants*.—Patented November 11, 1856.

The water, entering the receiving pipe at J, passes up around the valve-stem D in the sleeve M, and out through the aperture N in the distributing nozzle F. If it is desired to stop the ingress of water to the valve, and to waste it out of the distributing pipes, the valve-stem D is closed; which closes the valve E and opens valve B, stopping the ingress of the water to the valve and allowing it to fall back out of the distributing pipes in the sleeve M, and to pass up around the stem D and out through the valve B, where it is wasted.

The inventor says: I *claim* the interior arrangement and combination of water-valve and air-chamber, as shown and described.

I do not claim the application of an air-chamber to the receiving pipe.

But I *claim* its peculiar combination with the waste-valve, as set forth.

No. 14,335.—JOHN S. BARDEN, assignor to Himself and AARON W. ROCKWOOD.—*Improved Water Metre*.—Patented February 26, 1856.

It will be understood that by applying to the crank-shaft Y a mechanism indicating the number of revolutions it may make, the water can be readily measured which has flowed through. The section fig. 3 is represented on a larger scale than the rest of the figures.

Claim.—A partitioned hollow cylinder or chamber A, and two series of induction and eduction passages B C, arranged with respect to the partition *a* of said chamber substantially as described, in combination with three or any other suitable number of oscillating cylinders D E F and pistons R R R, connected together and applied to the partitioned cylinder and made to operate essentially as explained, and for the purpose of receiving and discharging water or any other fluid, or measuring the same, as set forth.

Also, combining each oscillating cylinder with the partitioned cylinder by a yoke G, screw-bolts H H H, and pressure-springs O O O, or their mechanical equivalents, arranged and operating together substantially in the manner and for the purpose as set forth.

Also, making the bottom of each cylinder dishing or concave below the lower terminus of the path of the piston, and towards the passage of said bottom, as specified, the same being for the purpose as set forth.

No. 15,712.—GEORGE TROTT, R. H. COLES, and WILLIAM A. CLARK.—*Improved Mode of Suspending Hydraulic Puppet Valves*.—Patented September 9, 1856.

The ball *v* attached to the upper end of the upper shank of valve *d*, which fits loosely in the socket formed in the lower end of the valve stem *f*, is held therein by a pin *u* passing under the ball, but so arranged as not to interfere with the free motion of the valve. In the bottom of the valve is loosely fitted an anti-friction disk *i*, against which the ball *v* bears. This enables said bolt to move freely in the socket, whereas otherwise there might be sufficient friction against the unyielding bottom of the socket to materially impede the motion of the valve.

Claim.—The combination of the ball, loose socket, and anti-friction washer, when employed to connect an elastic or yielding valve with its stem, substantially as set forth.

No. 16,049.—J. HENRY DARLINGTON and WILLIAM PIPER.—*Improved Diaphragm Fluid-Metre*.—Patented November 11, 1856.

The water passes up from the induction pipe E, through the centre of the metre, in the direction of the arrows down through the water channel M, and drives the diaphragm H P on the left to the right. By this motion the lever J of the fulcrum *c* operates the slide valves E, and closes the passage M on the left at the same time as it opens the similar passage on the right. In this way the water causes an intermittent reciprocating motion to be kept up, each diaphragm working the opposite valve; and the water is discharged in such quantities as the reservoirs hold, and is measured and determined by the registering apparatus, consisting of ratchet wheel Q, pawls *i* and *h*, and springs *j* *k*.

The inventors say: We do not claim any of the separate elements or devices; nor do we claim any special combination thereof.

But we *claim* their particular arrangements as hereinbefore and for the purpose set forth.

No. 14,029.—JAMES NEAL and CHARLES W. EMERY.—*Pump*.—Patented January 1, 1856.

The nature of this invention will be understood by reference to the annexed claim and corresponding illustration.

Claim.—We are aware that the lever or levers for working the piston rod of a pump have been supported either on the pump-barrel, or on a rotary cap-plate, fitted on the top of said barrel; we therefore do not claim such.

But what we do claim as our invention is, supporting the brake posts H and I, by means of an annular ring F, made to encircle and rotate on the neck *d d* of the base plate C, or stand of the pump-barrel, when the pump-barrel is applied to the base-plate, so that it may turn independently on said base-plate, and be screwed or fastened to it.

No. 14,024.—CHARLES N. LEWIS.—*Improved Pump*.—Patented January 1, 1856.

The interior cylinder is placed immediately on the valve plate E, which fits within the sides of the base N, and has upon it two induction valves F F. Two projections *q q* are cast upon the valve plate E, which fit into the holes *q q* of the flanges K. The outer case P P is fastened to the base N over the interior cylinder, forming an air chamber. A tube S S around the stem A of the piston B is attached to the top of the case, and extends down to the bottom of the basin C, so that its lower end shall always be under the surface of the water within such basin, the same serving as water packing to the piston-rod, in place of a common stuffing-box.

Claim.—The basin C or its equivalent, for the uses and purposes above set forth; and in combination and connexion therewith, I claim the arrangement and construction of said pump, as above specified.

No. 15,878.—WILLIAM T. BARNES and JACOB BARNES.—*Improved Pump*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—1st. The employment of the priming reservoir U, or its equivalent, which is connected to the pump T, and fills it with water by the action of the pump; which water is held by the supporting box V, or its equivalent, and can be discharged to prime the pump by pulling the cord W, or its equivalent, for the uses described.

2d. The combination of the levers G G, with the piston rods E E, and the connecting rods H H, and rocking beam K, in manner shown for the purposes set forth.

No. 14,884.—THOMAS H. POWERS.—*Improved Cattle Pump*.—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I do not claim operating the platform and raising water by the weight of the cattle; but I *claim* the specific manner whereby the platform may be placed at a distance from the well.

No. 14,576.—JOHN R. SEES.—*Improved Method of Varying the Stroke of Feeding-Pump for Steam Engines*.—Patented April 1, 1856.

By moving the lever F to the extreme left end of the arc G, the sliding block D is raised to the upper end of the arm C of the rock shaft, so that the piston of the pump L remains stationary. By moving the lever F to the opposite end of the arc, the block is carried down and the pump receives its maximum throw. The length of stroke of the pump can thus be regulated from a minimum to a maximum.

Claim.—The use of an intermediate arm or lever between the moving power that works a force or supply pump, attached to a steam boiler and the pump, with an adjustable sliding block, movable on said arm or lever, as herein described, or any analogous arrangement substantially the same, which will produce the desired effect.

No. 14,039.—GEORGE WILLIAMSON.—*Hydro-Pneumatic Pump for Diving Bells*.—Patented January 1, 1856.

This improvement is for the purpose of supplying the leakage water to the air pump *a*, and thus keeping the valves *d* and *e* moist and tight, and disposing of the surplus water which is forced through the pump with the air; and secondly, cooling the air by surrounding the valve chamber *f* with water, and causing the air to pass therefrom through the pipes *m* to a condenser *p*, through a cooler supplied with cold water, which is necessary to prevent making steam. The piston rod *a*² connects the piston *a* with a steam engine; there is always a sufficiency of water in the cylinder *a* and chamber *b* to fill the latter; after the water is all expelled from the cylinder, and when the piston recedes to the opposite end of the cylinder, the water flows in behind it, and draws in its equivalent in bulk of air and water through valve *d*; on its return this is forced out of valve *e* into the chamber *f*; the water being non-elastic, if the parts are kept cool enough not to raise steam, allows this process to be continued. But for this cooling process the water packing would become rapidly heated, and, raising steam, stop the pumping of air.

Claim.—1st. The arrangement and combination of the pump cylinder, chamber *b*, and their valve arrangement; by which a proper supply of water is kept up and the air pumped, as specified.

I also claim refrigerating the air by extracting the caloric therefrom, after it has passed the pump, by means of the water bath surrounding the valve chamber and eduction tubes, substantially as set forth.

I also claim the float reservoir connected with the eduction pipe for separating the water from the air, as specified.

No. 15,173.—STEPHEN D. CARPENTER.—*Improvement in Rotary Pumps*.—Patented June 24, 1856.

2 and 3 represent the two semi-spherical shells which are bolted together by the flanches A, and the inside bored out to form a perfect sphere.

L, L, L, (fig. 2,) represents the side view of the propeller, and its connexion with the cones D D, said cones being permanently attached to the shaft J J. E, the disk to which are attached the elliptical cogs *k k k k*, which work into, and match with, corresponding cogs on the cones, as seen at D D, fig. 3. These cogs are intended to produce a greater bearing surface than could be obtained by the contact of a plain surface revolving on the cones, and hence remove, in a great degree, the liability of leakage.

The disk E E, is constructed of a larger circle than the cones and shells, so as to have a bearing in the groove diagonal to the shaft, the said groove serving to keep the said disk in its place. The object of said disk is to divide the globe into two chambers; and its bearing on the surface of the cones serves as a cut off, or, more properly, answers the purpose of the ordinary valve in pumps, as, by its connexion with the "propeller," no communication exists between the orifice of induction and eduction, W and X, and whatever fluid enters either chamber must remain there until forced out by a rotary motion.

Claim.—The cones D D, connected by the propeller L L L L, in combination with the diaphragm or disk E E. Also the semi-spherical shells, 2 and 3, fig. 1, in combination with the conducting pipes.

No. 14,186.—EDWARD N. DICKERSON and ELISHA K. ROOT.—*Improvement in Pumps.*—Patented February 5, 1856.

Each of the two buckets C is driven by a cam A, which consists of a spiral surface *a a a*, so constructed as to elevate the bucket with uniform velocity, while the rest of the surface, *a b a*, lets the bucket down with accelerated speed. The effect of this construction is, that the water, which the lower of the two buckets is driving with uniform speed, is passing through the upper one, which is descending to renew its stroke, and whose valves are therefore open; and before the lower bucket ceases to drive the water, the upper one has descended, commenced its ascent, and has overtaken the current in which it moves, so that its valves are closed and it is moving upward at the uniform speed designed and dividing the load with the lower bucket; the speed of the lower bucket is then gradually diminished as the second half of the spiral curve comes into action, and the entire load of the column is insensibly transferred from the lower to the upper bucket without causing variation in the speed of the column of water.

Claim.—1st. Two buckets working in pump barrels, so arranged that the column to be raised passes through both, in succession, in combination with the spiral cams, or their equivalents, so arranged as to move said buckets with uniform velocity and to maintain practically a uniform and constant lifting action upon the water, substantially in the manner described.

* 2d. Imparting to the column of water, by means of a reciprocating pump, a constant and uniform flow through the ascending main, substantially as herein described.

No. 15,888.—EDWIN T. LIGON.—*Improvement in Pumps.*—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claims and the engravings.

The inventor says: I do not claim a reciprocating piston working in a pump-barrel and provided with two valves, when said barrel is fur-

nished with two on each side of the piston, and only one eduction pipe—my pump, as described, having two induction passages, and one eduction passage—each stroke or vibration of the piston, when the pump is elevating a liquid, causing such liquid to be drawn at once through both induction passages, and be discharged out of the central discharging chamber of the piston.

But I *claim* the combination and arrangement of the two induction passages or branches *c d* by valve-chamber D E, their four valves F F and G G, the receiving and delivering chambers *g g f*, their four valve-openings *iiii*, provided with a separate valve to each, or one vibrating plate K, made to operate between them, substantially as specified; the piston being provided with an eduction opening or passage, and the whole being arranged and made to operate within a cylindrical case A, essentially as specified.

I do not claim a valve made to operate in connexion with two valve openings only, or so as to close them alternately.

But I *claim* combining and arranging four valve openings *iiii*, with one vibrating plate K, as described, so that it may vibrate between them and opposite sides of it, and cover two of them at the termination of each of its vibrations.

No. 15,922.—JOHN P. COWING.—*Improvement in Pumps.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim an oil or water chamber for keeping the pump cylinder air-tight, irrespective of the arrangement of the same; neither do I claim as new the air-chamber valves and water passages, for they are essentially the same as in many other pumps now in use.

But I *claim* the auxiliary cylinder F placed on the top of the pump cylinder C, and so arranged as to form a reservoir for oil or water around the stuffing-box H and piston, and at the same time to support a guide L for the piston, which may be turned in any desired direction.

No. 16,229.—JABEZ CONEY.—*Improvement in Pumps.*—Patented December 16, 1856.

Rotary motion being imparted to shaft *c*, the oblique disk *c* operating on the steel balls *f*, which rest in the adjustable steel sockets *e*, imparts to the pistons *d* a reciprocating movement, working the pumps in the usual manner. The working parts are enclosed in an oil-cylinder *p*, as stated in the claim.

Claim.—1st. Producing the reciprocating movement of the pump pistons by the oblique disk, steel balls, and adjustable steel sockets, constructed and operating substantially as described.

2d. Constructing and arranging the duplicate cylinders with their double-acting pistons in any odd numbers, five being the best, around

the driving shaft with its oblique disk, so as to be operated thereby from the centre, substantially as described.

3d. Enclosing the working parts in an oil-cylinder to keep them lubricated and free from dirt, substantially as described.

No. 14,372.—HIRAM SMITH.—*Improvement in Air Escapes for Pumps*.—Patented March 4, 1856.

Claim.—The employment of tubes s^1 , arranged to take the accumulating air from the top or upper portion of the receiving valve-chambers and conduct it below the valve seats into the water-discharge of the pump.

No. 16,024.—JOHN ROBINGSON.—*Improvement in Chain Pumps*.—Patented November 4, 1856.

Motion being imparted to the discs a , the buckets F will pass around the discs B , and will become filled in passing through the water below. The buckets as they arrive at the top of the wheel are tilted as they strike against the bars G , and the contents of the buckets are discharged into the troughs D , and when these troughs descend a small distance the water passes into the spout H .

The inventor says: I do not claim the drum or wheel B , with the buckets hung as described in it, and tilted by striking a stop, the bucket chains passing round the sides of the drum; as such and many other parts or details are common to chain bucket pumps.

But I *claim* providing the wheel B , having its buckets and chains arranged as described, with a partition C , forming troughs D , and tilting-stops or bars G , arranged relatively to each other, and rotating together with the wheel and its buckets for operation together, as specified.

No. 15,070.—ROBERT B. GORSUCH.—*Improved Method of Effecting Uniform Pressure upon the Pumping Piston of Double-Acting Steam Pumps*.—Patented June 10, 1856.

The arm R having been brought in contact with the stop j^1 of rod f , and having thus forced the steam-valve D partially across the ports, carrying with it the secondary piston e , the engine reverses. The water immediately finds its way through the holes in valve h , and forces down piston e , until its upper end passes the diaphragm c , and comes within the action of the static balance-chamber S , which then continues the valve e rapidly, by this means moving the steam-valve the full distance through which it should pass after the engine has reversed, thus securing a perfect valve-motion, by quietly supplying the motion at each successive stroke not obtained at the termination of the preceeding one in consequence of insufficient force or momentum in the moving parts.

The inventor says: I disclaim effecting a connexion between the

water on both sides of the piston or plunger, or between either end of the pump-cylinder and the forcing-main above the force-valves, except through said valves in the ordinary action of the machine, at any time or for any purposes whatever. Neither do I claim operating the steam-valve in direct-acting steam-pumps by a secondary piston, as they have been used in various combinations for that purpose. But I *claim* the secondary piston e , in combination with the pump-cylinder, depending for its action upon the static balance-chamber S , and the reverse motion of the pump-plunger, combined or either separately, for attaining the end in view, substantially as described.

No. 15,134.—JOHN C. KING.—*Improved Valve for Double-Acting Pumps*.—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—A single pump-valve E , with two chambered faces, standing at an angle to each other, and operated by the pressure of the water from the pump-cylinder, to answer as suction and delivery valve to a double-acting pump.

No. 14,626.—JACOB W. GOODWIN and MOSES C. HAWKINS.—*Improved Method of Regulating Pumps by Wind-Wheels*.—Patented April 8, 1856.

When water is taken out from the trough N , the float U falls and the elevating rod P rises and brings the wheels H and J in contact, thereby setting the pump in operation.

Claim.—1st. The construction of a wind-wheel, with the sails A shaped like a funnel, and always presenting the open ends of those on one side of the wheel to the blast.

2d. We claim the construction of the float M , and the lever O , with the elevating-rod P , in combination with the wheel H , so constructed as to be raised and lowered by the rising and falling of the float M , in the manner described, or by any other construction substantially the same, and which will produce the same results.

No. 14,599.—THOMAS CRANE.—*Improvement in Rotary Pumps*.—Patented April 8, 1856.

When the periphery of the piston E works too loosely within the chamber A , it may be tightened by turning the shaft C , within its sleeve k , until the eccentric portion e of the shaft C throws outwards the piston a sufficient distance to bring its periphery into close contact with the periphery of the pump-chamber.

Claim.—Connecting the shaft C to the hub D in such a manner that, without opening the pump-case, the periphery of the annular piston E can at any moment be forced outward into close contact with the periphery of the pump-chamber, substantially in the manner herein set forth.

No. 15,059.—JOHN BROUGHTON.—*Improvement in Rotary Pumps.*—Patented June 10, 1856.

The distinguishing characteristic of this pump consists of its being composed of a rotary eccentric piston A, fitted within a barrel C, which derives an oscillating movement (the centre line of oscillation being at E,) from the rotary movement of the piston, while the piston by its rotation, combined with the oscillation of the barrel, is caused to move reciprocally towards and from each end *bb* of the barrel, and thereby without the aid of valves alternately to form a vacuum to draw water into either end of the barrel through a suitable inlet G B L, and force it out again through M B L.

The shaft B is hollow, and has a transverse partition *d*, at about the middle of the piston, which separates one portion which is to serve as an inlet from the suction pipe G to the barrel C, from the other portion which is to serve as an outlet from the barrel C, to the discharge-pipe L. The outlet portion of the shaft connects with an air-chamber N cast within the piston, said chamber connecting with the passage M.

Claim.—A rotary pump composed of a rotary eccentric piston A working within an oscillating barrel C, with any arrangement of inlet and outlet passages, as herein set forth.

No. 15,221.—CHARLES N. CLOW.—*Improvement in Rotary Pumps.*—Patented July 1, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I am aware that corrugated or cogged pistons have been used, and I wish it distinctly understood that I do not claim such cams or pistons.

But I *claim* cams B B or pistons having smooth peripheries, made to revolve with their peripheries in contact, to form the abutment by gear-wheels D D on the same shafts as said cams, the pitch line of which gears corresponds in shape with the peripheries of the cams.

No. 15,274.—JAMES A. BAZIN.—*Improvement in Rotary Pumps.*—Patented July 8, 1856.

The two pistons *bc* of a rotary pump *a* are attached to independent shafts *d* and *e*. The shaft *d* is attached to a hollow sleeve *ff*, which revolves around a centre shaft *g*, to which the fly-wheel *h* is attached. The sleeve *ff* extends through the centre of the shaft *e* of the piston *b* and is fastened to a short crank, to which the toggle-arms *no* are attached, by means of pivot *m*. The shaft *e* of piston *c* is secured to a sleeve *k*, which revolves around sleeve *f* but extends no further than the shaft *d*. The sleeve *k* is attached to a crank *l* placed behind the crank *i*, both cranks turning on a common centre *g*; to the end of crank *l* are attached toggle-arms *p* and *q*, figs. 1 and 4, by a joint *r*; the ends of each set of arms meet in pivot joints *s t* common to both sets. The pivots *s* and *t* have attached to them friction rolls *u* and *v*. By means of these arrangements and those illustrated in fig. 3, consisting of a circular groove

W W described from centre *r* and a circular groove X X described from centre *g* in the front plate of the pump, and a slot *z* in the plate *a*, in which the friction rolls *y* play, one piston is held stationary while the other is moving.

Claim.—I claim the means employed for moving the two pistons alternately, the same consisting of the toggle-arms attached to the cranks of the pistons, and operating in the circular grooves W X, in such a manner as to hold one crank and its piston stationary while the other crank and its piston are moving, as set forth.

No. 15,280.—CHARLES N. CLOW.—*Improvement in Rotary Pumps.*—Patented July 8, 1856.

The cams A A revolve in the pump-chamber towards each other; the roller C is inserted in the space between the two cams or pistons, so that it makes a water-tight joint where it rests on them. As the cams rotate, this roller moves longitudinally in the case, but at all times lies over the space between the cams.

The inventor says: I am aware that the cams A A have been heretofore used, and therefore I do not claim them as new; but what I *claim* is roller C, or its equivalent, inserted in the manner and for the purpose described.

No. 15,211.—REMY HENRY, assignor to JAMES SMITH.—*Improved Method of Operating Steam Valves of Steam Pumps.*—Patented June 24, 1856.

The steam valve I is moved by the pistons B and D coming alternately in contact with the sleeves F, the motion of the sleeves being communicated to the valve-rod J by means of lever L. The attachment of spring N and fork O effects the double purpose of giving the valve a sudden opening as soon as the lever L and the fork O have been moved past a direct line, by the piston striking the sleeve and holding the valve in its proper position until the return stroke is made.

The inventor says: I do not claim attaching the pistons of a steam cylinder and a pump to one rod, and operating the pump by the direct connexion; nor do I claim operating the valve of a steam cylinder by the piston.

But I *claim*, 1st. Giving motion to the steam valve I of a steam pump by the alternate action of the steam and pump pistons B and D.

2d. The combination of the sleeve F, the lever L, the fork O, and the spring N, to communicate the requisite movement to the steam valve.

No. 15,227.—ROBERT H. FLETCHER.—*Improved Method of Operating Valves of Steam Pumps.*—Patented July 1, 1856.

When the piston has nearly finished its stroke, it shifts the inner cylinder E by means of stud *b* and lever *a*, closing the passages 6 2

and 4 8, and opening 1 5 and 3 7, thereby causing the water to enter and leave at opposite points, but keeping up a continuous flow, and so on at each backward and forward movement of the piston.

Claim.—Enclosing the piston head F within an inner cylinder E, which fits within the outside cylinder A of the pump, said inner cylinder being somewhat shorter than the space between the outside cylinder heads C, and so constructed as to alternately open and close the ports through which the water passes in and out of said pump, and operated by the piston, substantially in the manner herein described.

No. 16,154.—HENRY M. WALKER.—*Improvement in the Siphon à Clapet.*—Patented December 2, 1856.

When this siphon is to be used, the ring C is raised to the knob D, thus closing the valves at each end; the cap A is then secured in its place, and the siphon is ready for use, by inserting the short arm in water and opening the valves by lowering ring C.

Claim.—I am aware that siphons have been filled at the top, and that a valve or stop-cock has been used on the long arm.

But I claim the application of a device for the simultaneous opening and closing of the orifices at each end of a siphon.

No. 16,178.—ERASTUS W. ELLSWORTH.—*Improved Arrangement of Valves, &c., in Siphon Rams.*—Patented December 9, 1856.

By connecting pipe H with a reservoir containing water, and turning key N J into the position indicated in fig. 1, the water will flow in the direction of the arrows, expelling the air from A. By then turning the key N J into the position of fig. 2, valve D closes, and the descent of the water in pipe A acts by suction to elevate the water from the source of supply at the foot of pipe B into B. The air which has previously been in pipe B is thereby transferred over into A. A repetition of the manipulation with the key will now expel said air, and both legs of the siphon are then filled. The valve C then commences beating against the opening L, and at each pulsation the momentum of the current in B acts to drive a stream up through the pipe H.

Claim.—The combination of either or both the valves of the ram with a governing key; said valves and key being constructed and arranged in the manner described, or in any similar manner, whereby any or all of the same objects are accomplished, either in a siphon ram or in a common hydraulic ram.

No. 14,623.—ANSON WOLCOTT.—*Improved Method of Treating Surface Springs.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I am aware that placing an open barrel or box

so as to surround a spring, is not new; but in that case it does not admit of covering the same with earth, nor remedy the evil of soft earth or miry margins to springs; nor do they prevent surface water with its impurities, nor insects from entering, nor prevent changes of temperature consequent to said open springs.

I am also aware that closed cisterns for retaining water introduced into them are not new; I therefore do not claim any of these methods; but I claim the use of an inverted vessel *a*, constructed with an edge susceptible of being forced into the clay pan through which the spring issues; said vessel being provided with a discharge pipe *b*, for the purpose of capping springs, so as to admit of surrounding and covering the inverted vessel with clay, substantially as described.

No. 14,617.—EARL PARKER and WILLIAM REYNOLDS.—*Automatic Thermo-Hydro-Olaio-Pneumatic Valve.*—Patented April 8, 1856.

The steam, when turned on, will pass through the perforations *d* into the stem, and through the side openings *h* into the annular space *e*. The heat will cause the oil and water in the inner bell B to be expanded and to press the piston *g* downwards till it closes the side openings *h*. But when the steam is cut off and allowed to condense, the oil and water in cooling gradually resume the original space, which admits of the piston being forced above the side openings *h* by the spring *x*, when air, freely entering the top apertures *c*, passes through the cock into the pipes.

Claim.—The employment, when combined substantially as specified, of oil and water, or their equivalents, for the automatic closing or moving of the valve by expansion of the said fluids in their liquid state.

And we further claim the arrangement of the inner and outer bells *e* B, tubes, perforations of passages *c d h*, and interior piston or valve *g*, for operation in the manner as set forth.

No. 15,030.—HENRY R. WORTHINGTON.—*Improved Method of Attaching Stem to a Conical Valve.*—Patented June 3, 1856.

The conical plug A has no passage through it for the water, and when in its seat completely closes the opening through the gate D. The plug is elevated or depressed by the action of the screw *h*.

The inventor says: I disclaim the invention of a cone or plug, lifted by means of a screw in the direction of its axis.

But I claim the use of the hollow conical plug, with the apparatus for opening and closing the same, attached at the bottom of plug.

No. 15,192.—FRANKLIN PEALE.—*Improved Tubular Elastic Valve.*—Patented June 24, 1856.

The nature of this improvement is the employment of valves composed of flexible material, arranged so as to open in one direction by

the elastic quality of the material composing the valve, and to close again through the same cause.

Claim.—The method of adapting flexible valves to flexible tubes, and inserting them therein, in the manner as shown.

No. 15,960.—ROBERT P. BRADLEY.—*Improved Puppet Valve.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I do not confine myself to the spiral arrangement of the grooves *b b* up the sides of the valve.

But I *claim*, 1st. The construction of a puppet-valve B of the form of a cylinder, of the full size of or larger than the exterior of the face *h* of the valve, with its face at the bottom, and with grooves *b* in the sides, substantially as described.

2d. When the outlet *e* is at the side thereof, forming a passage round the valve, by making a groove around the interior of the chamber A¹, and a similar groove around the exterior of the valve B, to form a passage around the grooved cylindrical puppet valve B¹, to form a passage *f* of an area sufficient for the free escape of water at the outlet of the chamber A¹, substantially as described.

No. 14,627.—JOHN D. HEATON.—*Improved Arrangement of Valves for Hydraulic Engines.*—Patented April 8, 1856.

When a head of water communicates with pipe J, the chamber A is filled, and the hydrostatic pressure forces the water through ports *b b* and pipe N into the cylinder L, causing the piston to move, and imparting a rotary motion to the spur wheels P and R. When the crank is near the dead point, the wrist S comes in contact with the head of the slot W, which moves the valve sufficiently to close the ports *b b*, and uncover the ports *a a*. The water now passes through G N into cylinder L, and the water first admitted into the cylinder passes out through O I into chamber B, and is discharged through pipe K.

Claim.—The construction, use, and application of the swinging or vibrating band valve devices T T *c c c c*, being on or attached to an axle or shaft *e e*, and operated by the slotted connexion rod I W and wrist pin S, as set forth.

I also claim in combination with the said valves the construction and arrangement of the water chests, or the chambers C C D D, the compartments F G E H, with the pipe I K, substantially as described.

No. 14,646.—J. A. AYRES.—*Improved Mechanism by which Cattle Raise Water for Themselves.*—Patented April 15, 1856.

When the animal passes upon the platform E, towards the trough D, the back end of the platform will be depressed, and the filled bucket

G will be raised up above the trough D, the cork *i* on the end of the lever *g* falling by its own gravity when above the water, and causing the opposite end of the lever *g* to cover the orifice of the tube *f*. When the lower end of the bucket just passes above the trough D, a pin *j* strikes against the lever *g*, and throws the end of the lever below the tube *f*, allowing the water to flow out.

Claim.—The combination of the bucket G, with faucet H attached, platform E, and wheel and axle *c d*; the above parts being connected by the ropes or chains *b c*, and arranged substantially as described for the purpose specified.

No. 14,525.—ANDREW J. SWEENEY.—*Water Metre.*—Patented March 25, 1856.

The piston-rod P has in one end a link F, to change the position of the weighted lever G, which plays in a slotted piece I, forming a rest for the lever at either end. The lever strikes in its fall on either end (as the case may be) another slot on the valve-rod K, and opens and closes the ports B and D, allowing the cylinders A and A¹ to fill and discharge alternately.

M is the discharge-pipe, and N the supply-pipe.

Claim.—The combination of two cylinders and two pistons with one head common to both, having the ports thereto attached as herein described, forming a cheap and effective metre, with but little liability to get out of order.

No. 14,921.—NATHAN B. MARSH.—*Improved Water Metre.*—Patented May 20, 1856.

The rod *i* is by means of the bar *z* placed in rigid connexion with a valve-rod 2, having attached a pair of tappets 3, which, at the successive strokes of the piston, move the arm *y* alternately to and fro, and with it the valves.

In order that there may be no perceptible cessation of the flow of water, the valve motion is made almost instantaneous, by the retracting force of a spring 4, composed of India-rubber thong, attached at one end to the outside of the arm, and at the other end to a stirrup 5, capable of vibrating around a pivot placed eccentrically with that of the arm *y*, so that the thong being drawn out of the middle of the stroke, tends to throw the arm to whichever extremity of its sweep it is for the time being nearest. These valves and their perforated sockets are so arranged that they can at no part of their motion communicate with the supply and the discharge at the same time.

The inventor says: I am aware that elastic diaphragms have been used for various purposes; this, therefore, I do not claim.

But I *claim* the manner of pinching the diaphragm between the plates *f g*, so as to perfectly and at all times pack the joint between the chambers which it divides, viz: by means of the projecting flanges

on each, lapping past each other, and the nuts to hold them together as represented.

The double reversing valve movement, namely, the two solid cylindrical valves *r s* having their spindles connected by a rocking-beam *x*, and playing within tubes *t u*, communicating at their ends with the supply *l* and discharge *m* respectively, and with the respective compartments *a* and *b* of the measuring cylinder, by means of apertures in their sides.

No. 15,597.—CHARLES J. P. ARIAIL.—*Improved Method of Applying one Stream of Water to Assist in Raising Another*.—Patented August 26, 1856.

The body A is provided with two concentric annular channels B and C, in which the valves *e* and *c* attached to plate D are made to revolve. The plate D revolves on its centre-pin as the pressure of the water running from the reservoir through the siphon E acts upon the valve *e*; the valve *c*, being smaller than valve *e*, forces a body of water in the channel C into the pipe S and raises the water in said pipe.

Claim.—The arrangement of raising water of two concentric annular channels, to which are affixed self-acting, rotating valves; attaching to one channel a siphon, through the suction of which, and pressure of water following, the rotating valves are operated, constructed and arranged, substantially as described.

No. 16,235.—JOHN HELLER.—*Improved Portable Water Mill*.—Patented December 16, 1856.

The nature of this invention consists in the arrangement and combination of four overshot water wheels E, enclosed within a box A, so as to operate on the four sides of a bevel wheel on a vertical shaft F, for the purpose of maintaining said shaft in its proper perpendicular position.

Claim.—The "Portable Quadruple Water-Power," arranged and combined substantially as described.

No. 14,535.—JOHN HASELTINE.—*Water Wheel*.—Patented March 25, 1856.

A is a scroll which conducts the water to the wheel; the radial portion *f* is connected to the shaft D by the tangential partition C, which latter is parallel with the shaft. The hoop E surrounds the extremities of the inclined portion C¹ of the float.

Claim.—Making the outer portion *f* of the floats radial, the second portion C tangential, and the third and last portion C¹ to incline downward from the shaft D and from the tangential portion C, when the same or the several parts are constructed, combined, and arranged substantially as described, so that the water will act against the two first by propulsion, and upon the latter by its weight.

No. 15,175.—WILBUR M. DAVIS.—*Improved Water-Wheel*.—Patented June 24, 1856.

The water enters through the spout A, passes round between the scroll B and scroll-plate H, through the pitches G acting upon the floats F, and passes out at the bottom of the wheel.

Claim.—The combination of the scroll-plate H and water pitches G, to secure more beneficially the direct action of the water, in combination with the cone spreading the bottom of the wheel, with a curved float F, narrowed at the bottom, and set spirally upon the cone E, which, with the scroll-plate and water-pitches, secures the full, direct action and re-action force of the water upon the wheel.

No. 15,309.—JOHN TYLER.—*Improved Water-Wheel*.—Patented July 8, 1856.

The object of giving the dish-shape to the head *e* of the wheel is to enable the water as it enters the wheel to exert an upward lifting action upon it; also, to cause the water to be kept in a compact mass, and to pass so rapidly and so cleanly through the wheel, that there can be no loss from the reaction of sluggish water between the buckets. The object of giving the scolloped shape to the rim *f* is to conduct the water in a solid body from the water-way A against the central portion of the convex surface of each bucket, and then, as soon as it has performed its propelling function, allowing it freely to fall out of the wheel, and not react upon the concave surfaces of the buckets.

Claim.—Giving the head *e* of the improved water-wheel an upward curvature from centre to circumference.

2d. The peculiar shape and position of the series of buckets within the wheel, viz: the convex surface of each bucket having the shape of the segment of a circle whose radius is one-third longer than the radius of the wheel, whilst the said buckets are so arranged that the convex surface of each bucket is tangential to an imaginary circle, whose centre is the centre of the wheel, and whose radius is one-third the length of the radius of the wheel.

3d. Connecting the lower edges of the buckets to each other by means of a scolloped ring *f*, of such a shape that the water will be conducted from the scroll-shaped water-way directly against the central portion of the convex surfaces of each bucket, and then pass freely downwards between the buckets.

No. 15,977.—GEORGE E. W. HERBERT.—*Improved Water-Wheel*.—Patented October 28, 1856.

The water, being simultaneously admitted upon all sides of the wheel B, strikes upon the inclined faces *a* of the buckets. The flanges *l* prevent the water which has entered the wheel from being thrown by centrifugal force against the current entering through the scroll-passages, and thus impeding it; and by checking the water near the

periphery of the wheel, where it exerts most force, increases materially the power of the wheel.

Claim.—The flanges *l*, constructed as described, in combination with the inclined position of the buckets *a*, substantially as specified and for the purposes set forth.

No. 14,882.—GEORGE W. PITTOCK, JOHN B. STOTT, and GALEN RICHMOND.—*Improved Reacting Water-Wheel.*—Patented May 13, 1856.

The water, being admitted to the top of the upper wheel, in forcing its way down causes it to revolve. Its exit water, instead of passing off uselessly, is projected against the buckets of the lower wheel, giving effect to it also, both as a direct and reactive wheel.

Claim.—The combination bucket, formed by the union of two separate buckets, whose lines are arranged so as to form a hollow box, through which the water passes in operating the wheel. We claim the mechanical arrangement and application of the gearing to the wheels and shaft *X*, with the upper section of the cone of the upper wheel, in combination with the cap *E* which covers it.

No. 15,384.—A. MUNROE.—*Improved Reacting Water-Wheel.*—Patented July 22, 1856.

The object of this invention is to introduce the water into the wheel in the proper direction, as represented in the illustration, the water being discharged from the centre of the wheel, so as to allow a free and unobstructed current to pass through the spiral *A*.

The inventor says: I do not claim the scroll *A*, nor the concave buckets *d*, when separately considered, for they have been previously used; but I *claim* the scroll *A*, having the guide or deflecting plates *a* attached to it, the wheel *B* provided with the concave buckets *d*, and the plates *e* attached to its arms *c*; the above parts being arranged and combined as shown, for the purpose specified.

No. 15,463.—JOHN C. SHOREY, assignor to AUGUSTUS J. WEBSTER.—*Improved Method of operating Gates for Water-Wheels.*—Patented July 29, 1856.

A represents a horizontal water-wheel, mounted in the usual manner. The horizontal gates *F* and *G* are arranged above the water-wheel, and can be made to turn on their fulcra *F* by means of the pinion *K* and racks *h*. In fig. 1 the gates are represented as being open; in fig. 2 they are represented as being shut.

Claim.—Applying the two gates to the wheel and flume, in manner and so as to operate with respect to the discharging opening and the wheel-shaft, substantially as specified.

No. 16,027.—DAVID M. TYLER.—*Improved Method of Starting and Stopping Water-Wheels.*—Patented November 4, 1856.

The operation of this water-wheel is as follows: The issues being closed, tooth *y* of arc *c* is made to engage the wheel *h*, and power is applied to wheel *W* in the direction of arrow. This turns the wheel *h* in the direction of arrow 2, and drawing rods *e*, as shown by arrow 3, slightly open the issues. The discharge of water which then takes place produces the rotation of the wheel in the direction of arrow 4, carrying disk *D* around until point *p* of dog *i* drops into notch *m*, the issue gradually increasing in size until this point is reached. The teeth of arc *c* are then disengaged from wheel *h*, and the water-wheel is in operation. Pressure upon rod *R* forces down the disk *B*, causing point *p* to be removed from notch *m*, when the pressure of the water on the buckets close the issues, and the dog point *p* is arrested by notch *n*.

Claim.—The combination of the frame upon the main shaft, and the spring dog *i* on the same, with the notched disk *D*, and the rods leading to the swinging buckets, or their equivalents, for effecting the opening of the issues and locking of the same, substantially as set forth.

Also, the beveled disk *B*, in combination with the studs of the dog, or their equivalents, arranged and operating substantially as set forth, for permitting the water in the wheel to close the issues.

No. 15,273.—H. B. BARBER.—*Improved Method of Drawing Water from Wells.*—Patented July 8, 1856.

In raising the bucket *I*, it comes in contact with the lever *O*, (represented in detail in fig. 2,) and raises the same together with pawl *R*¹; and at the same time the pawl *R* is lowered, and arrests the gearing of the pulley *G*, holding the bucket elevated. The motion of the crank-shaft *C* is then reversed, and the pulley *E*, which runs loose on shaft *C*, coupling itself to pulley *G*, elevates the bucket *K*, and the bucket *I* is lowered. By unscrewing the set-screw *m*, so as not to project beyond the arms *n* of wheel *G*, and by arresting wheel *E* by means of hasp *d*, one bucket only may be used without any further alterations in the parts of the machinery.

Claim.—The use of the lever *O*, in combination with the two pawls *R* and *R*¹ and toothed pulley *G*, or their mechanical equivalent, constructed and arranged as above described, for the purpose of automatically arresting the pulleys when the buckets are at a given height, and keeping them suspended during their discharge.

I further claim combining the two pulleys *E* and *G*, mounted on one shaft, and driven by the same pinion, with the hasp *d* and thumb-screw *m*, for the purpose of connecting or disconnecting said pulleys, and thus working one or two buckets.

No. 15,970.—PLUMER CHESLEY.—*Improved Current-Wheel.*—Patented October 28, 1856.

This invention relates to the peculiar construction of a wind and water wheel, arranged with a perpendicular shaft *A*, to which are

attached one or more sets of wheels, each set containing four arms, to which the fans or floats B are attached. If the wheel is operated by wind and water combined, two sets are used upon the same shaft, one acting in the wind, and the other in the water.

A detailed description of the construction of this wheel would take up too much space to be given here.

Claim.—1st. The regulators, as described and arranged.

2d. I claim the entire arrangement for starting and stopping the wheel, as I have made known.

No. 16,110.—STEPHEN K. BALDWIN.—*Improvements on the Fourneyron Turbine Wheel.*—Patented November 25, 1856.

The water takes its course through the orifices V, conducted by the water-guides J, and impinges against the buckets B at U, and thence passes downward in a reverse direction to the arrows, the momentum of the water causing it to press hard against the bucket until it reaches the Fourneyron turbine part, when it impinges against that with the momentum acquired in its descent, and the pressure of the head water following, and is discharged at the orifices at W.

The inventor says: I do not claim the water-guides J J, &c., or the circular gate N, or any particular method of applying the water to my wheel, as there are various methods in which it may be done.

But I claim the extending of the bucket B of the Fourneyron turbine water-wheel further inward towards the centre of the wheel, either on the radial lines, or on lines varying either side of the central point, and thence upward and outward, so as to receive the direct action of the propelling water against the extended bucket on the outside of the wheel, and above the Fourneyron turbine part, as described.

No. 14,793.—JOSEPH BASTION.—*Improved Construction of Guides or Chutes for Turbine Wheels.*—Patented May 6, 1856.

B represents a conical centre through which the wheel-shaft passes. The curved supporters C C (fig. 2 is an inverted view, with the chute closed) perform the double purpose of supporting the conical centre, and acting in conjunction with the movable part for closing the chute H. The flange g supports the movable or adjustable part of the chute H. Figure 1 represents the chute open. In order to adjust the same, the movable part must be revolved in the direction of the arrow.

Claim.—The stationary conical centre B, in combination with the adjustable parts D E F and supporters C C, for the purpose of graduating the quantity of water discharged, and giving the desired direction to the same.

No. 14,015.—BENJAMIN FENN.—*Wind-Mill.*—Patented January 1, 1856.

To a vertical shaft A are secured the horizontal arms D in a rectangular position; the wing supporters E are secured to these arms in

a horizontal position, and between them the wings F G and I are hung on pivots H a little one side of the centre of said wings; when the force of the wind increases, the wings are turned into an oblique position; and as the lower side of the wing I rests against the governor M at each end of the wing, (figs. 1 and 3,) they move correspondingly; and as soon as the wing is out of range of the wind, the governor, acting as a counter-balance, causes the wing to turn back into its former position. The wing F and its duplicates are governed in high winds by the pendulums J. As the wing F is being brought into range with the wind, the force of the wind acting upon the wing O attached to the pendulum, it is moved back from d to e, which withdraws the rod L so that the wing raises from f² to g (fig. 3); and as soon as the wing has passed out of the range of the wind, the pendulum will fall back to d.

Claim.—What I claim as my invention, and desire to secure by letters patent, is, the horizontal movable wing with unequal sides, and hung upon eccentric pivots, in combination with the governors M, arranged in the manner and for the purpose set forth.

I claim, also, the method of governing and releasing the wings in high winds by means of the pendulum J and rod L, in combination with the wheel or counter-balance R, as herein described.

No. 15,714.—EPHRAIM WHITMAN.—*Improved Wind-Mill.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination and arrangement of the rotary wind-flume A, the series of turning blinds or gates M, and the wind-wheel G, the whole being applied and made to operate together substantially as described.

And in combination with the wind-flume A, the series of turning blinds or gates M and the wind-wheel G, the whole being applied and made to operate together substantially as described.

And in combination with the wind-flume A and its wheel G, the series of guide-plates L L L and the concentric tubular tapering case I, arranged substantially in manner as explained.

Also, arranging the transferring shaft F in the turning axis of the wind-flume A, and so as to pass through the lower journal C thereof, and thereby enable the wind-flume and driving-shaft H and its bevelled gear to revolve around such transferring shaft and the bevelled gear thereof, and transmit power through the shaft F under any position of the rotary-flume A.

No. 15,709.—JOHN R. ST. JOHN.—*Improved Wind-Mill.*—Patented September 9, 1856.

The governor T can be raised or lowered by means of the rod i on vane H; and as the governor T is pressed backward by the force of the wind, the rudder-vane H moves vertically on the axis m, by which

the segment-pinion *f*, operating upon circular-rack *d*, carries forward the collar *n*, the rods *B* contracting the spiral-spring *e*; at the same time the levers *p* are operated by the rods *B*, and move the rods *q* for opening or shutting the sails of the wind-mill.

The inventor says: I do not claim, separately and simply by themselves, any of the parts, as they have all been used before.

But I *claim* the arrangement and combination of the parts as described, or their equivalents.

1st. The traverse table and tail-piece for carrying the reduced part of the main shaft, and for sustaining the main shaft horizontally on the screw-pivot *G*, with the arrangement thereon of the rudder-vane for its perpendicular movement.

2d. The main shaft with its hinder portion reduced, with the circular-cogged rack *d*, the collar *n n*, and the spiral spring *e e*, working therewith.

3d. The rudder-vane *H*, as performing the two offices of keeping the sails to the wind by moving the traverse tables horizontally; also as carrying the rod *i i* and the governor-vane or globe *T*, for giving a vertical movement.

No. 15,805.—MARCUS FRISBEE.—*Improved Wind-Mill*.—Patented September 30, 1856.

The spring *F* runs towards the shaft *A*, a little past the edge of the wing *C*, so that it hits a stop when brought into a line with the shaft by the wind; it is held in this position by a moderate wind until the shaft moves round, when the wind presses on the other side of the wing, and the opposite wing takes its position. The stops are fastened to two flat rods *R R* by means of loops, allowing a motion up and down.

Claim.—The combination of the spring on the sails with the adjustable or shifting straps operated by the lever, in the manner and for the purposes set forth.

The combination of the spring on the sails with the adjustable or shifting straps operated by the lever *G*, in the manner and for the purposes set forth.

No. 16,257.—SOLOMON W. RUGGLES, assignor to SILAS RUGGLES.—*Improvement in Wind-Mills*.—Patented December 16, 1856.

The vane *F* keeps the rod *I* in a proper relative position with the wind, and the buckets *K* are raised in consequence of the rods *f* passing over the rod *I*; and as the buckets *K* rise, they are filled by the wind, and the disk *J* is rotated thereby. The buckets fall by their own gravity as they pass off the rod *I* and get beyond the direct action of the wind.

Claim.—The disk *J* and buckets *K*, in combination with the wire or rod *I*, connected with the vane-bar *E*, and arranged as described for the purposes specified.

No. 14,808.—ALBERT G. FIELD.—*Improved Self-Regulating Wind-Mill*.—Patented May 6, 1856.

The wind being in the direction of the arrow, the proper weight *I* will keep the sails *G* at an angle of about 45° with the wind, a button *h* on the cord preventing the weight from turning said sails square with the wind. As the sails move around, they will preserve their position till the wind catches against the windward edge of the sails, which causes the sails and spindles *F* to be turned in a reverse position, as shown at *G**, the sails, however, still forming an angle of 60° with the wind. At *G*** the edges of the sails will only be presented to the wind; as they are not acted upon by the weights *I* at this point, the buttons *h* being against the loops *d*, and as the sails reach the windward side of the wheel, the wind will again act upon them, so as to throw them into the position shown at *G****.

Claim.—Hanging the sails *G G'* on arbors or spindles *F*, substantially as shown, and having the weights *I* attached to the cranks *b* of the arbors or spindles by cords *c*, having buttons *h* upon them, as herein described, for the purpose specified.

I further claim raising the weights *I* by means of the cords *f* attached to the weights *I* and shaft or pin *J*, arranged substantially as herein shown and described.

No. 14,918.—MORGAN S. JOHNSON.—*Improved Method of Regulating Wind-Mills*.—Patented May 20, 1856.

The nature of this invention consists in providing an outside framework *G* with doors *H*, which are made to open and shut, by turning the shaft *C*, for the purpose of letting in or shutting out wind.

Claim.—The particular mechanical devices, as arranged for the purpose of housing the sails.

No. 14,997.—JESSE BATTEY.—*Improved Method of Regulating Wind-Mills*.—Patented June 3, 1856.

The wing *d* serves to counteract the opposite wing *s*, while the adjustable wing *e* counteracts the pressure of the wind against the shield *B* and frame.

The regulator *D* is connected with the vane *C* in such a manner that the extension of the balls brings the point *N* nearer the vane *C*, and *vice versa*.

The object of the pressure-regulator *E* is to operate instantaneously on the regulator *D*, in case of sudden gusts of wind, causing it to shut off a portion of the wind before the increased velocity of the main wheel would cause it to do so. Any sudden gust of wind throws back the wing *a*, raising the lever *K* by means of the cord *F* winding upon the shaft *H*.

In order to start the mill, the point *Y* is brought nearer the vane *C* by means of cord *T* and the double lever *U*, whereby the pinion *V* is

made to slide clear of the segment O. The mill is stopped in a similar way.

The inventor says: I do not claim the wind-wheel in itself considered, neither do I claim the regulator D separately; as similar ones have been used before.

But I claim the regulator E, either with a perpendicular or inclined wings or with the shaft H standing upright, and the wing turning horizontally, and its combination with the regulator D; also, the rotary vane C and its arrangement, and the connexion of the combined regulators E and D or either of them separately therewith, for the purpose of securing uniformity of speed. And lastly, I claim the entire arrangement of starting and stopping the mill, as herein specified, or any arrangement substantially the same.

No. 15,599.—WILLIAM C. CHAMBERS and THOMAS S. HARGRAVES.—*Improved Wind-Wheel*.—Patented August 26, 1856.

Motion being given to the mill, it imparts a movement through the gears to the vertical shaft L, which propels the machinery. As the force of the wind increases or slackens, the mill will always be self-regulating; for the vane or rudder A¹ will always be in range with the wind, or nearly so, while the wind-wheel H will, in proportion to the resistance offered from the machinery it propels and the force of the wind, be carried away from or brought to the line of the rudder A¹. As the plate F is vibrated away from the line of the rudder, it will, by means of the segment O, cause the small pinion, which is secured to the pulley Q, to rotate; and as the weight cords are secured to this pulley in such a manner, by being wound around them, as to always draw, one weight will be elevated, and the other depressed. The purpose of the heavy weight M is to always bring the wind-wheel in a line with the rudder, while the small weight N serves to steady it in its action. The rudder-head E and plate F are free to rotate upon the ring of the plate D, as the direction of the wind may indicate.

Claim.—We claim attaching the plate E, which supports the wheel, to the rudder plate, in such a manner as to allow it a vibrating rotary motion, whereby the mill is rendered self-regulating, substantially as described.

2d. The combination and arrangement of the segment gear O, pinion P, drum Q, and weights M and N, (or any equivalent mechanism,) for retaining and holding the wind-wheel always in proper position, substantially as set forth.

No. 14,572.—FRANCIS PEABODY.—*Improved Wind-Wheels*.—Patented April 1, 1856.

Upon each side of the hubs are grooves i^2 , to which are adapted guide rings k^2 . To the pins l^2 projecting from opposite sides of these rings are pivoted the rods N and O, the object of which is to prevent the rings from being revolved by the wheel. To the pins l are attached the

chains Q, which are secured to the windlass R, in order to hold the wheel more steadily in violent gales.

To the rings k^2 are secured the chains Q², with their weights S¹. This weight is sufficient to counterbalance the force of the wind upon the wheel, so long as it is not necessary to retard its motion by bringing it nearer to the regulating disk. As the wind increases, the wheel B² is carried back towards its disk, and the weight S¹ is raised, until it comes in contact with the lowest weight p , which it lifts from the step T. The weights p are thus successively raised, until the accumulated weight counterbalances the force of the wind.

Claim.—The method herein described of hanging and arranging the two wheels B B², and adapting them to the opposite ends of a permanent building A; the wheels B B², with their regulating disks C C², being secured to the revolving turn-tables D and D², at a distance from the points $f f$ around which they revolve, equal or nearly so to one-half the width of the building, whereby wheels of great diameter may be employed in connexion with a permanent building of any required dimensions, as set forth.

2d. The weights S and $p p$, with the chains Q², or their equivalents, in combination with the disks C², for the purpose of regulating the motion of the wheel to the varying force of the wind, as set forth.

No. 14,459.—A. LEMPCHE.—*Improved Self-Regulating Wind-Wheel*.—Patented March 18, 1856.

If the speed of the wings G increases in consequence of an increased velocity of the wind, the weights e will be thrown outward by centrifugal force, and the hooked ends of the lever J will turn the wings more obliquely to the wind, the tension of the spring I being overcome.

Claim.—The spiral spring I, or its equivalent, in combination with the weighted levers J, arranged substantially as shown, for the purpose specified.

No. 15,193.—FRANCIS PEABODY.—*Self-Regulating Wind-Wheel*.—Patented June 24, 1856.

Immediately behind the vanes A of the wheel are a set of secondary blades B (shown in fig. 3). The hubs C and D slide upon their shaft G, a pin a^3 from the hub D of the wind-wheel entering the curved groove a^2 , and a pin c from the hub C entering the straight groove c^2 of the shaft. When the force of the wind increases, the hubs D and C are both carried back against the action of the spring F; the wind-wheel, however, is caused to make a partial revolution with respect to the shaft as its hub recedes, and thus the blades B are brought opposite to the openings between the fans of the wind-wheel, and these openings are more or less closed thereby.

Claim.—Regulating the velocity of the wind-wheel by means of the secondary blades B.

No. 14,099.—FRANK G. JOHNSON.—*Improved Method of Regulating the Speed of Wind-Mills*.—Patented January 15, 1856.

The nature of this improvement will be understood from the claims and the engravings.

The inventor says: I do not claim as my invention the general principle of regulating wind-mills by the use of weights or governors, revolving with or by means of the wind-wheel, and controlling the sails thereof through the intervention of levers and rods.

But what I do *claim* as my invention, and desire to secure by letters patent, is—

1st. The method substantially as herein set forth of regulating the velocity of the wind-mill and controlling the position of its fans by the use of the weights D D D with the springs E E E, adjusted to slide from and towards the centre of the wheel upon the spokes B B B, and connected to the fans A A A by means of the rods G G G, or their equivalents.

2d. I claim the combination together of the brake-wheel I and the arms Z Z Z, for the purpose of setting the fans edgewise to the wind whenever desired, said arms and brake-wheel being formed and adjusted substantially in the manner herein set forth.

No. 14,143.—FRANCIS PEABODY.—*Improved Method of Regulating the Velocity of Wind-Wheels*.—Patented January 22, 1856.

In order to complete the full circle of the disk in rear of the wheel A, (to oppose the full circle of the wheel,) the inventor hinges to the roof and sides of the building the wind-gates F and G. When the wind is light, the segments can be thrown back; when the wind is very irregular, the wheel A is moved longitudinally upon its shaft H nearer towards the wind-gates by means of hand-wheel k, screw-rod i, and rods c c, sliding in grooves of said shaft H, as will be understood from the engravings.

Claim.—1st. The wind-gates herein described, for the purpose specified.

2d. The method herein described of controlling the wheel by means of the rod c c and screw i, arranged and operating in the manner substantially as herein set forth.

XII.—LEVER, SCREW, ETC.

No. 15,142.—DAVID McCOMB.—*Improvement in Non-Elastic Bands for Bales of Cotton and other Fibrous Materials*.—Patented June 17, 1856.

Figure 3 exhibits the under side of the slide; 1 and 2, in figure 2, exhibit the other side of said slide, which is so constructed, that 1 serves as a guard to prevent the slide from dropping down too far, when applied in baling. Figure 4 exhibits a sectional view of the two complete.

Claim.—The combination of the link or slide with the hooked ends 5 and 6 of hoops, for the purpose of securing them from opening with the expansive force of the bale A.

I also claim the peculiar formation of the link, (as exhibited in figures 2 and 3,) which forms a secure means of keeping the hooked ends of the hoop together, and has a guard 1 which keeps it to its place, is easy of application in putting on, and may be removed at pleasure without mutilation.

No. 14,213.—ABNER WHITELEY.—*Improvement in Belt-Fastenings*.—Patented February 5, 1856.

The hooks B attached to the end A of the belt being passed through any set of holes in the end D of the belt, the belt is fastened ready to go on the pulleys. The end D overlaps the heads C of the hooks. The object of this is to secure the passage of the belt between side-guides, and avoid difficulty in catching against said guides, as would be caused by a buckle, and to permit the belt to be taken up and let out without cutting off the end and splicing again to let it out.

Claim.—The hook B, made as described and for the purposes set forth.

No. 14,389.—JOHN H. CHEEVER.—*Improvement in the Manufacture of India-rubber Belting or Banding*.—Patented March 11, 1856.

The nature of this invention will be understood from the claims.

The inventor says: I do not claim the modes of preparing the rubber, or of compounding or vulcanizing the fabric, nor the machinery, as these are all well known to the manufacturers of rubber goods; nor do I claim the compounding of fibres of cotton or flax with India-rubber, as this has been done for the purpose of packing steam joints and for other similar purposes, but it has never been done in the manner described in the foregoing specification, nor has it ever before been used to constitute the fabric known in commerce as belting or banding; nor do I desire to claim the new process of making fibrous rubber goods in such forms that the fibres are arranged crossing each

other, in the manner above described, for the purpose of enabling the fabric to resist tension in all directions, and giving it flexibility without elasticity, as this new process and fabric I intend to make the subject of a separate application for letters patent on my part. But I do *claim* the improvement in the manufacture of rubber belting or banding, which consists in compounding fibres of cotton or flax with India-rubber, substantially in the manner and by the processes above described.

No. 14,175.—GEORGE D. YOUNG.—*Improvement in Belt or Band Fastenings*.—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—A clasp for uniting the ends *a a* of a belt or band, consisting of the bottom plate *b*, with its vertical studs *c c*, and the turning button *e*, or its equivalent, all operating together to rigidly gripe the band or belt, as described.

No. 15,795.—AUGUSTUS SIMPSON, assignor to SAMUEL H. F. BINGHAM.—*Improved Belt-Punch*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I am aware that punches and dies for various purposes have been used, wherein the one enters the other; but mine differs from all those heretofore used, in causing the cut to open as the cutter passes through, as shown in fig. 2, making an entirely different principle of cutting from those; which is the principle of action that I claim; or, in other words—

I *claim* the combination and arrangement of the tit *D* and the cutter *A*, when constructed and operating as described; whereby the conical form is given to the article punched, and the cutting facilitated and performed with the edge of the cutter free, as set forth and described.

No. 16,222.—MARK ALLCUT.—*Improvement in Adjustable Cant-Hook for Moving Logs, &c.*—Patented December 16, 1856.

The arrangement of the adjustable hook *B*, which is held in its place by means of pawl *C*, affords the means of applying this cant-hook to logs, stones, etc., of different sizes within the limits of its capability.

Claim.—The arrangement and combination of the lever with its pawl and slot, and the hook with its ratch notches, substantially as described, and composing an improved cant-hook, as specified.

No. 16,283.—WILLIAM MAHER.—*Improvement in Blacksmith's Crane*.—Patented December 23, 1856.

By turning the bar *E*, the work will be raised or lowered according to the direction in which said bar is turned, because the bar *E* turns on

the screw *C*, and the work, in consequence of being attached to the chain *g*, may be raised or lowered by windlass *D*; and as the end of the work is attached to chain *h*, the work may be readily handled in any direction.

Claim.—The horizontal bar *E* hung upon the screw *C*, and used in connexion with the windlass *D*, the above parts being arranged as shown, for the purpose specified.

No. 14,927.—E. PRICE.—*Improved Elevator for Cotton, Sugar-Cane, &c.*—Patented May 20, 1856.

The cotton is raked from the table *11* on to the carrier and elevated, the carrier being set in motion by applying power to the pulley *13*.

The carrier is composed of the cords *10 10* and slats *9 9 9*, as represented.

Claim.—The arrangement of the table *11* with the carrier apparatus, as represented in the accompanying drawings.

No. 14,282.—MARCUS M. CASS and LAWSON R. BIGELOW.—*Improved Grapple for Raising Stone*.—Patented February 19, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The combination of the levers, braces, and wedge, substantially as herein described, for the purpose of making a grapple for raising stone, or other heavy bodies, when the power to raise such body is applied to the wedge, and through it to the levers, to cause their jaws to tightly grasp and hold the body to be raised, as set forth.

No. 14,671.—GEO. MARTZ.—*Improvement in Apparatus for Hoisting Coal*.—Patented April 15, 1856.

The hoisting-carriage *P* and its load rest entirely upon its inner wheels *e e* and *e' e'*, until, in ascending, the outer sets of wheels *f f* and *f' f'* are brought upon the wider track of rails *E E*. The forward end of the coal car rests entirely upon the inner pair of wheels *e' e'*; and consequently, when the said wheels, in ascending, reach the chute *G*, they will follow the slope track down said chute, whilst the after end of said car will rest upon the outer wheels *f f*, which will throw the coal car into a position sufficiently inclined to cause its contents to be discharged into chute *G*.

The car is made to self-discharge its load by means of latch *V* and projection *q*.

As soon as the hoisting-carriage is relieved from the elevating power, it will run backwards all the way to the bottom of the slope-track *D D*, and will there discharge the coal car out on to the mine track *C C*, and put itself in proper trim for receiving another loaded coal car.

Claim.—Supporting the hoisting-carriage upon outer and inner sets of wheels, arranged in such a manner, in relation to the double sets

of railway tracks and the discharging-chute, that the coal car in said hoisting-carriage is made to self-discharge its load of coal into said chute.

I also claim so proportioning and arranging the respective parts of the hoisting-carriage and the coal car that, as soon as the elevating power is detached from said carriage, it will, by the force of gravity, run back to the bottom of the slope-track and re-station itself in the proper position for discharging its empty coal car and receiving a loaded car.

No. 14,666.—GEO. W. LA BAW.—*Improvement in Hoisting-Drums*.
Patented April 15, 1856.

The outside ends of the coilers J are arranged with a spring l, which at one end has a pin inserted in it. In the shaft M there is a slot through which the spring l passes, which is so made that its pressure forces it against the head of the coiler, which has a hole for the pin. If the pin is withdrawn, the shaft will turn independent of the coiler, whereby any amount of rope may be wound around the shaft inside the coilers.

Claim.—Constructing the coilers hollow, and with a slot k in them for the passage of the rope, together with the spring l, or equivalent, for the purpose of holding and protecting the surplus rope.

No. 16,233.—HARVY GRAY. *Improvement in Lifting-Jack*.—Patented December 16, 1856.

By lifting one of the pawls i, the weight raised by this jack, and resting on roller G, can easily be moved in a horizontal direction.

The inventor says: I do not claim the screw, yoke, rollers, pawl, or ratchet, separately considered; for I am aware they are in use for various uses.

But I *claim* the employment of the screw E, yoke F, roller G, pawls i, ratchets k, in combination, substantially and for the purpose as set forth.

No. 14,170.—HENRY F. SHAW.—*Improvement in Screw-Jacks*.—Patented January 29, 1856.

By revolving the body B of the jack, by means of a lever passed through the hole H, the plates E E, with their screw-shafts C C, can be made to recede from or approach each other, according to the position of the pawls g.

Claim.—The within described screw-jack, consisting essentially of the screw C, plates E, and double-pawls g, operating in the manner substantially as herein set forth.

No. 14,261.—WILLIAM D. TITUS.—*Improvement in Oil Box for Axles with Conical Journals*.—Patented February 12, 1856.

The chambers d being filled with oil, the oil will ooze out of the openings x, and by the rotation of the hub C will be gradually worked

upwards along and around the cones till the whole surface of the fixed conical bearing has been lubricated. The surplus of oil will escape and fall back through the sluices s into the oil chamber d.

Claim.—Constructing the cone or cones A, made close, with an internal oil or grease chamber d, round a cylinder or tube c, forming the centre part longitudinally of the cone, and providing the said cone or its periphery at opposite ends and on reverse sides with sluices or openings x and s, essentially as and for the purposes specified.

No. 15,145.—JOHN T. NOYE.—*Improvement in Clutch for Flour-Packer*.—Patented June 17, 1856.

A pin f projects from the packing-shaft T, and fills the slots S of cylinder W, so that the driving-shaft by means of this pin will carry the packing-shaft along with it, until the packer-shaft rises so that the pin may turn in the chamber K. To prevent the pins from striking the corners formed by the slots and cylindrical chamber, the triangular self-adjusting guard O is used: in its natural position, one arm extends across the slot; and as the packing-shaft rises, the pin f catches the arm x¹ and turns it round so that this arm stands nearly vertical, and the upper end of it reaches a little above the base of K, so that the pins f are thrown to the upper part of K before they can revolve in it; after the pin passes over the top of this arm, the arm falls to its natural position. After being thrown up to this position, the packing-shaft is kept here at pleasure by the rod L and its attachments in the usual manner.

Claim.—The clutch formed by the hollow shaft W, with slots S, and chamber K, in connexion with the round shaft T, with driving pins f, and balance or slide guards O, to drive the pins up into the chamber in the manner and for the purpose herein set forth.

No. 14,065.—WILLIAM C. PANCOST.—*Improvement in Cheese Presses*.—Patented January 8, 1856.

The spiral or screw wheel A acts upon a groove in the circumference of the wheel E, which can slide on its stationary shaft, said shaft being secured in the body of the follower D. The wheel A is turned by means of the lever C, and the spiral threads of the smallest diameter act upon the wheel E, and by it the follower is pressed downward.

Claim.—The spiral grooved wheel A, in combination with the self-adjusting wheel E, as described above, for the purpose set forth.

No. 14,098.—CALEB S. HUNT.—*Improvement in Cotton Presses*.—Patented January 15, 1856.

a represents part of the frame work of the press. Clasp f, with its dog g fitting over stud h, connects the plate e, fixed to the nut d, to the collar i. By turning nut k, by means of lever m, the nuts k and d will turn as though formed in one piece, and the nut d will travel upon the

coarse main-screw *c*, which supports the platen, (not shown in the engraving,) and thereby rapidly advance the latter. When the material is already considerably compressed, and a slow movement required, the spring pawl *o* attached to the plate *e* engages with a notch cut in the thread of main screw *c*, and thereby holds the nut *d* stationary and prevents it from turning on the screw *c*, and the platen from descending as soon as the nut *d* is disconnected from the collar *i*. This disconnection is effected by turning up clasp *f*. The nut *k* will then travel upon the thread upon the outside of nut *d*, which thread has but little pitch. Thus the screw *c* and platen will be elevated with a slow and powerful movement.

The inventor says: I claim the peculiar arrangement of the respective parts of my improved press, by which I am enabled, with a single lever, to impart either a weak and rapid movement or a slow and powerful movement to the platen of said press, or to any one of similar construction, viz: A non-revolving male screw attached to the platen is embraced by two or more matched and movable concentric screw nuts, whose uniting grooves and threads have a less degree of inclination than the threads upon the said male screw, and which are arranged in such a manner in relation to said male screw and the operating lever as to produce at will the desired movements of the platen, substantially as herein set forth.

No. 15,936.—WILLIAM F. PROVOST and CHARLES J. PROVOST.—*Improvement in Cotton Presses*.—Patented October 21, 1856.

The cotton to be pressed being placed in the upper part *N* of the box of the press, the power is applied to the lever *R*, which is firmly secured to the frame *B*; said frame is thus turned on its pivots, and the bevel wheel *F* runs around the circumference of the stationary bevel wheel *D*, and turns, at the same time, the screw *E*; the nuts *H* approach by this movement towards the centre, straighten the lever arms *I* and *M*, and thus press down the follower *K*. When the material is sufficiently pressed, the side doors *g* are opened and the bale is removed. The frame *B* is now turned in a reversed direction, the nuts *H* move on the screws from the centre outwards and raise the follower. When the follower *K* has arrived at the top of the box, as represented in fig. 2, then the outer sides of the nuts *H* just touch the inner side of the frame *B*; and as the frame *B*, and with it the screw *E*, is turned after this contact, then the friction between the studs *H* and the side pieces of the frame *B* causes the studs to turn with the screw. The levers *M* slide out of their recesses, which are open at one side, and the nuts *H* and arms *I* and follower *K* assume the position marked in red in fig. 2, which uncovers the box *N*, and thus permits the material to be fed in in an easy manner.

Claim.—The so uniting of the follower nuts and levers, as that, when the follower shall arrive at its highest point of elevation, it shall automatically swing out of the way of the filling box, to facilitate the placing of the cotton or other material therein, as set forth.

No. 14,493.—GEORGE H. CORLISS and ELISHA HARRIS.—*Improvement in Presses for Punching*.—Patented March 25, 1856.

The plunger *D* is firmly attached to the yoke *E*, which works in a guide *e*. *F* is an oscillating box which receives the eccentric *C*. This box works at its lower end on a pivot *a*. The plunger yoke is of such a width as to admit of the oscillating movement of the box produced by the revolution of the eccentric.

We do not claim of itself an oscillating connexion between the eccentric and the plunger or follower, for the reason that an oscillating connexion, in the form of a common pitman, has been employed; but we claim the oscillating box *F*, applied and operating within a yoke *E*, in the manner substantially as herein set forth.

No. 14,031.—JOSEPH PEEVY.—*Improvement in Hay and Cotton Presses*.—Patented January 1, 1856.

The beam *B*, sliding with its ends in the slots *a*, is lifted by a cord *e*, and at the upper portion of the slot *a* is drawn upon the guides or supports *i* against the side of the box *A*. The follower *I* is swung to the beam by connexions *m m*, so as to fall into a vertical position as the beam rises, and in this condition is drawn close against the side of the box during the filling thereof, as shown by the red lines.

The inventor says: I make no claim to the mode of operating the pressing arrangement, nor do I claim broadly the result due to my construction, as other devices have been employed to effect the purpose; but I claim as new, and of my invention, the combination of the laterally moving beam *B* with the swinging follower *I*, arranged and operating as and for the purpose specified.

No. 14,663.—SIMON INGERSOLL.—*Improvement in Hay and Cotton Presses*.—Patented April 15, 1856.

A represents the press-box, and *C* a follower, which is attached to a bar *D*, the ends of which pass through slots in the sides of the box.

Claim.—Operating the follower *C* by means of the levers *H H*, attached to swinging frames *G G*, and connected with the clamps *I I*, or their equivalents, for lifting the follower-bars *F F*; the retaining clamps *P*, or their equivalents, being employed for sustaining or holding the follower when the bars *F* are released from the clamps *I*, substantially as shown.

No. 14,009.—NATHAN CHAPMAN.—*Improved Chain for Power-Press*.—Patented January 1, 1856.

The nature of this invention consists in so making a chain to be used on power-presses, that the line of the links shall recede from a straight line, and at the same time the links diminish in length from their point of attachment to the wheel on which they are wound to the follower which they are intended to raise, for the purpose of elevating

said follower in a perpendicular line, and avoiding the side friction occasioned by the use of cone-pulleys used heretofore. A represents the pulley to which the links a^1 of the chain B are fastened; the front of the pulley is provided with projections $a b c d$, upon which projecting surfaces the chain is wound without the links interfering with each other.

Claim.—Having thus described my invention, what I claim as new, and desire to secure by letters patent, is—

The so making of a chain for power-presses, that it shall recede gradually from a straight line, and the links diminish in length as they extend from the wheel on which they are to be wound to the follower, which said chain is designed to work substantially as herein described.

No. 14,733.—NATHAN M. PHILLIPS.—*Electro-Magnetic Grain Scale.*—Patented April 22, 1856.

The electric current passes from the positive pole of the battery to L, thence around the magnet, and through the connecting wire to the scale-valve R. When the requisite weight of grain is received in the hopper B, the beam A rises, forming a connexion at the platina point O and spring N with the negative pole M of the battery, completing the electric circuit. The connexion and circuit being formed, causes the magnet G to attract the armature H, moving the lever I, closing the valve P, and opening the valve F discharging the grain. The valve F is closed and the valve P opened by the operator, and the operation repeated as before.

Claim.—The application of an electro-magnet to open and close the valves of a scale for weighing grain, by making a connexion between the positive and negative poles of a galvanic battery by means of the tilting or raising of the beam, as herein described, and for the purposes set forth, or any analogous arrangement substantially the same.

No. 14,119.—FRANCIS M. STRONG and THOMAS ROSS.—*Improvement in Platform Scales.*—Patented January 15, 1856.

B B are the platform timbers; A is part of the frame-work. The nature and object of the improvement will be understood from the claim and engraving.

The inventors say: We do not claim operating the beam by means of bent levers connected with the steel-yard rod through an *intermediate* lever.

But we *claim*, 1st, the use of corresponding concavities and balls, in combination with the proximate face of the intermediate bearing pieces h and the shoe g , substantially as described, and for the purpose specified.

2d. The adjustable bearings i , in combination with the pivots c , substantially as described and for the purpose specified.

3d. The combination of the projections on the bearings i with the notches in the pivots c , constructed as described, for the purpose specified.

No. 16,286.—LEA PUSEY.—*Arrangement of Railroad Platform-Scales.*—Patented December 23, 1856.

$a a^1$ represent the rails resting on the platform A of the scales, and $b b^1$ the rails of the main track; the cars can be passed either over the main track, so as to entirely clear the platform, or can be brought upon the platform rails $a a^1$, for the purpose of weighing, when they are disconnected from the main track rails $b b^1$ by means of an ordinary switch.

The inventor says: I do not claim a railroad scale, in combination with either a permanent or subsidiary track or siding, so that a locomotive or cars may be passed upon the said scale; nor simply approximating two tracks of a railroad, so that a locomotive or cars may be switched from one to the other, irrespective of the combination and arrangement of the same with the platform of the scale, as described, so as to avoid both the crossing of the track and the consequent use of a frog, or its substitute; nor do I claim supporting part of a railroad track upon posts or supports of any kind, arranged so as to pass up through roomy holes, made in the platform of a scale, so as to admit a locomotive or cars to pass over the same, without bearing upon the scale, irrespective of the peculiar arrangement and combination of the same with the scale, as described; whereby the said scale is adapted for receiving, weighing, and discharging the said railroad cars, without crossing the track, or using a frog or its substitute.

But I *claim* the arrangement of the platform of a railroad scale, either in the main or a subsidiary track of a railroad, substantially as described and set forth; so that when the said platform is not in use for weighing as a railroad scale, the locomotive and train may pass directly over the same, without bearing upon the said platform or scale; and also so that the cars may be passed on and off the said scale in the course of weighing, without crossing the track, and therefore without using a frog or its substitute, as described; whereby all the advantages heretofore derived from a siding constructed for preserving the scale from the injurious effects of the locomotives and trains passing rapidly over it are equally attained, and the room and expense required for the construction and use of the said siding entirely avoided.

No. 14,198.—S. S. MILLS and M. BISSELL.—*Improvement in Weighing-Scales.*—Patented February 5, 1856.

The weights C C D are hung with loops or eyes to the beam arms, so that they cannot be taken from them, mislaid, &c. When not used, they can be placed at the inner ends of the arms, in line with the fulcrum, where, of course, they will not affect the equilibrium.

Claim.—Constructing the scale beam A with arms $a a^1 a^2$, two or more, and otherwise arranged, as shown, so that either of the weights or the arms may, when not in use, be placed in line with the fulcrum of the beam, substantially as described for the purposes specified.

No. 14,361.—JAMES KELLY.—*Improvement in Weighing-Scales.*—
Patented March 4, 1856.

When the indexes H M P are at the zero marks, the frame B will be perfectly balanced on the arms *a a*. The article to be weighed is placed upon the dish R, and the screw-rod J is turned by hand until the weight L is brought out sufficiently far from the fulcrum of the beam to counterbalance the article in the dish. The index M will show the weight in pounds, and the index P will show the fractional parts of a pound. If the article to be weighed is to be placed in a vessel, it (the vessel) is placed upon dish R, and counterbalanced by turning-rod R, which will cause the weight and nut F G to be moved nearer the fulcrum of the beam. The dish R is not represented in fig. 1.

The inventor says: I am aware that scales have been provided with a sliding tare weight G on one end of the beam, and a sliding gross weight L at the other, with the latter end or portion made adjustable by sliding devices that shortened or lengthened leverage. Also, that a fixed leverage in beam-scales is old, and that the mere indication of the weight by screw adjustment is not new; none of such, therefore, do I claim.

But what I do *claim* is the arrangement, substantially as herein shown and described, of the two screws (E and J) with, at opposite ends and forming part, of the double beam (B D), in combination with the nuts F K and weight (G L); all constructed and operating together essentially as set forth, for the separate and simultaneous adjustment of the tare and gross weights from fixed points or distances at opposite ends of the beam, in manner and for the purposes described.

No. 14,702.—R. F. WOLCOTT.—*Improvement in Weighing-Scales.*—
Patented April 15, 1856.

The weighing-poise is composed of the saddle *i* and the hanging weight *f*, the screw cavity in said saddle resting upon the regulating screw *d*, the legs of said saddle resting upon the side-bars *b b* of the beam.

The inventor says: I do not claim the principle of operating a scale-poise by means of a screw.

But I *claim* the arrangement of the compound weighing-poise with the screw *d*, and with the sides of the scale-beam, in such a manner that the said poise may be either lifted from place to place upon the beam, or be moved gradually thereupon by turning the said screw *d*.

No. 16,302.—ELNATHAN SAMPSON, assignor to the "VERGENNES SCALE MANUFACTURING COMPANY."—*Improvement in Weighing-Scales.*—
Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The peculiar arrangement and operation of the respective parts of my improved compound weighing-poise, viz: combining the

outer portion *b* of said poise with the main portion *a* thereof in such manner that the act of rotating the outer portion of the poise will move it longitudinally upon the main portion thereof by a graduated movement, and at the same time indicate the different leverage action thereby produced upon the scale-beam by means of a toothed horizontal index on the main portion of the poise, and a spiral groove and a numbered spiral scale on the periphery of the outer portion of the poise, whilst the entire poise can be moved longitudinally upon a rod, situated immediately above the scale-beam, and the leverage exerted by said poise, when its respective parts are compactly united, be indicated by a vertical index descending from the main portion of said poise, immediately in front of the numbered scale of the scale-beam, all substantially as set forth.

No. 14,382.—WILLIAM YOST.—*Improvement in Weighing-Scale Beams.*—
Patented March 4, 1856.

The manner of operating these scale-beams is as follows: In loading a car, the car is first placed on the platform of the scales, and the whole is balanced by adding weights to the pendant hook D. The graduated sliding index is then moved outward from the clevis A towards the point of the beam. The load is then added to the car and weighed as in other scales, which gives the net weight of the addition.

Claim.—The index marked from the centre, both right and left, together with the P and its additions and weights for grain measure.

No. 14,159.—JONAS HINKLEY.—*Improvement in Universal Joint for Connecting Shafts, &c.*—Patented January 29, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Connecting shafts, when placed angularly with each other, by means of the universal joints, constructed as shown and described, by which a rotary motion may be communicated from one shaft to the other.

No. 14,210.—OTIS TUFTS.—*Improvement in Making Wrought-Iron Shafts.*—Patented February 5, 1856.

The pieces *b* are first fitted together with longitudinal tongues and grooves *c* and lateral keys *d*, and then they are bound with large wrought-iron collars *f*, which are to be fitted on hot and shrunk by cooling.

Claim.—Constructing large wrought-iron shafts, with pieces separately wrought and fastened together, substantially as described.

No. 14,939.—JAMES W. MARTIN, assignor to LEWIS ROTHERWELL and JAMES W. MARTIN.—*Improved Weighing Cart*.—Patented May 20, 1856.

When the body A is loaded, the bar M is withdrawn from the loops S; and by turning the crank-shaft K, the bars I I are moved, so that the notches *n* will be withdrawn from the heads *l* of the taper-pins *k*, and the enlarged parts of the slots *o* will be brought in a line with the heads *l* of the two opposite pins; at the same time the bar J will be thrown underneath the back piece A¹ of the shafts L, the bar J preventing the body A from tilting. By drawing downward the end of the lever H, the levers E E will throw the body A upward, free from the axle B; and the body A and the load it contains may then be weighed by adjusting the weight on the scale-beam G.

The inventor says: I do not claim broadly the levers and scale-beam, irrespective of their arrangement and adaptation to the cart; but I *claim* the levers E E F H, connected with the scale-beam G, in combination with the bars I I and J, arranged and applied to the cart, as shown.

No. 14,687.—WILLIAM H. BRAMBLE.—*Improvement in Grain-Weighing Machines*.—Patented April 15, 1856.—Antedated April 8, 1856.

When a sufficient quantity of grain has entered the receptacle C to vibrate the scale-beam *i*, the lever J and rod *g* will operate upon click *k* so as to allow the gate *m* to close itself by gravity; but as soon as the gate descends, the weight *y* brings the scale-beam back to its horizontal position. As the click *k* descends, it catches a tooth on the rear wheel *e*¹, thereby arresting the descent of the gate L, which causes the grain to sift slowly into C. The second upward movement of the scale-beam causes the gate L to descend and stop the flow of grain. The gate L, in descending, strikes against and depresses the lever E, thereby detaching the pin *u*, which permits the vessel C to vibrate on its axis until it is arrested by one of its projecting pins S. This latter movement causes also the elevation of both gates by means of the cams N N, and the opening of the door at the bottom of the filled compartment. As soon as the scale-beam is relieved from the weight of the grain just weighed, it will reset itself for again performing its proper functions. The movements of the weighing vessel C may be communicated to the hands of a registering dial plate E¹ in any well known manner.

Claim.—1st. The double-chambered oscillating vessel C, when combined with and forming a part of an automatic weighing apparatus.

I also claim dividing the vessel C into two compartments by means of a longitudinal flexible partition *a*, when the said vessel is arranged with and forms a part of a weighing apparatus.

I also claim combining gates *m* and L, of different sizes, with the conducting chute *w*, and with an apparatus that can be operated by the vibration of the scale-beam *i*.

I also claim the combination of the double gates with each other,

and with the ratchet-wheels *e* and *e*¹, the retaining click *k*, and the detaching movements.

I also claim detaching the click which holds the gate or gates in an open position through the medium of a vertical tilting lever J, combined with the scale-beam *i*.

I also claim the arrangement of the auxiliary weighing-poise Y and the movable table *f*, when the said table is combined with and operated by the gate *m*.

XIII.—GRINDING MILLS, ETC.

No. 14,199.—STEPHEN C. MENDENHALL.—*Improvement in Flour Bolts*.—Patented February 5, 1856.

The inventor says in his specification: The object of this improvement is to combine a merchant and a country bolt. The valves, as shown by full lines in fig. 1, represent the bolt on merchant work. It will be seen that while valve *g*¹ is on rib *s* 6, its indicator is also on No. 6 in the cord-box H, and so of the other valves and indicators. To put the bolt on custom work, both the indicators at No. 6 and No. 2 are moved to No. 4, which will place the valves *g*¹ and *g*³ to rib *s* 4, as indicated by dotted lines in fig. 1. All the flour will now pass through the one spout at *s* 4, and the offal through spout *b*.

Claim.—The direct and positive contraction and expansion of the valves *g g g*, between fixed and varying points, substantially in the manner and for the purpose set forth.

Also, the combination of the expanding and contracting valves *g g g*, with the cords *d d d*, pulleys *f f f f*, drums *x x x*, and indicators *j j j*, or their equivalents, for the purpose specified.

No. 15,455.—S. C. MENDENHALL and J. CONNER.—*Improvement in Flour Bolts*.—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. The manner described of varying the action of the revolving brushes *b*, by giving to the brush-bars *a* any desired backward or forward angular set on the radial arms or bosses which carry the brush-bars, in relation to the run or travel of the same within the screen cylinder, by means of the links *m*, connecting the inclined pivots or rods *g*³ of the brush-bars with a turning ring *n*, arranged to revolve together with the brush-shaft, but made capable of circular adjustment thereon, or the mechanical equivalents of such devices, operating essentially as and for the purposes specified.

2d. In combination with the radial expansion and contraction of the

brush-bars and brushes within or against the screen cylinder for graduating the rub of the brushes, as specified, giving any varied angular set backwards or forwards to such graduated rub, by so connecting the brush-bars with the devices which effect their expansion or contraction as to admit of a variable inclined set or position, in relation to the run, being given the said brush-bars and brushes, to adjust or improve the action of said radially graduated rub, as set forth.

No. 15,697.—GEORGE JUENGST.—*Improvement in Reversing Gear.*—Patented September 9, 1856.

The springs $f f^1$ are fastened midway between their ends to pivots e , which project through holes in the hubs d ; the outer ends of said pivots are square, and have a light screw-twist and pass through square holes in disk g , which disks sit loosely on the shafts B and C , and may be thrown in or out by means of their necks h , fork i , and a proper hand-lever. The effect of drawing them out will be to turn the pivots e slightly by reason of their screw-twist, and thus to relieve the forks $\odot P R S$ of the pressure of the ends f^1 of the springs; the forks will be slightly turned on their pivots e in consequence of said pressure of springs f , the arms $o^2 p^2 r^2 s^2$ will be brought into contact with their respective rims $a b$, and the arms $o^1 p^1 r^1 s^1$ will be thrown off the said rims. The reciprocation of the piston-rod H and rack L , and the revolution of the cogged-rims M and N in the direction of arrows 1 2 and 4, will now have the effect of revolving the hubs d and shafts B , C , and D in directions opposite to the arrows 3, 5, and 6, causing the main shaft D to revolve continually in a direction opposite to what it did before.

The inventor says: I do not claim the described mode of converting motion, as it is well known.

Neither do I claim the substitution of the nipping-pawl for the ordinary pawl and ratchet, as that is also well known.

But I *claim* the described arrangement of the disks g , the screw-pivots e , and the springs $f f^1$, or their equivalents, whereby the action of the nipping-pawl is reversed, and the motion communicated by it changed in direction without any change of direction or cession of motion in the moving power.

No. 15,630.—RICHARD WARD.—*Grain Cleaner and Separator.*—Patented August 26, 1856.

The grain to be cleaned passes from the hopper f through the opening l into tube a , the heavier grain falling through the contracted vent of the tube a below; the lighter grain and dust, being carried up by the current of air generated by fan i over the top of the tube side and hinge d , and striking the projecting part q of the casing, is projected towards the front side of the second tube and falls below into trough m , the dust passing through the fan i .

Claim.—The combination and arrangement of the curved board $q q$ with the slide $R R$, the chaff-conductor S , and the slide $T T$, substantially in the manner and for the purpose specified.

No. 16,088.—CHASE B. HORTON.—*Improvement in Machines for Cleaning Grain.*—Patented November 18, 1856.

Motion being given to the shaft B , the grain enters the feed-chamber F through the spout G , where it meets the suction blast created by fan K , which separates the impurities from the grain, driving them out in the direction of the arrows through the switch-throat L , the blast escaping through the apertures M of the blast-head E , while the chaff descends and passes out through N . The grain passes through the eccentric rings H into the case C ; the shaft B is surrounded in the feed-chamber F by a case F^1 , which prevents the grain striking it; this case is provided with two V-shaped ridges u and w (fig. 5), which distribute the grain towards the outside of the chamber before entering the case C . As the grain passes through the case C , it is acted upon by the beaters I ; and upon being discharged through the spout J , it is exposed to another blast entering the chamber D , and created by a suction-fan S , which latter blast delivers the grain from all impurities.

Claim.—1st. The double-acting V-shaped distributor, in combination with the concentric ring-guard, constructed as described, for the purposes of distributing the grain to the periphery of the cylinder while falling and preventing its return in the blast.

2d. The construction and arrangement of the double blast-head E , in the manner and for the purpose described.

3d. The combination of the spring partition R with the spring-valve K , so arranged that the expansion of the blast-tube, by means of said partition, shall cause the valve K to open and thereby admit air above the mouth of the tube.

No. 15,785.—HAMILTON E. SMITH.—*Improvement in Grain-Separators.*—Patented September 23, 1856.

The grain is fed into the machine through the hopper L ; the fingers f and f^1 catch the straw; these fingers, represented in a perspective view at fig. 2, are made to vibrate on their respective pivots e and e^1 , by means of the eccentrics 3 and 4 acting upon the levers H and H^1 of the common fulcrum d , and by straps I and bars J . The fingers shake out the grain and pass off the straw. The grain falls then through the screens c and c^1 , leaving there the coarser impurities, and eventually drops to the inclined board M , where it is acted upon by a blast from fan O , and passes out at the opening N . A vibrating motion is imparted to the screens by means of the eccentrics 1 and 2, rods D and D^1 , and straps E and E^1 turning on the common fulcrum b .

Claim.—The arrangement of the vertically vibrating shakers and horizontally vibrating screens, for the purpose of separating grain or other material, the whole being operated by a combination of mechanism substantially such as described.

No. 15,879.—JOEL W. CORMACK and FERDINAND C. WALKER.—*Improvement in Grain-Separators*.—Patented October 14, 1856.

In this apparatus the grain passes from the hopper D into the tube C; and motion being imparted to the fan c, said fan causes the air to pass up through the air-chamber C; and as the air passes between the flanges I, in the funnel k, a spiral motion is imparted to it, by which a greater length of draught is obtained in the tube C of a given length, for the purpose of operating on the parts to be carried off.

Claim.—The cylindrical cheat-box, into which the air-tube enters, arranged as described, and for the purpose set forth. The flanges I and funnel k, or their equivalent, in combination with the tube C, for the purpose of creating the spiral or whirlwind blast in a grain-separator, as described.

No. 16,103.—JOSEPH LYNDALL, assignor to CYRUS ROBERTS.—*Improvement in Grain-Separators and Conveyers*.—Patented November 18, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—1st. Suspending the conveyer on vertical radius bars or pendulum bars, which swing it forward, first in a nearly horizontal, and next in an upward direction, and then swing it back, first moving it suddenly downwards, and next horizontally or thereabouts, until it reaches the place where it started, substantially as set forth.

2d. Swinging and rocking the conveyer, as described, on radius bars of unequal lengths, which raise its rear end somewhat further and faster than its front end, in the manner and with the results set forth.

3d. Arranging the head of the vibrating shaking fingers in a recess in the bottom of the conveyer, substantially as described. But I make no claim to the arrangement of the vibrating fingers below the conveyer, so that the straw and grain, after leaving the conveyer, will pass on to the fingers.

4th. The combination of an adjustable bar or guide with an arm projecting from the head of the vibrating fingers, so that the upward throw of the fingers may be varied while the limit of their descent remains unchanged, as set forth.

5th. Constructing the screening apertures in the bottom of the conveyer with channels on the front sides of the tops thereof, to facilitate the separation of the grain and chaff from the straw, and the passage of the straw through the conveyer, as set forth.

No. 15,180.—DAVID HINMAN.—*Improvement in Hanging Grindstones*.—Patented June 24, 1856.

The stone A being placed between the two moulds B and C, a rod is passed down through the hole L and through the eye of the stone into the hole D. By this means the stone is lined, so that the stone and

shaft will be true with each other, as the grooves in the moulds in which the shaft is formed are trued with the face of the moulds, which come in contact with the stone.

Claim.—Hanging grind stones in the manner herein described, having the shaft and flange, with or without a crank, cast in one piece, with the stone firmly secured thereto by the shrinking of the metal.

No. 14,547.—RICHARD HUNT.—*Improvement in Horse-Power*.—Patented March 25, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The combination of the central pivot and annular track secured to the ground, as described, with a master-wheel N fitted with a central eye, and an annular series of conical supporting-wheels W, whereby the usual supporting-frame to combine these several parts is dispensed with, while the requisite rigidity and steadiness of the master-wheel is maintained, as set forth.

No. 15,296.—PHILIP H. KELLS.—*Improvement in Reversible Horse-Power*.—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claim and illustrations.

Claim.—Constructing the machine so that the shaft of the over-reaching belt-pulley W¹ may be reversible when the gear-wheel W shall be shifted to, and secured upon, the opposite end of its shaft, and that in every such position of the pulley-shaft, the end of the gear-shaft and the fastenings thereon shall be within the plane of the inner side of the arms, spokes, or face of said pulley; the gear-wheel fastenings being the same on both ends of its shaft, and so related to the pulley-shaft that the converge-gear shall duly mesh with the pinion of said shaft at each change of position of these several parts, substantially as herein set forth, for the purpose of changing from a right to a left hand machine, or the reverse.

No. 14,750.—THOMAS D. BURK, assignor to JOHN C. MILLER and CHARLES A. FOWLER.—*Improvement in Link Gearing for Horse-Powers*.—Patented April 22, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the horse-power consisting of the roller moving in a circular path about a centre, as that is old; neither do I claim the universal joint, swivel, or other parts by themselves. But I *claim* the mode of converting the motion of an axis P rolling around a centre into an alternating motion at right angles to the plane described by the rolling axle, by means of the combination of the crank E F, connecting link G, universal joint H, and swivelling bolt of the same.

No. 15,693.—ALBERT W. GRAY.—*Improvement in Links of Horse-Powers*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Constructing the links composing the endless chain of corrugated sheet metal, so that the corrugations shall serve both as hinges for connecting the links and as cogs for gearing with the cog-wheel on the driving-shaft, substantially as specified.

No. 16,040.—BENJAMIN MACKERLY.—*Improvement in Cider-Mills*.—Patented November 4, 1856.

The apples in the spout B are seized by the double series of hooks *d*, which rapidly draw them into the machine and at the same time crush them between the saw-edged teeth *f* of the concave A, and move them along laterally to be more finely disintegrated by the joint action of the double series of saw-edged teeth *e* on the grinding cylinder *g*, and the single series of saw-edged teeth in the concave A. The crushed portions of the apples will be steadily moved in a lateral direction, and will be discharged through an aperture at the opposite end of the concave.

The inventor says: I am aware that round teeth whose sides are spirally and annularly grooved have been used on a cylinder, and within the concave combined therewith.

I *claim* the combined use of flat-sided saw-edged teeth upon the cylinder and within the concave, substantially as set forth.

No. 16,261.—HARRY ABBOTT.—*Improvement in Cider-Mill*.—Patented December 23, 1856.

The apples in the hopper D pass down to the crushing cylinder B and are discharged, when crushed, to the endless cloth I, which conveys the pomace between the pressing rollers E and *a b c*, and thence delivers the pressed pomace at the end of the machine, while the cider is strained through cloth I, and is then conducted by spouts L into a receiving vessel M.

Claim.—The arrangement of the small pressing rollers *a b c* in the arc of a circle upon vibratory arms N, to which the pressing power Q is applied, substantially in the manner and for the purposes as herein set forth.

No. 15,255.—CYRUS ROBERTS.—*Improvement in Corn and Cob Mill*.—Patented July 1, 1856.

The spider *h* being mounted upon the collar *g*, (which collar is concentric to, and form a part of, the ball *e*,) and the hull or concave *f* being secured and adjusted between its arms *h*, by means of set-screws

i, it must be apparent that any vibration given to the one will be communicated to the other without altering their relative position to each other.

Claim.—The method of rendering the grinding surface of the hull or concave *f* concentric with that of the ball *e*, and of preserving this concentricity by mounting the revolving spider *h*, between the arms of which the rim of the hull is screwed and adjusted upon a neck or journal *g* formed on the under side of the ball *e*, in the manner and for the purpose substantially as described.

No. 15,060.—JONATHAN BURDGE.—*Improvement in Cutting Flour Mill*.—Patented June 10, 1856.

The inventor says: I do not claim adjustable knives for the purpose of grinding grain, nor furrows cut in the grinding surfaces of mills; nor do I claim simply the arrangement of opposite grinding surfaces, so that their teeth or cutters cannot be brought into contact; as such devices have been used before. But I *claim* forming the surface of the cutter-head with central and peripheral ledges *d e*, and a plane or level depression *h* between them, equal in width to the cutters, and in depth to the depth of cut required, for the purpose of easily setting the cutters all to an exact and uniform height, and of preventing the possibility of their being brought into contact with the counter-plate above, and also for the purpose of preventing the escape of meal, or particles of grain, at the periphery.

I also claim the notches or nicks *p p* in the ledge *e* of the cutter-head, and the notches *q q* in the ledge or surface *f* of the counter plate *f*, said notches having the least possible width at their inner ends, and gradually widening or flaring outwards; when the two sets are arranged in combination, so as to cross each other, and thus mutually scrape outward, by their edges, any dust or glutinous substance which may have a tendency to adhere to the opposite surfaces of the ledges.

I also claim the peculiar construction and arrangement of the counter plate with bent gathering, and retaining ridges *n*, running across from the inner to the outer peripheries of a conical concavity *m* in its under side, the lower edges of said ridges being all in the same plane, and even with the surrounding surface *f*, when combined with the cutters *i i*, and operating in connexion therewith.

No. 16,249.—THOMAS B. STOUT.—*Improvement in Grinding-Mill*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim simply feeding the corn or grain through the sides of one of the burrs; nor do I claim a dress composed of alternate long and short ridges, together with feeding spaces, in themselves separately.

I *claim* the arrangement and combination of the feeding cavities *a a*, feeding apertures *g g*, and the form of dress given to the grinding surfaces, substantially as specified.

No. 15,680.—ANSON ATWOOD.—*Improvement in Dress of Metallic Hemispherical Grinding-Mill*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The series of radial ogee ribs and furrows, in combination with the intermediate or interposing ribs and furrows, cracking teeth, and hemispherical-formed grinding surface, combined in the manner substantially as described.

No. 14,227.—CLEMENT DARE.—*Improved Method of Regulating Feed-ates for Mills, &c.*—Patented February 12, 1856.

Claim.—The combination of the floats 2 and 3, rods 4 and 5, beam-lever 6, and sliding-bar 7 7 *d*, these in combination with the cam-lever 8, shaft 17, levers 11 11, and rods 12 12, or their equivalent, for operating the gate 13, in the manner and for the purpose set forth.

No. 15,488.—JACOB O. JOYCE.—*Improvement in Corn and Cob Mills*.—Patented August 5, 1856; antedated February 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The arrangement of the segments *I* on the upper cone, and the segments *K K*¹ on the lower cone, so that the former shall pass through between the latter, gradually contracting the spaces between their crushing surfaces, substantially as set forth.

No. 14,132.—THOMAS CRANE.—*Improvement in Flouring-Mills*.—Patented January 22, 1856.

The arrangement of the annular space around the bed stone and the hoop *c*, with its wings *e* moving therein, will prevent the flour from accumulating about the running stone and heating.

Claim.—Securing the bed-stone *b* within a hoop *p*, rising from a suitable bed plate *p*¹, when the said hoop has an open annular space surrounding it, which is supplied with a discharging spout *n*, and has a rotating hoop *c* arranged and operating therein, substantially in the manner and for the purpose herein set forth.

No. 14,179.—JOSEPH WEIS.—*Improvement in Flouring-Mills*.—Patented January 29, 1856.

F represents the burr provided with a steel covering *G*. The concave *h h* is provided with longitudinal grooves *i*, which, as the burr re-

volves, catch the grain and turns its direction between each of the pieces *h*.

Claim.—The longitudinal grooves *i* between the dovetailed steel pieces, constructed and arranged in the manner set forth, and for the purpose specified.

No. 14,164.—LUCIUS PAIGE.—*Improvement in Grinding-Mills*.—Patented January 29, 1856.

When the article to be ground is placed in the hopper, and the screw *A* is put in revolution, the wheels *D*, the peripheries of which are also provided with screw-threads, will be set in rotation towards the screw, and will move the material towards it, and first crush it between them and the screw; and finally, by the action of the screw, the material will be ground and discharged.

Claim.—Arranging and combining with a screw *A*, in manner substantially as described, one or more wheels *D* and a hopper *C*, whereby such mechanism is made to answer the purpose of a mill for grinding.

No. 15,841.—JOEL W. CORMACK.—*Improvement in ut-Mills*.—Patented October 7, 1856.

The grain enters this apparatus through the spout *C*, and passes downward between the conical cap *B* and the revolving cone *E*; and in passing through between the teeth of said cones, the white-caps, straw, and other foreign matter are broken; the grain then falls upon the flat surface *G*, whence it is fed into the hopper *F* by the creepers *c*; and passing down the hopper *F*, it falls through the revolving cone *M* upon the stationary cone *I*. It then is carried outward by the centrifugal force of the revolving cone, and is scoured by the action of the corrugated surfaces of the flanges *J* and stationary cone *I*, as it passes over them.

The inventor says: I do not claim creepers, or flanges, or cones, in themselves, as new.

But I *claim* the combination of the cones *E* and creepers *c c*, arranged and operating in connexion with the flanged rims *J J J J*, attached to the cones *H* and *M*, in the manner and for the purpose set forth and described.

No. 15,868.—W. P. COLEMAN.—*Improvement in Mill-Stone Dress*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim a circle dress or curved furrows, the radii of which are equal to the radius of the stone or thereabouts, nor yet the straight tangential furrows, of themselves or apart from their relative arrangement, combination, and operation together in the

two stones. Neither do I claim of itself the curved furrows arching in opposite directions in the two stones, and gathering in the grain towards the eye. But I *claim* forming the master and subordinate furrows C D of the stones substantially as described, viz: the straight portions of the furrows being tangential with the eye and with circles concentric therewith, and the curved portion being segments of a circle of equal curvature, or thereabouts, to that of the outer peripheries of the stones; for the purpose of rapidly throwing the grain outwards in the early action of the furrows, and retarding or gathering it in by the after or outer portions thereof, as set forth.

No. 16,074.—THOMAS B. STOUT.—*Improvement in Mill-Stone Dress.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim making the furrows of different depths, nor simply terminating deep furrows with shallower ones at the periphery, as I am aware that the equivalents of such have before been used. But I *claim* the combined arrangement of furrows upon the grinding plates, viz: the inner furrows *d d*, having their abrupt edges on the two grinders, meeting by the revolution of the runner, deep at the central ends, but running out to the surface at the outer ends; while the peripheral furrows are arranged oblique to the inner furrows, their edges inclined in the opposite direction, and having a considerable proportion of plane surface between them, substantially in the manner and for the purposes described.

No. 15,346.—J. G. SIEMERS.—*Improvement in the Adjustment of Mill-Stones.*—Patented July 15, 1856.

The stationary stone A is secured within a flanged metallic rim *f*, whose projecting ears rest upon springs *m*, placed upon the upper ends of tubular projections *h*; the rim *f* is kept in place and can be adjusted by means of the set-screws *n*. The running stone B rests on the flanch *p* of the shaft D, by means of the circular plates *c* and *d*, separated from each other by the springs *i i*, and adjustable by means of the set-screws *e e*.

The inventor says: I do not claim any arrangement of the running stone or its spindle, by which an elastic bearing of said running stone against the stationary stone is produced; but I *claim* supporting the stationary stone upon a series of elastic and readily adjustable bearings, when the said stationary stone is combined with a running stone which rests upon a series of elastic and readily adjustable bearings, which are combined therewith and with the spindle or shaft of the same in such a manner that the faces of said stationary and running stones are enabled to mutually self-adjust themselves to each other, and are also enabled to be adjusted.

No. 14,128.—DAVID MARSH, assignor to THOMAS B. STOUT, JOSEPH A. CODY, and Himself.—*Improvement in Hanging Mill-Stones.*—Patented January 15, 1856.

The runner-stone G is suspended upon the arms *b* of the carrier F. The feather E passes through a slot in the spindle D, and is pivoted at *a*, so as to allow it slight play. The spindle is passed through the central hole of the carrier, so that the ends of the feather come to rest against the shoulders *f* of the slots in the central hole of the carrier, and the carrier is thus suspended upon the spindle. Keys *g* are finally driven into the part *d* of the slots, through which the ends of the feather have been introduced. The keys serve to retain the feather in the recess.

Claim.—The mode of securing the carrier to the spindle, by means of the vibrating feather inserted in the spindle, it admitting of being secured by keying in a recess in the cup, substantially as set forth.

No. 14,109.—R. D. NESMITH.—*Improvement in Machines for Dressing Mill-Stones.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the method shown for adjusting the machine radially or tangentially with the arbor E, neither do I claim the method of operating the pick-arm C¹ for these devices have been previously used. But I *claim* securing the back end of the pick-arm C¹ to a head F¹ attached to a sliding-plate G¹, the head being allowed to turn on the sliding-plate, whereby the length of the pick-arm may be increased or diminished, as desired, and also the position of the pick-arm varied in the machine as set forth.

No. 14,859.—SIMON W. DRAPER and REUBEN M. DRAPER.—*Improvement in Machines for Dressing Mill-Stones.*—Patented May 13, 1856.

The inventors say: This invention consists in certain improvements on the machine for dressing mill-stones which is the subject of letters patent granted to us May 25, 1852. Our improvement consists in a certain mode of actuating the pick, for the purpose of causing it to strike with the same force throughout in cutting a long series of parallel furrows.

Claim.—In combination with the inversion of the cam G, the employment of a secondary lever *m* attached to the sliding-piece A¹, or arranged in any equivalent manner, to cross the face of the cam on one side of the centre, and transmit motion therefrom to an arm *c*¹ on the pick-shaft F, whereby; in all changes of the relative positions of the pick-shaft and the cam, the pick is operated by the cam in such a manner as to give a uniform force to the blow.

No. 15,250.—M. PAINTER and C. PAINTER.—*Improvement in Swinging Spout for Feeding Mill-Stones*.—Patented July 1, 1856.

The grain passes from the shoe C down through the tube H, the lower end of which is near the bed-stone J. The tube F remains stationary within the damsel; but the tube H turns with the bail I, the universal joint attachment *b* permitting this. By this improvement the grain is prevented from coming in contact with the sides of the eye E; and consequently the clogging of the eye, in consequence of the grain adhering to it by the centrifugal force, is prevented.

Claim.—Suspending the oblique eye feeding-tube H, by universal joint *b*, from above, in combination with and for free rotation and universal movement of said tube by the revolving stone A, as and for the purposes specified.

No. 16,155.—ALBIN WARTH.—*Improvement in Converting Rotary into Reciprocating Motion*.—Patented December 2, 1856.

By turning the shaft G, motion will be given to the pinion H, through the medium of the gearing *fgh*, and the pinion H will move the rack D; and when the end of the rack reaches the pinion, the head F will make half a revolution, so that the pinion H will pass around the end of the rack and gear into its under side. The head also makes another half revolution when the opposite end of the rack D reaches the pinion H, so that said pinion may pass around upon the upper side of the rack. By this means a reciprocating motion is given to the bar B and shaft C, when the shaft G is rotated, or by working the bar B back and forth a rotating motion is given to the shaft G.

Claim.—The intermittent, semi-rotating-head F, or its equivalent, carrying, in eccentric relationship to the bearing of said head, a driving-pinion H, for gearing with the endless-rack D, and, driven by or operating through suitable gear, a pinion *f*, arranged with separate action, concentric to said head—the latter being combined with sliding stops *jj* or their equivalents—all arranged and operating together, substantially as and for the purposes set forth.

No. 14,568.—ROBERT MAFFETT.—*Improvement in Method of Converting Reciprocating into Rotary Motion*.—Patented April 1, 1856.

When the piston racks B and C reciprocate in opposite directions, the teeth of one of the pinions D D¹ will gear with one of the racks, producing the rotation of the shaft E. As the extreme of each rack nears the end of its stroke, the forward lozenge projection L gradually rises up the incline of the guide groove H, lifting the front end of each rack. At the termination of each stroke, the lateral projections *f* or *f*¹ press upon the edge of the rim, enclosing the rack teeth, and lift the rear lozenge into the cavity *g* of groove H. With the return stroke of both pistons the inclination of cavity *g*, acting on lozenge L, carries the rack downward, and causes the second tooth of the pinion to engage the

rack opposite, and thus continue the rotation of shaft E in the same direction.

The inventor says: The upper rack teeth meshing with pinion A, enables the back stroke of the free rack to aid the operating rack; this, however, I do not claim.

I am also aware that opposite semi-toothed pinions have before been used in combination with racks for converting reciprocating into rotary motion. I therefore make no claim to such; neither do I claim the use of guide grooves and lugs on the racks by themselves.

But I *claim* the arrangement of the laterally projecting lifting teeth *ff* on the same pinions, in combination with the guide grooves H and lozenge projections L, as described.

No. 16,303.—SAMUEL GISSENGER and JOHN W. KELLBERG, assignors to D. A. MORRIS.—*Improvement in Converting Reciprocating into Rotary Motion*.—Patented December 23, 1856.

Motion being transmitted to the piston rod D, it causes rod C to drive the pin *c* along the slot *d d*¹, and one end of the bar E, entering into one of the notches in the rim *a* of the wheel A, is caused to turn said wheel on its axis; the bar being confined in the notch by the working of pin *c* in the slot *d d*¹, the arcs of which are both parallel with the inner circumference of rim *a*. While the pin *c* moves from end to end of one arc of the slot, the wheel A makes one-fourth of a revolution. After moving along one arc of the slot, the pin *c* is prevented from going back in the same arc by means of the levers G G¹, and caused to pass along the other arc, by which means the continuous circular motion of wheel A is produced.

Claim.—The combination of the disk A having an externally notched rim *a* and being attached to the shaft to be rotated, the standard F, or its equivalent, containing a double arc-formed slot *d d*¹, the bar E that is connected by a vibrating rod C with the piston rod or other reciprocating object, the pin *c*, the levers G G, and springs *jj*, the whole operating substantially as and for the purpose specified.

No. 14,473.—JOHN R. SEES.—*Improvement in Adjusting the Brasses of Connecting-Rods*.—Patented March 18, 1856.

The nature of this invention consists in the manner of securing the boxes in connecting-rods, and following up their wear by two wedges D, the set-screw F, and bridge-piece E; dispensing thereby with the straps, gibs, and key.

Claim.—The combination of the bridge-piece E and the wedges D D, as herein described for the purposes set forth.

No. 15,284.—R. M. DEMPSEY.—*Improvement in Smut-Machines*.—Patented July 8, 1856.

The grain to be scoured passes through the hopper G down upon the concave E; and motion being given to the shaft B, the grain is sub-

jected to the necessary scouring and beating by the rod *b*; and the grain passes from the centre of the head *E* towards its periphery and over the edge, falls into the space below the head, and is carried around by the wings *d* into the spout *g*; the grain on its passage being subjected to a blast generated by fan *I*, and the smut is blown through the perforated conical screen *D*, and passes through a passage communicating with curb *C*. The grain passes through the spout *g* and falls into the spout *J*.

Claim.—The concave head *E*, having vertical rods or spikes *b*, attached and fitted within an invertal conical screen *D*, the head *E*, having wings *d* attached to its under side, as shown, and its upper surface corrugated, as shown, or in any other manner, for the purpose specified.

No. 15,442.—G. H. STARBUCK and L. D. GILMAN.—*Improvement in Smut-Machines.*—Patented July 29, 1856.

The shaft *E* being set in motion, the grain passes through the aperture *i* upon the disc *e*, which is provided with spikes *f*, and is thrown by centrifugal force to the edge of said disc and falls down upon the upper plate *H*, then down the funnel *I* to the centre of middle plate *H*, and is carried by centrifugal force to the edge of said plate and drops down upon the second funnel *I*, whence it passes to the lower plate *H*, and lower funnel *I*, to the centre of the screen *F*, and passing over the edges of said screen is finally discharged through the aperture *d* of basin *C*.

Claim.—The combination of the screen *F*, plate *H*, funnels *I*, and disc *e*, with spike *f* attached, when said plates are attached to the shaft *E* and fitted within the case or shell *A*, as described, for the purpose set forth.

No. 15,978.—HARVEY B. INGHAM.—*Improvement in Smut-Machines.*—Patented October 28, 1856; antedated June 24, 1856.

This invention consists in the arrangement of a receptacle *D*, between the cylindrical blast-pipes *E* and *F*, and extending underneath the beating cylinder *w*, into which all the offal from the screen, blast-pipes, and beating cylinder is precipitated, and in which is a slatted chute *l*, which conducts cheat, seeds, and the heavier parts to the bottom, where they are discharged from the machine, at the same time the smut, dust, and chaff are drawn through the lattice and passed out through the fan-chamber *G*.

Claim.—1st. The receptacle *D*, arranged and operating in combination with the blast tubes and beating cylinder substantially as specified.

2d. I claim the arrangement for discharging the grain by its centrifugal action at an aperture on the upper side of the beating cylinder, and through a channel eccentrically around the blast-pipe, whereby the grain is thrown into the blast higher in the pipe, and is distributed more evenly therein, as set forth.

XIV.—LUMBER.

No. 14,752.—KELSEY CURTISS, assignor to the "WINSTED AUGER COMPANY."—*Improved Auger.*—Patented April 22, 1856.

In consequence of the small bar *A* upon which no screw is cut, the cutters or lips of the auger are left free to enter the wood, boring it more rapidly and easily than when the screw and the large twist of the auger are connected.

Claim.—The making of an extension-bar, connecting the small screw on the end of the auger or bit with the lips or cutters of the auger proper.

No. 14,829.—N. W. ROBINSON.—*Improved Machine for Manufacturing Barrel-Heads.*—Patented May 6, 1856.

The lower disk *E*¹ is depressed, and the upper disk *E* is elevated; the frame *P* is also depressed, and the clamp *K* is kept elevated or raised, by means of a spring *T* on the upper part of the frame *A*. The stuff *U* to be formed into barrel-heads is placed upon the bed *J* directly between the two cutting disks *E* *E*¹, the slide *O* having been previously withdrawn from underneath the bed. The clamp *K* is then pressed down upon the stuff by depressing the lever *N*, and the brads *h* in the under edges of the segments *d* enter the stuff and hold it firmly upon the bed *J*; the lower cutting disk *E*¹ is now forced against the under side of the stuff *U*, and the cutters *F*² *F*² plane the under surface of the stuff, while the cutters *G* *G* bevel the edges, and the vertical cutters *I* *I* cut half through the stuff. The lower cutting disk *E*¹ is then allowed to fall, and the slide *O* is shoved underneath the bed *J* and raised upward against the stuff by operating lever *G*, which raises the frame *P*. When the slide *O* is raised, the brads *m* on the ledge *l* penetrate the under surface of the stuff, the upper rotary disk *E* is brought down upon the stuff and the cutters *F*² *F*² plane the upper surface, and the cutters *G* *G* bevel the edges and the vertical cutters *I* *I* cut entirely through the stuff.

Figure 1 represents a front elevation.

Figure 2 is a horizontal section (line *z z*).

Claim.—1st. The peculiar construction of the clamp *K*, as herein shown and described, viz: said clamp being formed of a ring *e* having segments *d* attached to its under side by set-screws *g* placed between the upper surface of the segments and under surface of the ring; by which construction the clamp may be enlarged or contracted, so as to suit different sized barrel-heads.

2d. I claim the stationary bed-piece *J* and rotary planing disk *E*, in combination with the sliding-clamp *O*, for the purpose of allowing said planing disk to plane and chamfer the whole surface of one side of the barrel-head, and then support it in its position while being chamfered and planed on the other side.

No. 15,763.—HENRY GROSS.—*Improved Device in Machines for Manufacturing Bed-Pins.*—Patented September 23, 1856.

L and I are two cutters near the outer end of the machine, the cutter L cutting the stick to the diameter of the head of the pin, the cutter I cutting it to the size of the shaft of the pin; and when the desired length is attained, the inner end of the pin comes in contact with the follower D and thus raises the lower end of the lever N, which plays in the slot O of the follower D; said lever turning on the pivot F and thus depressing the chisel G which forms the head of the pin, and when completed the pin is thrown out by the action of spiral spring C.

The inventor says: I disclaim the throwing out of the finished pin by a spring, and the employment of a movable cutter for forming the head, when a distinct and separate operation is required to bring it into action, as in W. McBride's patent of February 28, 1854.

But I claim fixing the head-forming V-cutter to a lever operated by the longitudinal movement of the pin, as described, whereby but one hand of the operator is required for forming the entire pin.

No. 14,511.—J. W. MAHAN.—*Improved Carpenter's Bench.*—Patented March 25, 1856.

a a a are the posts, *B B B B* the cross ties of the bench. The bottom H of the jointing box A is made movable by means of the table boards J J, the raising wedges *i i*, connecting rods *g*, and lever O, which work on the pivot *p*. The lever is secured to its position by a thumb screw. The board E to be jointed is held fast by the clamp jaw F, and the plane *m* is moved until the slides *n n* come down to the bearings *l l*.

B is the facing box. The board to be faced is held to its place in the rebates *x x* of the sliding jaws 6, by the weights W. The weights are raised by depressing the lever *t*. In facing lumber, the plane 11 is moved back and forth until the arms 12 come down to the bearings 10.

I do not claim the principle of running a plane with slides on it in a box, or the slides on the edges of a box, but I claim the construction of a work bench, substantially as shown by my model, drawings, and specification, together with the peculiar construction of the planes for pointing and facing.

No. 15,739.—J. W. MAHAN.—*Improved Carpenter's Bench.*—Patented September 16, 1856.

By operating the levers *g¹*, which are connected by a rod E, the bottom D can be raised or lowered to suit the convenience of the operator. By operating the lever 10, the front and back plates F and G can be operated towards each other for the purpose of securing the stuff to be worked between them, and the facing box H can be operated by moving the slides L simultaneously, thus causing the box to open to the same degree at each end.

Claim.—The carpenter's and cabinet maker's assistant bench, constructed in any manner substantially the same as set forth.

No. 14,390.—CLINTON W. CLAPP.—*Improved Bench Clamp.*—Patented March 11, 1856.

The block F to be clamped is placed upon the bench A over the groove B; one end of the block being against the hook C, the shank E of the other hook D is placed in the groove B; and the hook D forced into the opposite end of block F, the part *b* of the shank E is then forced towards the hook D, and the shank is thereby wedged firmly in the groove B. If the hook D is shoved rapidly towards the block F, when forced into it, the part *b* will, by its momentum, wedge the shank E in the groove B, the bevelled end of part *b* working past the bevelled end of the part *a¹*, and thereby increasing the width of the shank at this point and causing the shank to bind firmly in the groove.

Claim.—The hook D attached to the shank E, which is formed of two parts *a¹ b*, having bevelled ends and connected as shown, the shank being fitted in the groove B in the bench, and used in connexion with the stationary hook C, substantially as shown, for the purpose specified.

No. 14,569.—J. W. MAHAN.—*Improved Mitring-Bench.*—Patented April 1, 1856.

The stuff is fed to the saw by means of the foot treadle D and the raising bottom *g*. *D D D D*, &c., are mortises cut into the mitre box C to receive the saw, which is only allowed to move back and forth. The position of the mitre box is regulated by the scale B marked on the box. S represents a cutting chisel which is made to slide in two square boxes H H, fastened to the turning plate T. The bolt around which plate T turns passes through the plate A, which latter works in a groove *m* on the top of the bench.

Claim.—1st. The peculiar construction of the mitre box C, (or its equivalent,) as shown by my model, drawings, and specification; the advantages it possesses over any other in use being, first, so constructed that it never wears out by the teeth of the saw cutting the box, as is the case in ordinary boxes. Secondly, its easy combination with the other devices in my machine for accomplishing the various results which can be accomplished perfectly by any one, whether skilled or not in the ordinary way of accomplishing said results, viz: laying off and cutting picture frames, door and window frames, tenoning sash, &c.

2d. Its combination with the other devices represented, shown by my model, drawings, and specification.

No. 14,105.—HORATIO McGRATH.—*Improved Bits for Boring Fellos and Tenoning Spokes.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—The single twist auger *g* with a tapering shell-pod *h*, for the purpose of boring and tapering a mortise at one operation, as herein described.

likewise claim the tenon auger, constructed as herein described, with its auxiliary adjustable cutter *l* to reduce the superfluous timber, and with its finishing bits *k*, arranged to cut a tapering tenon with a shoulder at right angles to its axis.

No. 15,652.—HENRY HAYES.—*Improved Method of Boring and Mortising Hubs*.—Patented September 2, 1856.

In working this machine, the operator will take hold of the lever *i* with his right hand, and of the lever *s* with the left. By bearing down upon lever *i* the auger is brought in contact with the hub *m*; when the first hole is bored, the lever *i* is released and pressed backwards by a spring attached to its lower end. The lever *s* which has held the hub *m* stationary by a pin of its passing through one of the notches of index *l* is now pushed to the left, the index is released, and together with the hub *m* is turned as the roller *t* by the movement of the lever *s* tightens the band which passes around the pulleys of the shafts *k* and worm-wheel *n*. One hole for each mortise being bored, the carriage *G* is moved forward by operating upon lever *a d*, which movement brings the chisels in contact with the hub when every alternate mortise is made. The points of the chisels are then raised by operating the screw *b b*, which causes the rider *H* to swing on its pivoted end, and by which the front end is raised which supports the edges of the chisels, and the balance of the mortises are made in a zigzag position.

Claim.—1st. The adjustable frame *B B B B*, with its attachments, substantially as described and for the purposes set forth.

2d. The application of the rider *H* to the carriage *G*, substantially as described and for the purposes set forth.

3d. The combination of the index *l*, the lever *s*, and the roller *t*, substantially as described and for the purposes set forth.

No. 14,416.—GEORGE N. STEARNS.—*Mortising and Boring Machine*.—Patented March 11, 1856.

The lever *K* being in a perpendicular position, as seen in fig. 1, is moved by lever *T* to an angle which throws either point of the pawl *L* into a position to be thrust into pinion *N* according to the direction desired to be mortised. By moving downward lever *D*, the lever *F* (which latter is linked to lever *D*) is also moved downward, and the thick portion of cam *J* is withdrawn from lever *K*, and lever *K* is pressed to the cam by the upper half of the spring *M*, and causes the pawl to move backwards, the top of which being moved forward by the spring *M* causes the point of the pawl to drop between the teeth. At the time the cam moves back, the lower end of lever *K* moves forward, and the pawl turns pinion *N*, which is hung on a shaft *O*, on the inner end of which is a pinion *P*, which meshes into a rack *R* underneath the bed frame *S*. To reverse the feed motion of the bed frame, the position of *K* is changed by moving lever *T* so as to bring

the opposite side of lever *K* against the cam, when the opposite end of the pawl will catch into pinion *N*.

I is a spring lever between the guides *m m*, and may be adjusted higher or lower by a slot and set-screw at its lower end. *c* is a stationary rack into which meshes pinion *a*, which turns loosely on the inner end of shaft *Z*. By turning crank *d* the bevel wheel *Y* meshes into wheel *X* and turns the auger. When the auger has bored the desired depth, the end of shaft *Z* passes below a projection in the spring *I*, which presses against the pinion *a* over the shaft and causes it to clutch to the shaft. The pinion *a* then revolves with the shaft *Z*, and is moved up the stationary rack; and the spring *I*, by its peculiar form, regains its position at the end of shaft *Z*. Thus the auger receives its return motion.

The inventor says: I do not claim a movement of the carriage exclusive of the means by which it is done.

1st. I claim an adjustable cam *J* in combination with levers *F K T*, spring *M*, pawl *L*, pinions *N* and *P*, and rack *R*, as set forth in the specification.

2d. I claim the use of the spring, or its equivalent, to move the tch which gives the return motion to the auger.

No. 16,101.—G. H. STEVENS.—*Improved Boring and Mortising Machine*.—Patented November 18, 1856.

As the shaft *D* is rotated, motion is communicated to the shaft *C*, and the hammer *H* is operated by crank *a* and pitman *G*. The auger *K* is rotated by the wheels *I* and *J*. The stuff to be mortised is placed underneath the frame *A*, and the auger bores the hole while the chisel *N*, in consequence of being acted upon by hammer *H*, is driven down and makes a rectangular mortise, the chisel squaring the round hole made by the auger. The frame *B* is fed downward as the work progresses, in consequence of the wheel *P* gearing into rack *L*.

The inventor says: I am aware that the hollow chisel and bit have been previously used, and I therefore do not claim those parts irrespective of the mode of arranging and operating the same.

But I claim attaching the auger or bit *K*, chisel *N*, and hammer *H*, to the sliding frame *B*, and operating the auger or bit, hammer, and frame, as shown and described, for the purpose specified.

No. 14,223.—FELIX BROWN and ADOLPH BROWN.—*Machine for Boring and Turning Wood*.—Patented February 12, 1856.

When the process of boring commences, the support *F* is in such a position as to support the extreme end of the boring tool *b*, and remains in that position until the boring tool has entered some little distance into the wood, when during the revolution of cam *M* the recess in the circumference of said cam allows spring *7* to pull the support *F* backwards as fast as the wood is pressed forward against the boring-tool; by this means the depth of the hole to be bored can be regulated.

While the wood is being bored out the cams $H H^1$ act upon the slides 11 13, and consequently upon the tools 10 and 12, giving thereby, according to the shape of the cams, to the outside of the wood, the required form. When finished the cam N has turned round so as to allow spring 5 to draw the support E and boring-tool backwards; and the cam W , acting through lever X upon slide 14, forces the knife m or the circular saw G on the revolving wood, and thereby cuts the finished work off.

Claim.—1st. The support F guiding the extreme end of the boring-tool, said support being acted upon by a cam in connexion with springs or weights in such a manner as to remain stationary until the boring-tool has some little distance entered the wood, and is then made to go backwards in proportion as the wood is pressed forward, substantially as described.

2d. The arrangement and manner of working either the fixed knife or the revolving saw, for the purpose of cutting off the finished work in the manner specified.

3d. The arrangement and manner of working the tools 10 and 12 in connexion with the movable slides 11 and 13, attached to the fixed supports C acted upon by their respective cams H and H^1 , for the purpose and in the manner substantially as described.

No. 15,678.—SAMUEL H. YOCUM.—*Improved Method of Boring Hubs for Boxes.*—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—Operating the bits $e e$ by the adjustable feed rods $n n$ and lever m , with the mechanism described or its equivalent, in combination with the eight anti-friction wheels c , temper-screws $o o$ and $k k$, that confine the hub D and expose a true circle to the bits $e e$, at any desired distance from the centre of the hub.

No. 14,968.—H. L. MOONEY and W. B. CARTER.—*Improved Tool for Boring Hubs.*—Patented May 27, 1856.

The tool is turned upon the end of the hub in the usual manner, and at each revolution the excavating cutter m and shouldering instrument $i i^1$ are moved simultaneously outward, by turning handles f and g . This outward movement of cutter $i i^1$ causes its cutting edge i , to remain constantly engaged with the side of the excavation, and thus prevents the rising of the tool by the action of the edge of the cutter m .

The inventors say: We make no claim to the receiving of the cutter from the centre of the hub during the progress of the excavation, as such constitutes no part of our invention.

But we *claim* the construction of the tool, with the excavating and shouldering cutters in separate slide bars d and e , capable of a simultaneous outward movement, and relatively so situated that the shouldering cutter is made to perform the double function of cutting the shoulder and holding the tool firmly upon the hub.

No. 14,327.—JAMES TEMPLE.—*Boring Machine.*—Patented February 26, 1856.

In operating this machine the boring shafts E are adjusted to the requisite distance apart by the sides c and d , and there secured. The long pinion D being adjusted to mesh with the driving pinions G by means of the slides b . The timber is secured between the standards f by screws i , and as the shafts E rotate they are gradually moved forward by lever H .

Claim.—The combination of the horizontal and vertical slides b and c , arranged and operating substantially as and for the purpose specified.

No. 16,241.—SAMUEL KLAHR.—*Improved Boring Machine.*—Patented December 16, 1856.

The pump-stock or post to be bored is fastened on the top of carriage 2; and motion being given to driving wheel P , it is transmitted to pulleys J and E , which latter turns the tool D . The feed motion of carriage 2 is effected by the endless screw Z , pinion Y , shaft X , screw W , pinion V , and pulleys T , which latter are provided with pins U , which operate the endless chain R , to which carriage 2 is attached.

The inventor says: I *claim* the arrangement and combination of the shaft X , endless screw Z , pinion V , and pulleys T , as operating on an endless chain and railway carriage, for the purpose of boring pump-stocks, as described.

I also claim the shape and construction of the pinion V and pulleys T , with pins U , solid on one shaft, for the purpose set forth.

I do not claim the combination and arrangement of the drum J , with the device for operating the drum E .

But I claim the combination and arrangement of the drum J , with the device for operating both of the carriages C and 2 for boring post and pump-stocks, forming a neat portable machine, substantially as set forth.

No. 15,022.—WILLIAM SAMUELS and GEORGE L. STANSBURY.—*Improved Boring Machine.*

The square shafts of the augers $A A A$ pass through the square mortices $a a a$ of the cog-wheels $B B B$. By means of the sliding sash D and lever J the rotating augers are forced into the timber.

The augers A have pivot points above the round plates P , and turn against steel plates $G G G$, which draw out, so as to allow the auger to pass up through the upper cross-piece E , as the sash is forced down, thus allowing some of the augers to be made inoperative.

Claim.—The power boring machine, constructed as and for the purposes described in the foregoing specification.

No. 14,479.—ISRAEL W. WARD.—*Improved Adjustment in Boring Machines*.—Patented March 18, 1856; antedated February 16, 1856.

The nature of this improvement will be understood from the claims and engravings.

The inventor says: I am aware augers have been so arranged as to be made to approach or recede from each other, and still remain in gear with the driving cylinder; but in practice, as heretofore arranged, they are too expensive and troublesome to go into general use. This I do not, therefore, claim.

But I *claim* having the cylinder D in the curved arcs C, and the shaft F in the straight slots *b*, cut in the pillar-blocks B, and uniting the journals D and F by the braces E, so that they may be adjustable, but always be held in gear with each other, substantially as described.

I also claim the hollow auger-shanks F¹ H¹, so arranged as to slide over the stationary shafts F H as they are forced out or drawn back, substantially as described.

No. 14,329.—HEMAN WHIPPLE.—*Improvement in Instruments for Measuring the Length of Braces in Carpentry*.—Patented February 26, 1856.

The use of this instrument will be understood by reference to the engravings.

The inventor says: I do not claim determining the length of the hypotenuse and the subtended angles by a square and rule, as this has been done in several instruments.

But what I *claim* is the button *c*, to receive and clamp the square on the centre line of motion of said button, in the manner and for the purposes specified.

I also claim the traveller *e* with one side on the line of the slot *x* and centre of the button *c*, for the purposes and as specified.

No. 14,984.—ELLIOT T. MILLER.—*Improvement in Callipers for Measuring Irregular Forms*.—Patented May 27, 1856.

The callipers are applied to the irregular form, the fingers C being forced in until they indicate the form; the plates F are then forced down under the spring-catches L, by which means the India-rubber blocks *g* are pressed against the fingers, and the latter are held in place.

Claim.—The callipers, consisting essentially of fingers C, plates F, and elastic blocks *g*.

No. 15,530.—EDWARD Q. SMITH.—*Improvement in Manufacturing Chairs*.—Patented August 12, 1856.

The sliding table 5 is furnished with a pillar 11, and clamped against the adjusting piece 6 by the screw clamp 7; it is then moved up to the cutter head 3, and the pillar passes into the recess made in the cut-

ter head, at which time the cutters 8 and 9 give it the required shape, and when connected to the back piece of the chair they form a joint which is represented in a cross section at fig. 2.

Claim.—The arrangement of the sliding table 5, in combination with the cutter head 3 and cutters 8 and 9, furnished with the adjusting piece 6, for holding the pillar to its proper relative position to the cutter head, or equivalent means for making the top of the pillar the desired form and size to fit the dovetail in the chair back.

No. 14,522.—SOLON STAPLES.—*Improved Clamp for Planking Ships*.—Patented March 25, 1856.

The object of this invention is to bend and hold together the inner or outer planks of vessels until properly secured. A represents a board which is to be secured to B.

The inventor says: I do not claim the above described parts separately considered; but I *claim* the combination of the shank *a*, arm *b*, screw *d*, and brace K, with the rigid sliding tie *f*, constructed and arranged substantially as herein described for the purpose specified.

No. 14,676.—H. W. OLIVER.—*Improved Floor Clamp*.—Patented April 15, 1856.

The bed plate A being placed upon the joist J, the lever D is turned over, whereby the jaw C will be forced outward against the board K. The bevelled end *a*¹ of rack E will be forced at the same time under the projection *e*, thereby raising the bar F and pressing the hook *h* firmly against the under side of the beam.

Claim.—The sliding jaw or head C, and the hook *h* attached or fitted to the plate or bed A, and operated by the lever D and rack E, substantially as described for the purpose set forth.

No. 14,307.—ARI DAVIS and ASAHIEL DAVIS.—*Dovetailing Machine*.—Patented February 26, 1856.

The carriage B is fitted to the tracks C E and D, and to the carriage is fitted the movable and adjustable slide F, so that it may be slid to any desired position on the top of and with the track D, and secured in such position by the screw G. The slide F is intended to be moved to correspond with and rest upon the track D. The carriage B and its adjustable slide F receive and carry the piece of board W² to be dovetailed, they being held down by the hand of the operator while he is pushing the carriage B forwards.

Claim.—The arrangement and operation of the cutter heads *x b* and L, one movable and adjustable with the bar D, which carries it, and the other stationary so as to bevel and form the groove in one end of the wood, and bevel and form the tongue to fit this groove on the opposite end of the wood at one single operation; so as to complete the dove-

tailing of each piece of any desired length, without changing the cutters essentially in the manner and for the purposes fully set forth.

Also, the carriage B, or its mechanical equivalent, and its movable and adjustable slide F which carries the board being dovetailed, and which can be moved and adjusted in conjunction with the bar or way D, and cutters thereon, so as to give any desired length to the board, essentially in the manner and for the purposes set forth.

No. 14,427.—EDWIN WIGHT.—*Improved Dovetailing Machine*.—Patented March 11, 1856.

The boards to be cut are placed between the wedge-shaped blocks T and S; the bar p^1 is then brought down with the cross-bar Q, which bears on the top of the wedge T. Bar p^1 is secured and brought down by means of the set-screw m , as shown in fig. 3.

The boards thus confined to the base plate A are submitted to the semi-cylindrical cutter, which is brought to act upon the edges of the series of boards by means of the slides, fig. 2, similar in form to the ordinary slides of machines for planing iron.

The inventor says: I do not claim the exclusive use of revolving and traversing cutters, as they are employed in a variety of machines; but I do *claim* the cutting of dovetails of exactly similar size and form on the edges of a number of boards at one operation, by placing the said boards one upon the other, arranging them in the manner set forth, or any equivalent to the same, and submitting them to the action of revolving and traversing cutters.

No. 15,301.—LYSANDER A. ORCUTT.—*Improved Dovetailing Machine*.—Patented July 8, 1856.

The four slides or chucks K on the pieces J are arranged at such a distance apart as will receive the plank or board on which the dovetails are to be cut, and are secured there by the clamp L. A notched pattern N, having openings in it at such distances apart as is required to have the dovetails, is then placed between M and G, and there secured by set-screws f . The variable dog R, being adjusted to the notches in the guide N, enters said notches and holds the work whilst it is being cut. When the dovetail is being cut, the table is secured in a horizontal position by a set-screw t and rod q ; and when the tenon is being cut, collars or stops are placed on said rod and the screw is loosened, said collars being so placed and at such a distance apart as will give an angle corresponding with that of the dovetail; then by rocking the table each way and passing the material to the cutter twice, the tenon is cut.

Claim.—The combination of the double frames or carriages for producing the canting or rocking and the vertical and horizontal motions, for cutting dovetails and tenons or counters.

I also claim the variable dog R and pattern N, for spacing, regulating, and holding the stuff under the action of the cutter, as herein set forth.

No. 15,727.—WILLIAM M. BULLOCK.—*Improved Machine for Dressing Felloes*.—Patented September 16, 1856.

The fellies represented in dotted lines are placed upon a suitable bed which moves in an arc of a circle; motion being given to the cutter-head J by means of the wheel C and pinion D, the cutter K, as the head J rotates, dresses the felly. The bearings H of the shaft E are kept stationary by means of a stop L attached to ring F; by raising the latch, the bearing and shaft E can be turned one half the circumference of the wheel C, as represented in fig. 2, and the motion of the cutter-head J will be reversed, thus affording the means of dressing the fellies in the same direction as the grain runs in the wood to be dressed.

Claim.—The rotating ring or band G placed within the stationary ring or band F, the ring or band G having the cutter-head shaft E fitted to it, the shaft E being rotated by the gearing C D, as shown and described, for the purpose specified.

No. 14,987.—A. B. RICHMOND.—*Improved Machine for Manufacturing Felloes*.—Patented May 27, 1856.

In the saw frame D D there is hung a shaft 24, on which the saw arm F is vibrated. The saw arm F ends in hands, one of which has five slotted fingers, and the other three. The saws G G are adjusted to the desired circle by turning the screws $q q q$ and c , which moves the nuts 12; and when the desired circle of the saw is thus obtained, the nuts 11 11 are screwed up to 12, holding the saws between them. The saws are then secured on the hand by means of the screws 13.

The platform III moves on slides IX IX. The screws VIII, &c., serve to level it so as to square it with the saw a . When the felly is laid on the platform against the adjustable gauge VI, the end from the saw a is moved off from IV by the screw VII until it lies at the proper angle, and then, holding it secure with one hand, the operator slides the platform up to the saw a , when one end of the felly is cut off at the proper level.

For the purpose of boring, the felly is placed between the adjustable gauges $l l$, on the platform $p p$, and secured by means of button u ; $n n$ are bits with which the holes for the spokes are bored. The bits, being fastened to the sliding pieces $f f$, are pressed against the felly by means of lever v . The bits $n^1 n^1$ operate in a similar manner.

Claim.—The saws, constructed so that they may be adjusted to any required circle by means of the set-screws $g g g g g$, and also constructed as described, with the saw-hand and fingers and slots and set screws combined, or any other construction substantially the same. I do not claim the saws alone, but constructed, and with the aforesaid combination, as described.

2d. The contrivance and construction of platform III, with the combination of gauges and set-screws, as described, for cutting the felly the proper length, or any other substantially the same.

2d. I do not claim the bits driven by hand alone but I claim the combi-

nation described in fig. 4, by which the bits for the spokes and dowel pins are made to move towards the felly at the same or different times, as may be desired, by means of the combination and construction described, or any other substantially the same.

No. 15,445.—G. W. WALTON and H. EDGARTON.—*Improved Method of turning Ellipsoidal Forms*.—Patented July 29, 1856.

Motion is given to the shaft B by a belt which passes around pulley C on shaft B, and motion is given to the shaft M by a belt which passes around the pulley N. When the teeth of the pinion O gear into the pinion L, the feed rollers K K¹ will be rotated, and the stick R, shown in dotted lines, will be fed into the hollow shaft B; when the teeth of the part pinion O pass out of gear with the rollers K K¹, the stick remains stationary, and the pins *f f*, on the shaft M, act upon the rods P P, and the collar E is moved forward, and the cutters I I¹, one or both, are forced inward by the slides *b b*, act upon the stick R, and cut a handle. By similar successive operations, a number of handles are cut side by side, and the stick of handles is discharged by the rollers Q Q.

Claim.—The feed rollers K K¹ and expanding cutters I I¹, one or more, attached or fitted to the hollow shaft B, when the parts are arranged and operated as shown and described, for the purpose specified.

No. 14,421.—HENRY D. STOVER and JAMES W. BICKNELL.—*Machine for Cutting Irregular Forms*.—Patented March 11, 1856.

It will be seen that the shaft *c*, together with its appendages, will swing about the fulcrum *e e* as the pinion (which gears into the stationary rack *g*) is revolved by means of worm-gearing K J. The parts *l m J i K h*, are connected to, and move with, the shaft C.

Claim.—Combining the guide *f* with the bearing *e*, substantially as, and for the purpose, set forth; and also combining the cutter head *d* with this guide in such a manner that they shall move up and down together, substantially as specified.

Also, the combination of the cutter-head, arbor, and pivoted bearing *e*, so as to allow the cutting angle of the knives to be varied in relation to the table, substantially as set forth; and also combining these with the mechanism, substantially as described, for varying that angle gradually in the cutting process.

No. 15,859.—CHARLES SPOFFORD.—*Improved Machine for Cutting Irregular Forms*.—Patented October 7, 1856.

This invention consists in the application of a horizontal cutter-head A in combination with two vertical tables G H, to which the guide-heads B and C are attached instead of using two vertical cutter heads operating on a horizontal table. The work can be shifted from

one table to the other as circumstances may require, by means of the vibratory spring-presser I vibrating on the fulcra *d*, said presser being operated as described in the claims.

The inventor says: I do not claim the invention of a rotary cutter cylinder. Nor do I claim combining knives in any manner with a rotary cutter-head or frame to hold said knives so that said head or any part of it may serve as a guide to the form or pattern carrying a material to be dressed.

I claim the combination of one rotary cutter, two guide-heads B and C, and two tables G H, arranged as described.

I also claim the combination of a vibratory spring-presser I with a rotary cutter-stock A and two tables G H, the said presser being made to operate with respect to the cutter-stock and tables, and either guide B C, as specified.

I also claim the combination of mechanism for moving the vibratory spring-presser and its spring towards either of the tables and locking the shaft to the spring, the same consisting of the arm M, the two turning bearers R S, and the treadle or lever N, connected to the bearers by pitmen O P, as described.

And in combination with the mechanism for moving the vibratory presser and its spring towards either of the tables, and locking the shaft to the spring, I claim the auxiliary treadle T applied to the main treadle, and supported by a swinging bar, substantially as explained.

No. 15,153.—JOHN TEAR.—*Improved Method of Operating Cutters in their Heads for Irregular Forms*.—Patented June 17, 1856.

When the cam N is in motion, the end *r* of the lever M is moved sidewise, and the upper end assumes a similar motion, thereby imparting to the knives K a slow movement which is reversed in each of the knives, and by this movement the knives slowly approach or recede from each other, at the same time that the cylinder I is revolving with a rapid motion imparted to it from pulley P; this provides the means of cutting two sides of the spoke tapering at one operation. The relative lateral distances of the knives K can be regulated in the following manner: When the lever S is turned, the arms R slide in the standards G and move the lever M and knife K in the same direction; the lever S can then be secured by inserting a pin into one of the holes *t* of the sliding-box T.

The inventor says: I am aware that a divided or sectional cylinder has been used, and that these sections have been operated by cams to give them lateral and vertical motion; these I do not claim.

But I claim the use of a cutter-head, in which the knives or cutters are caused to traverse during the rotation of the cylinder, for the purpose of adapting themselves to the shape of the thing to be cut by them.

No. 15,327.—P. C. CAMBRIDGE, jr.—*Improved Method of Turning Ornamental Forms*.—Patented July 15, 1856.

The stuff S is centred between the heads of an ordinary turning-lathe, and the guides or ways A A serve as the bed of the lathe. As the stuff S is rotated, the carriage B is moved. The cutters G rough off the work, and the sliding-carriage B is moved back and forth by hand, the tools Q and R acting alternately upon the stuff, and cutting alternately beads *e* and smooth cylindrical portions *f*. As the tools Q and R cut, the carriage B is kept stationary in consequence of the pawl D catching into the notched sides of the bar C. The pawl D is thrown out of the notches by operating the lever E; set-screws *g* are placed underneath the carriage J on carriage B, by which its length of stroke is regulated. The collar I supports the stuff S, or holds it firm, preventing all tremor, while the stuff is being operated upon.

Claim.—The sliding-carriage J, with tools Q R attached to it, as shown; the carriage J being fitted transversely on a carriage B, substantially as shown, for the purpose specified.

Further: the carriage J, in combination with the collar I and cutters G G, when the above parts are placed on the carriage B, and operating as described.

Also, the polygonal notched bar or gauge rack C, arranged as shown, by which the movement of the carriage B is regulated according to the character or nature of the work to be done, and the stuff beaded in the desired manner.

No. 15,196.—H. E. SALISBURY.—*Improved Method of Turning Tapering Forms*.—Patented June 24, 1856.

The centre-piece being pushed against the end of the timber, and the screw 2 turned to hold it in its place, motion is given to the machine. This will revolve the cutters *c*, and a gear-belt is extended from the mandrel to the pulley R on shaft J, which gives motion to the same; as it revolves, the worm-screw operates on gear U, which gives motion to the endless-chain belt, to which sliding-rod J is attached, by means of clamp 1, and to which is attached the sliding-centre by means of clamp 2, and as the timber is fed to the cutters the sliding-centre is moved out.

As the cam Y operates on the lever Z, it is raised or depressed. As it rises, the face-plate slides towards the cutters, causing the radiating arms *b* to pass through slots *c*³, thus closing the cutters, and making them to conform to the shape of the timber. When the irregularities of the cam depress the lever, the face-plate E is drawn back and the arms are drawn out of the slots, thus opening the cutters, so as to conform to the unevenness of the timber. When the timber has passed through the mandrel, the sliding-centre falls out, as shown in dotted lines, fig. 3; and if the timber is very long, the weight Z is allowed to press on the wheel to which it is attached, which will bring the friction-rollers M to bear on it, and which will act as a rest to steady and support it.

The inventor says: I do not claim causing cutters to advance and

recede to and from the piece being turned, irrespective of the specific arrangement; but I *claim* the manner herein described of operating the revolving cutters, namely, by means of cam Y, lever Z, movable face-plate E, with radiating arm *b* passing through slots *c*¹, with slides *d* on revolving face-plate F, for the purpose of opening and closing the cutters, and holding the timber stationary.

I also claim the movable centre-piece, operating as described and for set forth.

the purposes set forth, in combination with the feed motion, as herein

No. 15,556.—JOEL BRYANT.—*Carpenters' Gauges*.—Patented August 19, 1856.

The marking points are provided with screw-threads, which work in corresponding screw-threads in the hollow holders *g* and *c*, so that by turning said holders the markers may be screwed in or out at pleasure. The holder *g* is stationary, and provided with a groove *m* and shoulder *n* to receive the sides of a sliding-catch *i*, which thus retains the holder *g* in its place, but permits to turn it by means of its handle. The holder *c* which is attached to the arms *a* and *b* can be made to move by operating the screw *h*, and thus this gauge can be used as a mortising gauge or as a single gauge, by using one or two markers at a time.

Claim.—Point-holders, or holders for the points, markers, and cutters of the gauges, irrespective of the kind and form of gauges, or instruments equivalent thereto, constructed and operated as described.

No. 14,753.—GEORGE W. HOLMES, assignor to JARVIS C. MARBLE.—*Improved Hoop Machine*.—Patented April 22, 1856.

The inventor says: By constructing the saw-dishing, and arranging the pressure-rollers with respect to it, I am not only enabled to saw bent sticks, but I cut each hoop with a lateral bevel, such as will cause it, when bent around in a circle, to be frusto-conical on its inner sawed surface, and thus enable it to fit closely against the taper of the barrel.

Claim.—The arrangement and combination of the pressure-rollers F G, the saw D, and the stand-guard O, so as to operate together, the said rollers being pressed towards the saw with variable degrees of pressure.

And under the arrangement of the saw and pressure-rollers as described, I claim making the saw-dishing or concave-convex, by which advantages are gained, as stated.

No. 14,833.—JOSEPH SAWYER and SYLVESTER SAWYER.—*Improved Hoop Machine*.—Patented May 6, 1856.

The hoop, as it leaves the feed-rolls H and I, is borne up to the cutter-head C by the pressure-roll L hung in the frame M, which pivots round the axis of the feed-roll H; the roll L is brought up to its work by the spring N, one end of which is attached to its carrying-frame M;

the latter is thus brought up against the stiff spring O, which serves as a stop to the further motion of the pressure-roll L.

The finished portion of the hoop is caused to bear against the rest D; the pressure-roll L, while it keeps the hoop steadily up to the rest and the cutters, yields also to permit the passage of knots upon the outer surface of the hoop.

When the hand-lever T is forced in the direction of the arrow, it bears at *c* upon the stiff-spring stop O, by which means this spring is caused to yield, and the roll L is allowed to force the hoop against the cutter; at the same time the lever T presses at *d* against the feed-roll I, and causes it to yield, and thereby permit the end of the hoop to be borne over towards the cutters.

Claim.—The within described combination of the rest D and the pressure-roll L with the hollow-faced cutter-head C, operating in the manner substantially as set forth.

2d. We claim the method herein described of tapering the hoop for the lap, by means of the lever T and spring-stop O, operating in the manner and for the purpose set forth.

No. 15,780.—JOSEPH SAWYER and SYLVESTER SAWYER.—*Improved Hoop Machine.*—Patented September 23, 1856.

The hoop-pole, during the process of splitting, passes between the stationary rollers C D and the movable rollers E F. The knife *m* is secured to the carriage K, which is kept steady by means of rack *i*, which can be adjusted by means of a pinion meshing into said rack. The carriage K is hung at one end upon a rod *n*, so as to permit it to slide a short distance to either side.

Claim.—The methods described of hanging the knife and connecting it with the feeding-rolls, for the purpose of retaining it midway between the rolls, and parallel with the direction of the hoop-pole.

No. 15,865.—WILLIAM B. WOOD.—*Improved Hoop Machine.*—Patented October 7, 1856.

The hoop-poles are fed by the feeding-rolls B to the stationary knife C, by which they are split through the centre; the two halves are each then directed by the stationary guides *b* past the edge of the spring guides *c*, against which the hoops are pressed by the rolls *d*. The interior surface of the hoop is then shaved by the cutters *f* of the revolving cylinders D. During this operation, the planed surfaces of the hoops are pressed up against the stationary guides *g* by the rolls *h*. The hoop is then reduced to a uniform thickness by the revolving cutters E, during which operation it is held firmly to the rear of the guide *g* by the spring guides *k*. The hoops are then drawn out of the machine by the rolls F.

The inventor says: I do not claim splitting hoop-poles by forcing them against the edge of a stationary knife. Nor do I claim shaving them by means of revolving cutters. Neither do I claim any of the in-

dividual devices employed, nor their combinations. But I *claim* the peculiar arrangement of the several parts of the described machine, operating in the manner specified, for the purpose of splitting the poles and shaving the hoops at one operation, as set forth.

No. 15,768.—DANIEL LAMSON.—*Improved Machine for Notching Hoops.*—Patented September 23, 1856.

The hoop, represented in dotted lines, is laid flatwise upon the plate D, the knife E being raised; and the knife is brought down upon the hoop by depressing the treadle attached to rod C, the knife cutting an oblique notch of the required form in the hoop.

Claim.—The knife E attached to the reciprocating frame B, in combination with the inclined plate D attached to the frame A, substantially as described, for the purpose specified.

No. 16,225.—CLARK H. BROWN.—*Improved Method of Planing and Tapering Wooden Hoops.*—Patented December 16, 1856.

The bolt represented in dotted lines is placed on the carriage B; the carriage is then moved along in the direction of the arrow, and the planer G makes a deep cut at its commencement; but the arm *i* immediately strikes against the projection *f*, and moves the lever F, and the slide E and planer G are gradually thrown back a certain distance. The saw C now enters the bolt and cuts a strip of the necessary width from it. As the outer end of the bolt approaches the planer, and at the proper point, the pendant *g* strikes the projection *f* on the opposite end of the lever F, and the planer is gradually moved inwards so as to cut the outer end of the bolt in taper form.

The inventor says: I do not claim the circular saw and rotary planer, for they have been previously used for analogous purposes.

But I *claim* the combination of the saw C and the adjustable or sliding planer G, operated or adjusted by the movement of the carriage B, through the medium of the lever F and the pendant *g* and arm *i* on the carriage B, substantially as shown and described, for the purpose set forth.

No. 14,871.—WILLIAM D. HOOKER.—*Improved Method of Securing Knives to Cutter-Heads.*—Patented May 13, 1856.

By turning the rod E, the wedge D will be forced between the shanks *a a*, thereby securing the cutters in the head.

The inventor says: I do not claim operating a wedge by a screw, it having been done before.

But I *claim* the cutter-head A, the shanks *a a* of the cutters, the wedge D, the screw-rod E, the whole in combination, arranged substantially as described, and for the purpose specified.

No. 15,045.—JOSIAH MUMFORD.—*Improvement in Revolving Last-Holders*.—Patented June 3, 1856.

By this arrangement, the operator is enabled to bring the lasts M and N into any desired position by turning the plate C and by turning the braces E on their respective bolts d.

The inventor says: I am aware that a revolving last-holder has been patented; this I do not claim; nor do I claim arranging two revolving arms on one standard, as this has been done.

But I *claim* the so arranging of the two arms D, carrying each a last M and N to one revolving plate C having two inclined planes upon it, that both arms shall revolve at once; and when the last on one shall be up, the other shall be down, and *vice versa*; for the purpose of bringing one last into convenient position for the operator, and removing the other one entirely out of his way.

No. 14,647.—ANDREW J. BARNHART.—*Improvement in Securing and Releasing Blocks of Lasts*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and engraving.

The inventor says: I do not claim attaching the block B to the last A by means of a spring catch, irrespective of the arrangement of the catch, as herein shown. But I *claim* the fastening or catch C, arranged substantially as shown, so that the insertion of the lever or last hook will disengage it, and allow the block to be freely removed.

No. 14,126.—JOHN L. BROWN, assignor to Himself and CHARLES LEARNED.—*Lath Machine*.—Patented January 15, 1856.

The plank p is placed in the vertical frame F, and is supported underneath by the rest m. As the shaft E revolves, the knife frame B reciprocates, together with the knives f and the rest m, which are attached to said frame. The knife cuts off the lath; and as the rest m moves from beneath the plank, the lath falls to the ground, and the plank is held upon the upper face of the knife, which, in its turn, (when the opposite movement of B takes place,) slips from under the plank at the time the rest m reaches again the position shown in fig. 2, when the plank falls upon the rest and is ready for the next cut.

The inventor says: Disclaiming reciprocating knives for cutting laths, without regard to number and direction of movement, I *claim* the vertical guide frame F, in combination with the reciprocating rest m, constructed, arranged, and operating substantially as and for the purposes specified.

No. 14,499.—JESSE GILMAN.—*Improved Lath Machine*.—Patented March 25, 1856.

When the carriage W arrives at a certain point, a projection a¹ will strike a pin b¹ on the rod f, causing the motion of f¹ together with the

pulley X and the cams E E. The cams operate the lever G, and throw the clutch H in gear with the pulley J, thus reversing the rotation of shaft I and the motion of the carriage W, until the projection a¹ strikes against the projection i.

Claim.—The clutch H, operated by or through the medium of the lever G and cams E E, in combination with the rods f f¹, carriage W, and pulleys V X, the pulleys being connected respectively with the carriage W and rod f¹ by the cords c h, substantially as described for the purpose specified.

No. 14,027.—THOMAS R. MARKILLIE.—*Improved Bed for Lath-Sawing Machines*.—Patented January 1, 1856.

This invention is designated to facilitate the setting and effect the supporting of the log during the operation, so that it may traverse without jar or movement, and without binding or pressing upon the horizontal saw. The log is made to rest upon the bed m m of the carriage B, and carriage C being drawn over it, the dogs E E are secured to its ends by means of screws d d, the carriage B at this time being at the right of the vertical saws F; the inner vertical face of the log is made to rest against the face n of guide i. The log being thus set, the carriage B is made to traverse over the saws G and F, by which operation the first cut is effected. The movement of the carriage is then reversed; and when weight p strikes stud q, the plate b is revolved outward, permitting carriage C to be moved by weight a, until the vertical face of the cut comes in contact with face n of guide i, the horizontal face of the cut passing upon the edge r of said guide, and thus causing the log to rest upon bed m m and the guide i, plate b falling into position to hold carriage C.

Claim.—Having thus described my invention, and the operation thereof, I disclaim the employment of the two systems of saws perpendicular to each other, such forming no part of my invention.

What I claim is, the combination of the bed M M with the longitudinal bearing guide I I, arranged and operating as and for the purposes set forth.

Also, the construction of the conformable dogs E, operating as and for the purposes set forth.

No. 14,578.—H. C. SPALDING.—*Improved Lathe*.—Patented April 1, 1856.

This lathe for turning polygonal forms operates as follows:

The belt-shipper N is shoved into the box O¹ till the hooked lever Q¹ catches into a hole therein, and retains the belt-shipper in proper position. The reversing gear moves the carriage F, together with the stick to be cut, underneath the cutters E, which cut one side of the stick; the stick is prevented from vibrating by the jaws s s. When the carriage has reached the end of its forward motion, one of the projections z actuates the lever A¹, and the belt-shipper Z throws the belt upon the other pulley of the reversing gear, and the carriage F returns

backward. Before the carriage has completed its return motion, the upper end of the arm K^1 comes in contact with a projecting arm A^2 which forces the pawl a^1 underneath the end of the spring L^1 , whereby the pin z is raised from one of the holes w in the hub J^1 , causing the spring M^1 to draw the lower end of the arm K^1 back to its original position, as the carriage again moves forward, and the stick is turned the required distance between its centres by the pawl b^1 , so that an uncut side of the stick is presented to the action of the cutters.

Claim.—1st. Attaching the cutters E to the cutter-heads D by having the shanks b of said cutters fitted in taper grooves a , which are made in the sides of the cutter-heads, the inner ends of the grooves being wider than the outer ends, to permit the proper adjustment of the cutters.

2d. The shaft T , when arranged as herein shown, so that it will rise and fall curvilinearly, and be at equal distances from the arbor or shaft C at any point of its movement, so that power may be applied to the gearing which operates the adjustable and reciprocating carriage F from the stationary arbor or shaft C , without changing the lengths of the driving-belts.

3d. Holding or securing the sticks to be operated upon by means of the jaws s , operated by the grooved drum p , lever G^1 , and plates u w , as described.

4th. The hub J^1 , arm K^1 , with pawls a^1 b^1 attached, and operated as shown, for the purpose of turning the sticks the requisite distance between the centres at each movement of the carriage, so that the sticks may be cut with any desired number of sides.

5th. Arranging the belt-shipper N^1 , as shown, viz: with a hooked lever Q^1 , and pendent lever R^1 , and spring P^1 , and having a projecting pin f^1 attached to the side of the hub J^1 , so that the driving-belt of the machine will be thrown off the driving-pulley W at each entire revolution of the hub J^1 , so that the finished work may be removed from the machine, and fresh sticks placed between the centres.

No. 14,787.—ALBERT H. BROWN, assignor to TINGLEY and VIELE.—*Improved Lathe.*—Patented April 29, 1856.

The two cutter-stocks D^1 D^2 are pivoted against the rest A . They are in the bell-crank form, the inner ends holding the cutters E^1 E^2 , and the outer ends being attached to the rods G^1 G^2 , which are hooked under the pattern H . The movements of the rods G^1 G^2 , rising and falling upon the uneven surface of the pattern H , will give a similar motion to the cutters, and produce the desired form in the article to be turned.

Claim.—The form and arrangement of the cutter-stocks with the cutting tools attached, so as to partake of the curvilinear motion of the stock, and pivoting them upon the slide-rest; in combination with the apparatus for transferring the lines of the pattern by the motion of the stocks to the cutters, so as to produce a turned surface, of which the edge of the pattern is a sectional representation, substantially as set forth and described.

No. 14,941.—MILTON ROBERTS, assignor to MILTON ROBERTS, ISAAC ROBERTS, and ISAAC N. FELCH.—*Improved Lathe Attachment for Turning Irregular Forms.*—Patented May 20, 1856.

The movable head A is attached to a common lathe-bench, with a slide B moving between the guides C ; this transverse motion is produced by the crank G G , the cutter-slide being loosely attached to the bar F by pins, so that the head B can slide horizontally along the bar F . The horizontal motion is produced by two inclined planes E E , which act alternately upon the teeth of rack D .

Claim.—Automatic lathe-attachment for turning figured wood-work, substantially a transverse and longitudinal movement produced by cranks G G and inclined planes E E , or their equivalents, and tooth-rack D .

No. 16,108.—JAMES ANDERSON, JOHN McLAREN, and JOHN BRYANT.—*Improved Lathe for Cutting Fluted Mouldings.*—Patented November 25, 1856.

By turning the shaft J back and forth a reciprocating motion is given the leg E , and the leg is turned a certain distance at each vibration of the carriage B . One set of the revolving cutters q cut half a flute, and the other set of cutters cut the opposite side of the flute; and as the two sets of cutters rotate in reverse directions, both sets will cut with the grain of the wood, and the flutes will be cut in spiral form upon the leg E , owing to the rotating motion given it by lever h working in the inclined slot i . When one slot is cut, the leg E is turned around a certain distance and attached to the pinion f by pin f^1 .

Claim.—1st. The adjustable rotating cutters q q attached to shafts p p , which are fitted in frames o o , the frames being fitted and working in pendent guides n n attached to the adjustable block G , substantially as described for the purpose specified.

2d. Placing the leg E between centres which are attached to a swinging frame C fitted on a reciprocating carriage B , the leg being turned or rotated between its centres as the carriage moves, by means of the inclined slot i in the ledge or plate j , and the lever h and gearing f g , as described.

No. 14,632.—MICHAEL NECKERMANN.—*Chuck for Lathes.*—Patented April 8, 1856.

By turning the rim E , by means of the rod l , the toothed rim F may be thrown either in or out of gear with the pinions f . When the toothed rim F is in gear with the pinions f , all of said pinions will be turned by turning either of the screws D , and the jaws B will consequently be moved simultaneously towards or from the centre of the face-plate.

The inventor says: I do not claim the bevelled toothed rim F , nor the pinions f on the screws D , by which the jaws B are operated, for this device has been previously used.

But I *claim* the annular rim E, having inclined projections *j* attached to it, the projections *j* fitting or working over projections *i* on the back of the groove *h*, the toothed rim F being placed over the rim E, the above parts being arranged as shown for the purpose set forth.

No. 14,899.—MILTON ROBERTS, assignor to MILTON ROBERTS and ISAAC N. FELCH.—*Improved Cutter-Head for Lathes*.—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The eccentric insertion of the tenon E of the cutter-head B in the mandrel A, to produce an eccentric motion in throwing out the edge of the cutters.

No. 16,192.—LEMUEL SMITH.—*Improvement in Lathes for Irregular Forms*.—Patented December 9, 1856.

The stuff C is centred between the two heads B, a jaw F being at each side of it; and as the stuff B is rotated, the cutter G acts upon it. As the carriage E is drawn along, the jaws F expand and contract, the action of spring *c*, pressing them against the stuff, which will be turned, corresponding in form to pattern H.

Claim.—The two expanding jaws F F, placed on the carriage E, which works on the bed A of the turning lathe, in combination with the pattern H, the cutter G being attached to one of the jaws, and the whole arranged as shown and described, for the purpose specified.

No. 16,105.—JOSIAH B. POMROY.—*Improved Device for Governing the Parallel Yielding of Lumber Feeding Rollers*.—Patented November 18, 1856.

The boards to be resawed are inserted between the vertical feed-rollers, which rest at their bearings on the horizontal carriages N. These carriages are connected to rod T by the parallel arms S, and the pressure of spring tends to draw said arms in a direction parallel to rod T, and thus to press the feed-rollers tightly against the boards; by pressing on the knob *x*, the carriages N are separated, and free room is thus allowed for inserting or taking out boards.

The inventor says: I do not claim in general causing the feeding-rollers to yield and adapt themselves to the shape of the board so as to remain always in parallel positions; but I *claim* the arrangement and combination of the parallel arm S S, central guiding rod T, and spring *u*, in connexion with the yielding feeding-rollers, mounted on sliding carriages, substantially in the manner and for the purposes specified.

No. 15,053.—WILLIAM P. WOOD, assignor to SAMUEL D. VAUGHAN and WILLIAM P. WOOD.—*Improved Mitre Box*.—Patented June 3, 1856.

The box is adjusted to cut a joint of any angle, by moving the sliding carriage D towards or from the centre *a*, until the arms C (which are thus made to rotate in consequence of the pins *e e* of the sliding carriage playing in the grooves *s s* of the arms C) are parallel with the proper lines to cut the required joint, at which point they are secured by the set-screws *g g*.

Claim.—The arms C, when operated in the manner substantially as and for the purposes described.

No. 16,020.—JOSEPH R. PERRY.—*Improved Joint for Uniting a Mortising Chisel to its Mandrel*.—Patented November 4, 1856.

This invention consists in securing the revolving chisel socket J to the cross-head H of a mortising machine, by turning corresponding grooves on the inner circumference of the cross-head H and outer circumference of the socket J, and by then fitting both parts together and pouring metal into said groove through a passage *a* in the cross-head H, thus forming a complete swivel.

Claim.—Securing the revolving chisel socket J to the cross-head or cap H, by grooving both in the manner described, and filling the annular space thus created with a metallic composition, as specified.

No. 14,071.—WILLIAM STODDARD.—*Mortising Machine*.—Patented January 8, 1856.

The nature and object of this improvement will be understood from the claims and engravings.

The cutter-stock E receives a reciprocating motion by means of a crank and pitman H.

Claim.—1st. The movable cutting-spurs P P, or their mechanical equivalents, for forming or cutting the heads or ends of the mortise, and without the machine being confined to the timber being mortised, essentially in the manner and for the purposes set forth.

2d. I claim the double inverted feed-rack X, in combination with the ratchet-nut G², which is fixed to the screw Y, or their mechanical equivalents, so that this screw can be moved by the rack X and ratchet-nut G² to feed down the spurs P P and *a a a a*, and reciprocating cutter B², so as to form the mortise in the wood, essentially in the manner and for the purpose set forth.

No. 14,106.—J. A. MERRIMAN.—*Mortising Machine*.—Patented January 15, 1856.

The cutter K is attached to the plate I, and the chisels P P are attached to the plate O. The plate I, with cutter K, receives a hori-

zontal reciprocating motion from the revolving shaft N by reason of the pin L working in the slot *k* of the plate I. The plate O, with the chisels, receives a vertical reciprocating motion by means of pin L working in the slot *m* of plate O. The chisels cut the ends of the mortise, while the cutter takes out the wood between, the chisels rising and falling at the proper times so as not to interfere with the action of the cutter.

The inventor says: I do not claim mortising by means of two chisels P P and a horizontal reciprocating cutter K, irrespective of the peculiar means employed for operating said chisels and cutter, for they have been previously used. But what I do *claim* as new, and desire to secure by letters patent, is, operating the chisels P P and cutter K by means of the reciprocating plates I O attached to a plate H, and provided with slots *k m*, as shown, in which a pin, attached to the wrist M of a shaft N, works substantially as shown, for the purpose specified.

No. 14,564.—EDWARD JOSLIN.—*Improved Mortising Machine*.—Patented April 1, 1856.

The carriage B is moved downward by the foot-treadle G, which operates upon the longer arm of the tri-armed sectoral lever K. The other arms *h* and *g* operate upon the two wooden springs M and L, which raise the carriage B after each depression of the treadle G.

The inventor says: I do not claim the application of a spring to the tool-carriage in order to lift it; but I *claim* combining or arranging, as specified, with the tri-armed sectoral lever K and the post or frame of the tool-carriage, two wooden springs L M and a connecting-rod O, and so that one spring may be separated by draught, and the other by pressure, when said lever is forced downward, as explained, the same effecting advantages as set forth.

No. 15,467.—THOMAS R. BAILEY.—*Improved Mortising Machine*.—Patented August 5, 1856.

The mandrel H is mounted in the bearings I and J on the spring-plates L and M; the bearing I can be made to turn on the pin *c*, and the bearing J can be made to vibrate on the plate M. As the mandrel H is rotated, a rotary motion is given to the cutter *n*, and also a lateral vibrating motion, the latter movement being given by the screw *f*, worm-wheel *g*, eccentric *h*, pitman N, and bent-lever O. The mandrel H is shoved towards the hub D, and the cutter *n* enters the hub and cuts at right-angles to its axis; and as it vibrates laterally, the mortises will be cut the proper length, and the ends of the mortises will be cut of taper-form, because the bearing I of the mandrel works on the pivot *c*. The length of the mortise is regulated by adjusting the connexion of the pitman N with the arm *j* of lever O.

The inventor says: I do not claim a rotating and vibrating mandrel, irrespective of the construction and arrangement shown.

But I *claim* the mandrel H, fitted in bearings I J, attached to sliding-plates L M, one of the bearings I being pivoted to the plate L, and the other bearing J allowed to slide on the other plate M, the mandrel H being vibrated laterally by the screw *f*, worm-wheel *g*, eccentric *h*, pitman N, and bent-lever O, the whole being arranged as shown, for the purpose set forth.

No. 14,160.—HAZARD KNOWLES.—*Mortising Tool*.—Patented January 29, 1856.

A is the chisel-plate, worked by a cross-head C sliding in ways W W. The inventor says: I do not wish to be understood as making claim broadly to an instrument with teeth upon one or both edges, nor to the making of an instrument with teeth along the edge or edges, on a line inclined to the line of motion of such instrument; but what I do *claim* as my invention, and desire to secure by letters patent, is, combining in one instrument a series of chisels of the width required to give the desired form to the wood to be cut, when the said chisels are arranged in succession on a line oblique to the line of motion of the entire series, and with gullets interposed to receive and hold the wood cut by each chisel, until it passes through the thickness of the material to be cut, substantially as described; by which combination and arrangement the desired form is given at one operation, by the breadth of the chisels and by the inclination of the series of chisels, as to sustain the under surface of the wood outside of the form intended to be cut, and to act as resisting-shears, in conjunction with the chisels, which finish the cutting of the desired form, substantially as described.

No. 14,454.—A. C. HITCHCOCK and C. H. AMIDON.—*Improved Mortising Tool*.—Patented March 18, 1856.

The bit C is rotated within the bar or chisel A. It enters the wood, and in cutting takes off small chips. The chips pass out of the bar A through the slot C. The chisel A is forced into the wood, the cutting edges following the wood and making a rectangular hole.

The inventors say: We do not claim a hollow chisel having a bit placed within it, irrespective of the form of bit used and the slotted chisel; but we *claim* the combination of the bit C, constructed as described, with the hollow slotted chisel A, for the purpose set forth.

No. 16,197.—JOHN J. WESTERFIELD.—*Improved Method of Cutting Carved Mouldings*.—Patented December 9, 1856.

The stuff T to be cut is sawed out to the proper width and thickness, and secured to the edge of the bed N; and motion being given to the shaft B, the cutter-head S is rotated, and the bed N and frame M are turned, so that the stuff T is passed underneath the cutters which cut the mouldings.

The inventor says: I do not claim the elliptical and oval bed V, connected by the trammel W to the rotating bed U, for this is an old and well known device for cutting and drawing or describing ovals.

But I *claim* the inclined bed N, either of quadrant, circular, or elliptical form, and the conical head S, provided with curved cutters *f*, arranged and operating conjointly, as shown, for the purpose specified.

No. 14,302.—ANDREW BLAICKIE and WALTER CLARK.—*Improved Pitman*.—Patented February 26, 1856.

The object of this invention is to construct a pitman of great strength and lightness.

The inventors say: We do not claim as our invention bushes C C, straps D D, gibs E E, keys F F, or bolts K K; what we do *claim* is the exclusive application of the hollow rod or tube A, and the combination therewith of the wood B, bushes C C, and straps D D, gibs E E, keys F F, and bolts K K, in the manner and for the purpose substantially as described and shown.

No. 14,436.—LEWIS C. ASHLEY.—*Improved Bench Plane*.—Patented March 18, 1856.

The nature of this invention will be understood from the claim and engravings.

The inventor says: I do not broadly claim combining a metallic throat-piece with a bench-plane in such a manner that the discharging aperture for the shavings shall not be enlarged or rendered imperfect by the wearing away of the plane-stock.

I *claim* combining a metallic throat-piece D with a plane-stock A in a manner independent of the plane-iron B, substantially as herein described, to keep the mouth of the throat of the plane perfect as the plane-stock shall wear away.

No. 14,979.—THOMAS D. WORRALL.—*Improved Method of Securing Plane-Bits*.—Patented May 27, 1856.

By turning the rod E so as to cause the screw C' to enter the clamp D, the said clamp may be drawn down closely upon the plane-iron B, so as to confine it firmly in the throat C of the stock A.

The inventor says: I do not claim merely holding the plane or cutter in place in its throat by a wedge, screw, or equivalent device forced into the throat and across it, and against the plane-iron.

But I *claim* the arrangement of the clamp D and the screw-rod E, with respect to the plane-cutter and its stock.

No. 14,228.—C. H. DENISON.—*Rotary Planer for Felloes*.—Patented February 12, 1856.

The cutter-bar X attached to vertical shaft W is provided with cutters at each end; a belt passes round shaft W to give it the required

rotary motion. The frame U has a horizontal cylindrical cutter-head *e* within it, said cutter-head being rotated by a belt *f*; the cutter-frames U and T can be raised or lowered by screw-rods *h h* and *d*; the felloes Y Y, as the bed C rotates, pass underneath the cutter-bar X and leave their upper surfaces roughed off, and are smoothed by the cutter-head *e* by giving the bed C a reverse movement.

The inventor says: I do not claim the cutter-head *e*, nor the cutter-bar X, for both have been previously used.

But I *claim* the combination of the rotating bed C, cutter-head *e*, and cutter-bar X, arranged substantially as shown and described, for the purpose specified.

No. 14,363.—EBENEZER MATHERS.—*Improved Bench-Planes*.—Patented March 4, 1856.

The stock consists of two pieces A¹ and B¹, provided with a metal cap B flanged on each side; D is the set-screw for tightening the bit C. This plane is not liable to choke, as there is nothing to obstruct the shavings; and the bit can be made as wide as the stock.

Claim.—The construction of bench-planes with the stock in two pieces, connected by a metal cap, as above set forth substantially.

No. 16,309.—THOMAS D. WORRALL.—*Improved Method of Adjusting the Bits of Carpenters' Planes*.—Patented December 23, 1856.

The plane-iron B can be regulated by turning pinion H, which is set on shaft I, within the clamp D, which latter can be adjusted by means of screw G.

Claim.—The arrangement of the rack and pinion and the clamp, so that, while the pinion is placed within the clamp, the rear or dovetailed sides of the rack-bar shall serve as bearings for the clamp to work against.

No. 14,423.—JOHN B. THOMAS.—*Improved Plane-Stock*.—Patented March 11, 1856.

The case 1 serves to hold the glass face 3 to the stock 4 of the plane. Glass is used for the purpose of producing a smooth and durable face.

Claim.—The glass face 3 combined with the case or ferrule 1, or its equivalent, substantially as and for the purposes set forth in the foregoing specification.

No. 16,163.—EDWIN JONES.—*Improvement on the Bramah Planing-Wheel*.—Patented December 2, 1856.

This invention consists in the application of a conical wheel A, provided at its under side with cutting blades, for the purpose of planing the surfaces of clapboards or other articles. The wheel is set upon

an inclined shaft E, which can be adjusted in movable bearings *a*. Into a portion of its hub projecting beneath the wheel A are secured the knives M, arranged so as to edge the clapboards; and thus the articles have their surfaces dressed off and their edges jointed at a single operation.

Claim.—Providing the planing wheel with knives for edging or jointing the articles, when arranged as a single instrument, and operating substantially in the manner and for the purpose specified.

No. 14,604.—A. W. Fox.—*Improved Machine for Planing Felloes.*—Patented April 8, 1856.

A curved bar R, concentric with the motion of the carriage A, has a cam *k* at one end which disengages the lever N from the notch *l* when the feeding motion is nearly completed. The side of the carriage then pushes said lever over to notch *n*, thereby disengaging the pinion *g*, and throwing the pinion *f* into gear. When the return movement of the carriage is nearly completed, the shoulder *j* strikes the lever N and moves it along till it springs into the middle notch *m*, thereby disengaging both the pinions *f* and *g* from the crown-wheel M. Figure 3 represents the clamping apparatus. The cam G is so shaped that when the lever *t* is but partially raised toward a vertical position, the spring *u* will force it up the remaining distance. As the carriage A moves, the arm L will pass the spring *p*; but when the carriage returns, the said spring will strike the arm L, lift arm O, and raise the cam lever *t*. The felloes, after being thus disengaged from the clamp, are thrown from the machine by the operation of the spring *r* and arm S, in combination with the arm T, projection U, and friction-roller S.

Claim.—The arrangement of the movable pinions *f g*, gearing respectively into the series of cogs *h i* on the crown-wheel M, in combination with the device for gearing and un gearing said pinions at the proper moments, whereby the carriage is automatically fed along slowly, then returned at a more rapid rate, and finally stopped, while the cutters continue to revolve with uniform motion.

I also claim the combination of the clamping apparatus with the lever arms O L and spring *p*, for the purpose of automatically releasing the felloes.

I also claim the device for throwing the felloes from the machine, arranged and operating as herein described.

No. 14,455.—DANIEL N. HURLBUT.—*Improved Arrangement of Rotary Planing-Knives.*—Patented March 18, 1856.

The cutters B are placed on the rear side of the rim of the wheel, and are fastened by means of wedges.

Claim.—The arrangement of the cutters and manner of securing them to the cutter-rim of the wheel, substantially as set forth and described.

No. 14,880.—CYRUS B. MORSE.—*Improved Planing Machine.*—Patented May 13, 1856.

Any motion given to the cutter cylinder produces a simultaneous longitudinal movement of bed D by rocking lever connexion *c*, of arms *a* and bed D, so as to preserve to edge *l* of bed D and cutter edges the same relative position for all adjustments of the cutter cylinder.

The board is carried forward by rollers B B' without bending, and as it passes from over edge *l* of bed D it is met by and receives the action of the cutters directly in front of the support given by said bed. As the cut is made, any disposition to tear the stuff is counteracted by the cutting edge *l*, which severs the chip instantly. During the passage of the board through the machine it is kept flat upon the bed by the line-plate F, the tilt of which about its own axis prevents any inequality of thickness of the board from interfering with its operation.

The inventor says: I do not limit myself to the precise mechanical devices herein set forth, nor to the exact combination and arrangement of the same, so long as the object is obtained without changing the principle of operation.

Claim.—1st. The combination of the following mechanical elements: Planing cylinder C, vibrating arms *a a*, line-plate F, beds or rests D E, and weighted levers G, or their equivalents, when arranged or combined for reducing a board to an equal thickness without beading the same.

2d. Making the edge *l* of the bed D a cutting instrument, and giving said bed or rest a longitudinal movement, simultaneous with the swinging back or forward of the cylinder, so that the edges of the cutters on the cylinder will preserve the same relative position with respect to the cutting edge of the bed in all positions which the said cylinder may occupy.

3d. Giving the line-plate D a tilting motion about its own axis, to present its flat surface to the board under all circumstances.

4th. Maintaining the pressure on the middle of the board, irrespective of the portion of the cutters to which the board is submitted, by means of the weighted levers G.

No. 15,403.—ASAHEL LOCKWOOD, assignor to LUCIEN B. FLANDERS.—*Improved Planing Machine.*—Patented July 22, 1856.

M represents an adjustable guide which is fastened to the cross-head E; it is provided with a sliding piece N, the rod O of which is connected at P with the circular table K. If the adjustable guide M is secured by the set-screws *c c* in a position parallel to the ways C C, fig. 2, the vibrating table K will move in concert with the lower bed I, and will not vibrate upon the centre pin L. But if the guide M is turned in the least degree from the parallelism of the movement of the bed B, the cutter F will describe a curve of a very long radius, and the more the guide is turned the shorter will be the radius of the curve described by the tool F. The table K can turn on the plate B by means of the cir-

cular dovetail grooves and tongues *a a*; the plate *I* is supported by the bed-piece *B*.

Claim.—The support *I I*, with its circular dovetail grooves *a a* or their equivalents attached to the bed-piece *B*, together with the vibrating table *K*, turning upon the centre-pin or king-bolt *L*, and in combination therewith the adjustable guide *M* and the sliding-head *N*, so adjusted and combined that a greater or less vibratory motion can be secured to the table *K*, by means of the adjustable guide *M*, by bringing it out of a parallelism with the ways *C C* and the bed *B*, in the manner and for the purpose set forth.

No. 16,185.—HUDSON OSGOOD.—*Improved Planing Machine.*—Patented December 9, 1856.

The board to be planed is placed on an endless travelling bed *L*, and kept down on it by means of a holder *K*; this travelling bed feeds the board sidewise, at the same time that the planes *P*, attached to belt *A*¹, are drawn over the boards, whereby the cut made by each of the planes is diagonal on the surface of the boards.

The inventor says: I do not claim an endless belt and planing-cutters, arranged together, so that their planes of rotation or movement may be in the same direction, as in my machine they are arranged so as to cross or stand at right angles to one another.

I claim my arrangement of the endless bed and the belt of planes, substantially as specified, that is, so that when a board is being planed by such it shall be moved transversely under the planes, and the planes be drawn longitudinally over and against its surface.

No. 14,038.—HIRAM C. WRIGHT.—*Improved Arrangement of Feed-Rollers for Planing Machines.*—Patented January 1, 1856.

The shaft *N* when in motion drives the cutters *D* and *E* and the feed-rolls *A* and *C*; the board is placed on the table *F*, and resting on its edge passes the end of the feed-rolls *C*, and is carried through over the cutter *E*, matching its edge, and the rolls *A* draw it clear through; then the operator, turning the board on its other edge, passes it back to the other side of the middle roll *A*, thus matching each edge straight. The feed-rolls consist of a stationary one in the middle and two movable ones on each side, the bearings of each movable one being arranged with joint levers *p p*, connected by a rods *J*, so as to move the end of the same roll equally and keep its surface parallel with the stationary one. The rod *J J J J*, supporting the weighted bars *K K*, transfer through the levers *p p* the requisite pressure to the rolls.

The inventor says: I claim governing the motion of the movable feed rolls by means of the jointed levers and connecting rod, or its equivalent; whereby I am enabled to keep their surfaces parallel with the middle one, and thereby feed the board on a line with the surface the table, as above first set forth.

No. 16,129.—VALENTINE HOUCK.—*Improvement in Certain Devices in Planing Machines.*—Patented June 17, 1856.

As soon as the board comes under the first feed roller *h*, it presses the board and forces the piece *s* down upon the spring *Q*, which acts upon the wires *u u*, which passes through a friction roller, and draws back the rest *i*. The board, thus freed from any lateral compression, resumes its natural shape, and its convexities are cut off by the knives *f* and *g*.

The inventor says: What I claim as my invention is the movable rest, and the springs *i* attached, and the piece *s* in the slot *j*, which combined with the wires *u u* produce the effect which I have described.

The inventor says further: I fasten to the cylinder *g* planing-knives its whole width. They strike the edge of the board and plane it smooth. I then fasten the grooving or moulding-knives into the cylinder behind the planing-knife, and so that they strike the edge of the board before it is planed by the planing-knife, being the longest. The result is, that no feather is left, and as many and as different shaped moulding and grooving knives can be introduced, either on a line or one between the other, as may be desired, without involving the necessity of changing the planing-knife or other grooving-knives. In this way as many and as different formed mouldings and grooves may be made as is desired, by passing the board once through the machine. This arrangement of knives, by placing the grooving and moulding-knives behind the planing-knives, instead of on a line with them, is what I claim as my invention.

And I ask for a patent for these improvements, so that I may either construct a machine combining them, or sell the improvements to others, to be used upon machines already constructed.

No. 14,263.—LOISON D. TOWNE.—*Cutter-Heads for Planing Machines.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim a wedge for holding or spreading the cutters, as this is not new.

But what I do claim is the clamping or holding of the cutters *d d* between the brace *C C* and sides of the cutter-head *A*, by means of the conical or wedged-shaped form of the plug *B* and braces *C C*, or their equivalents, and whether said head be solid or made in two or more sections, substantially as described.

No. 15,365.—LEWIS M. BERRY.—*Improved Cutter-Heads for Planing Machines.*—Patented July 22, 1856.

The parts *l* and *m* are inserted into the cutter-head in a similar manner as the cutter-knives *d* and *c*; the projections on both their ends

play in grooves and the space between the parts *l* and *m*, and the knives *d* and *c* can be adjusted by turning said parts in their circular grooves. By this arrangement the stuff to be worked is prevented from being drawn towards the cutters, thereby lessening the danger of accidents to the operatives, and preventing the cutters from taking a deeper hold in the stuff, and thus spoiling the article.

The inventor says: I am aware that in a common hand plane, and in the spoke shave and similar tools, that part of the stock immediately forward of the cutter serves in some respects a similar purpose; such therefore I do not claim.

But I *claim* the application and use of the pieces *l* and *m*, substantially in the manner and for the purposes set forth.

No. 14,272.—CHARLES BURLEIGH, assignor to THE PUTNAM MACHINE COMPANY.—*Improved Gearing for Feed Rollers of Planing Machines.*—Patented February 12, 1856.

A is the shaft of the lower roll, B the shaft of the upper. Motion is transmitted from shaft A to shaft B by means of gearing C D E F. To prevent wheel E from dropping into a position where it should engage with both the wheels C and F at the same time, the links G H G¹ H¹ are made use of. They are geared together for a short distance by means of cogged sectors; M are the straight links which connect the auxiliary gears D E.

Claim.—The toothed links H and G, constructed and operating in the manner substantially as herein set forth.

No. 16,144.—JONATHAN P. GROSVENOR.—*Improved Method of Clamping Cutters in Cutter-Heads for Planing Machines.*—Patented December 2, 1856.

The collars *f* to which the cutting blades *g* are secured are provided with tongues and grooves *e* and *i*, fitting into each other; the collars being placed upon shaft B can be secured there by means of screw nut Q. This arrangement does away with the use of the long single cutter heads where thick pieces of wood are to be moulded, as several collars *f* can be interposed between two knives *g* to leave uncarved spaces between the mouldings.

Claim.—Connecting the collars with each other, or with the core blocks, by means of tongues and grooves, in the manner substantially as described, for the purpose set forth.

No. 14,130.—BENJAMIN F. AVERY.—*Machine for Bending Plough Handles, &c.*—Patented January 22, 1856.

The operator places a mould C upon the block A and applies the hook J to the projection D, and presses the handle K over the yielding bar to hold the bar G perpendicular, while he puts the end of the

strap (which may be of tough wood) into the projection D, and the end of the handle E also, which is to be bent. He then places the upper end of the handle under the stop I, which is brought down upon it by turning the nut H, when the operator pulls the bar G with the handle over the mould so as to bend it over the flange L; and press the bar of the handle down so as to insert the pin *e* over the strap and handle, to hold them on to the mould until sufficiently dry to remain in the bent position.

Claim.—The strap G above described, constructed in any manner substantially the same for the purposes set forth.

Also, the combination and arrangement of the several devices constituting the machine, substantially as described.

No. 15,382.—JOHN MOORE.—*Improved Polishing Machine.*—Patented July 22, 1856.

The shaft S or pulley D is attached to the frame B; the frame C, which supports another pulley E on the shaft V, can be turned on the shaft S as its fulcrum. The frame F, which can swing on shaft V, supports the polishing rubber R, driven by pulley P. By this arrangement the rubber R can be moved to any place of the table A without deranging any of the running parts of the machinery.

Claim.—The general construction of the machine substantially as described, having a rubber R revolving by power, and so constructed as to be readily applied whilst in motion to all parts of the work as required.

No. 15,600.—LEGRAND CROFOOT.—*Instrument for Laying out Rafters.*—Patented August 26, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The combination of the adjustable expanding measure A B with the adjustable bevels D and E, substantially as described for the purpose specified.

Also, in combination with the above, the fixed square plates sliding on the bevels D and E, substantially as specified and for the purpose set forth.

No. 15,398.—HARRY WHITE.—*Improved Method of Riving equal Pieces from a Block.*—Patented July 22, 1856.

The nature of this invention consists in so constructing and operating a cam Q as to make it traverse the carriage D and block G¹ under the froe J, so that the froe will first split off a portion of the block sufficient for a number of shingles, and then split it in the centre, and each of the pieces formed in the centre successively, until the whole block is split into a proper number of pieces of the desired thickness; also in

applying the springs X and X¹ so as to yield when the froe enters the block G¹, and re-act to close the split when the froe is withdrawn.

Claim.—Traversing the block to be split by means of devices substantially as are described or their equivalents, so that the froe will strike the pièces to be split in the centre successively to split them, substantially as set forth.

Also, the springs X X¹, so applied as to yield when the froe enters the block and re-act to close the split when the froe is withdrawn, as described.

No. 15,163.—AZA ARNOLD.—*Improved Self-setting or Self-raking Saw, for Sawing Machinery.*—Patented June 24, 1856.

When the end of the log moves up to the saw, it comes in contact with the front of the teeth at the lower parts of the saw, and the foot of the same retreats to a certain distance which is determined by a screw C; having retreated, the saw hangs over forward enough for the cut of the stroke. When the board comes back against the opposite side of the saw, it again retreats until the heel comes to the opposite stopper.

The inventor says: I do not claim the making or using of a two-edged saw, neither do I mean to confine myself to any precise form or dimensions of the mill; for my new method of adjustment, as before described, is applicable to various forms of common saw mills, whether they be operated by steam, by water, or other power, whether the saw vibrate vertically or in a horizontal or inclined position. I prefer a double mill, that is, having a sash or saw-frame so constructed as to have a saw on each end of the cross-head and two carriages, each log being moved and cut independently; but in some situations I design to use single mills.

But I *claim* the combination of a retreating motion (as set forth in the foregoing description) with the two-edged reciprocating saw, by which combination I can give any desired adjustment of cut, and feed at pleasure to enable the saw to cut during its whole descent.

No. 15,718.—L. A. DOLE, assignor to DOLE, SILVER, and FELSH.—*Improved Saw-Gummer.*—Patented September 9, 1856.

The saw to be gummed, represented in dotted lines, is laid flat-wise upon the die F, and the spaces between the teeth are cut out by depressing the outer end of lever D, the die E being brought down, owing to the eccentric attachment of the bar C to the lever D, which works against the under side of the stock A in the opening c, the shoulder a bearing upon the base B and serving as a fulcrum for the lever D to raise the bar C. The cut pieces from the saw pass down through the passage G.

Claim.—Arranging the cam or moving crank below the die, either in or below the die-block, so as to draw down the punch or male die-block, substantially as described.

Also, the cam lever D with a movable fulcrum, in combination with the opening c, so constructed and arranged as to traverse the bar C with a positive motion in each direction as the lever is vibrated, as described.

No. 15,811.—SAMUEL J. LEWIS and WILLIAM ALSTON.—*Improvement in Saw-Gummers.*—Patented September 30, 1856.

The saw to be gummed is placed in position to be moved up and down between the punch i and die h; the carriage D is then pushed forward by the lever e so as to bring the rest m to support the end of the tooth; when the lever p is pressed down, thus forcing the punch i into the die h, and carrying with it the gum from the under side of the tooth to the chip-way t. The carriage is now moved back so as to allow the movement of the saw to present another tooth.

The inventors say: We do not claim separately either of the respective devices constituting the saw-gummer, as described.

But we *claim* the punch A, constructed as described, in combination with the die B, constructed and seated as described, the same being arranged in the carriage C so as to rotate and operate together, in the manner and for the purpose set forth and described.

No. 14,863.—JACKSON GORHAM.—*Improved Hand-Saw.*—Patented May 13, 1856.

Claim.—The construction of a saw so as to answer the purposes of both saw and square in one and the same instrument.

No. 15,399.—JAMES O. WOODWARD.—*Improved Machine for Sawing Coopers' Hoops.*—Patented July 22, 1856.

The nature of this invention consists in an arrangement of two circular saws A A for sawing hoops from irregular or crooked hoop-poles, one of which saws can be moved in the direction parallel to the length of the shaft B, in order to saw various sizes of hoops. The shafts B hold the saws at their inner ends, both standing in an oblique position, so that the two edges of said saws operate near together; thus the saws will take out a part of the centre of the hoop-pole, leaving the outside fit for use. The hoop-pole is fed to the saws by the corrugated rollers G and G G.

Claim.—The new arrangement and operation of two circular saws for sawing irregular or crooked hoop-poles, and the two shafts with the saws attached at the inner ends thereof, being placed on an angle so that two edges of said saws run or operate near together, and the two opposite edges of said saws will run or operate wide apart.

No. 15,216.—DAVID BOWEN.—*Improved Machine for Sawing Fellows.*—Patented July 1, 1856.

On the shaft d of the clamp-box E is a cog-wheel e meshing with pinion f. On the shaft of pinion f is a ratchet wheel g, whose pawl H

is attached to lever *i*, the long arm of which is attached to the saw-gate *k*.

The cogged shanks of the clamps *F F* mesh with the pinion *p*, by which a simultaneous adjustment of the clamps in opposite directions is effected.

Claim.—The plank clamps *F F*, simultaneously adjustable in opposite directions, in combination with the mechanism connecting their case with the saw-gate.

No. 14, 339.—WILLIAM P. WOOD, assignor to Himself and JOHN S. GALLAHER, Jr.—*Improved Sawing Machine.*—Patented February 26, 1856.

The bearing *g* of the upper rocking-beam slides in ways *e e*, and can be raised by means of a screw and nut *J*.

Claim.—Attaching two saws *s s* to the opposite ends of two parallel rocking-beams *m m*, by means of swivel bearings, and in combination with the mode of straining, substantially as described.

Also, in combination with the saw table and upright or column, the reversible graduated scale-gauge *W W*, as set forth.

No. 14,757.—THOMAS J. ALEXANDER.—*Improved Sawing Machine.*—Patented April 29, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—1st. Giving to the revolving saw *B* a reciprocating action across or along the bed, in combination with the reciprocating movement of the bed or table *A*, simultaneously in opposite directions.

2d. Hanging or supporting the revolving saw *B* and bed or table *A* to give them their specified compound parallel or otherwise equivalently reciprocating movement, simultaneously in opposite directions on or to radial arms *c* and *e*, arranged substantially as set forth; and geared together by toothed segments *l*, or otherwise equivalently connected or driven to produce the necessary contra joint action of said radial arms, whereby the proper reciprocating actions of the saw and bed relatively to each other are insured, and the movement of the one may be made to actuate the other.

No. 15,026.—HENRY S. VROOMAN.—*Improved Sawing Machine.*—Patented June 3, 1856.

As the saws *O* work up and down, the carriage *B* is moved so as to feed the timber to the saws. The patterns *J* give a lateral movement to the saws, in consequence of the rods *l* bearing against them, said rods moving the frames *F G* and the saw sashes, and the rods *P* and levers *O* will turn the teeth of the saw in the direction of the line of their cut or kerf, because the friction rollers *t* bear against the patterns *J*.

In case the sides of the stuff or timber are to be cut bevelling or winding, the patterns *M* in the sides of the bars *N* are made in proper form, and the rod *f* will be raised and lowered, turning the frame *G* within the frames *F*, so as to throw the saws *O* in oblique positions, (figure 1.)

The inventor says: I do not claim giving saws a lateral movement in their sashes for sawing curved or irregularly formed articles, for this has been previously done.

But I *claim*, 1st. The combination of the frames *F G* and sashes *H*, when connected and arranged as shown, so that the sashes *H* and frame *G* may be turned within or upon the frames *F*, and thereby allow the saws to be operated in oblique positions, for the purpose specified.

2d. The employment or use of two patterns *J M*, when said patterns are so arranged or connected with the frames *F G* and saw sashes *H H*, that one pattern *J* will give the saw its lateral movement, and also turn the saw in the sashes, so that their teeth will face the intended direction of the cuts or kerfs, while the other pattern *M* will move the saw, when necessary, more or less obliquely to give the winding or bevelled side to the work or stuff, as herein described.

No. 15,012.—WILLIAM D. LEAVITT.—*Improved Sawing Machine.*—Patented June 3, 1856.

The saw is adjusted to suit any thickness of lumber by means of wheel 16, lever 15, and flanges 23, on saw-shaft 11. The spindle to which wheel 16 is attached is provided with a screw-thread and works in a nut 37 let into the frame 1.

The table 18 is attached to the saw-shaft 11, in the manner as shown, for the purpose of moving it with the saw.

The inventor says: I disclaim moving the saw laterally for gauging the thickness of the board to be cut, as such is not new; but I *claim* the arrangement of devices for effecting that purpose when combined with the mechanism described for setting the saw forward in its own plane.

No. 15,438.—T. T. PROSSER.—*Improved Sawing Machine.*—Patented July 29, 1856.

The saw *F* is attached, at both its ends, to the ends of the levers *D* and *E*, which turn on pivots in the upper and lower end of the upright *C*. The short ends of the levers *D* and *E* are confined in the slots of the rod *J*, and, by operating the set-screws *K*, the saw *F* can be strained.

Claim.—The levers *E D*, pivoted or attached to the uprights *C C*; the saw *F* being placed at one end of the levers, and the levers adjusted by the bars *J* and set-screws *K* at the opposite ends, substantially as described for the purpose set forth.

No. 15,414.—A. S. T. COPELAND.—*Improvements in Sawing Machinery*.—Patented July 29, 1856.

The saws are hung and strained in saw-heads H H, attached to a pitman which passes through an orifice O. S S are saw-strainers working in the saw-heads by means of the screw-nuts N N, and the saws are inserted in the slits L. The saws can be adjusted, and are held in their proper position, by means of the set-screws m. The saws, when hung and strained as aforesaid, have a peculiar manner of working in the logs, the bottom of the saw cutting from the centre of log to bottom of log, and the top of the saw cutting from the top of the log to centre of log, the saw in its downward motion describing two arcs of circles, which meet in centre of log. Pitman and saw shafts are reversed, so as to enable the saws to cut through the logs each way by means of the belt reversers 2 and 3, standing in catch plate P, which can be moved respectively into the catches 2 and 3, whereby the motion of the driving-shaft can be reversed.

The inventor says: I do not claim that attaching a saw to pitman is new. Nor do I claim the muley saw, gate or sash spring, pole or levers, crank pins set in balance wheels, or any other connexions on old principles.

But I *claim* the saw heads H H and saw strainers S S, and the combination of said saw heads and strainers with the screw-nuts N N and screws Q Q and m m, in any manner substantially the same as shown and described, for the purposes set forth.

Also, the attaching of saw heads to pitman in any manner substantially the same as shown and described, for the purposes set forth.

Also, the combination of belt reversers 2 and 3 with the mechanism for starting and stopping saws and reversing pitman and circular saw shaft, in any manner substantially the same as shown and described, for the purposes set forth.

Also, log reversers 1 and 1, 2 and 2, 3 and 3, and 4 and 4, operating in the manner shown and described, for the purposes set forth.

No. 15,790.—WILLIAM P. WOOD and SAMUEL DE VAUGHAN.—*Improved Devices in Sawing Machines*.—Patented September 23, 1856.

Motion being imparted to the cogged wheel I, the pinion F is rotated, causing the crank pin K to operate the lever H by playing in the slot in said lever. The lever H turning on its fulcrum operates the beams E, connected by means of rod e, and imparts a reciprocating motion to the wedge-shaped saw M, the smooth edge of which is guided by means of the fluted rollers o and p.

Claim.—1st. The arrangement of the driving-beam H in combination with the rocking-beams E, in the manner substantially as and for the purposes set forth.

2d. We claim the arrangement of the fluted feed-rolls O and P in combination with a reciprocating wedge-shaped saw blade, substantially as and for the purposes described.

3d. We claim the wedge-shaped saw blade M when constructed and operated in the manner and for the purposes set forth.

No. 15,078.—JOSEPH KURTZEMAN.—*Improved Method of Operating Head-Blocks of Sawing Mills*.—Patented June 10, 1856.

By moving the lever K in one direction, the dogs C C will only be moved by means of pawl J, ratchet I, &c.; but by moving it in the opposite direction, the head-block B will also be moved, the pawl N catching against the teeth in the rim or hub b when the shaft L is turned in one direction, and slipping over them when the shaft is turned in the opposite direction.

Claim.—Connecting the dogs C C to the shaft H by means of the racks a and gearing E F G, in combination with the toothed wheel o, having the hollow hub or geared rim b attached, the wheel being placed loosely on the shaft L, which is provided with the pawl N, substantially as shown for the purpose specified.

No. 15,689.—CALVIN DILKES and GEORGE S. DILKES.—*Improved Method of Feeding Sawing Mills*.—Patented September 9, 1856.

As the saw frame B is moved up and down, the cord H, wound around pulley G, causes said pulley to assume a reciprocating rotating motion, and the pin g on said pulley sliding in the slot of lever F will cause said lever to turn on its fulcrum e, and to operate the disk E and pawls D and D¹, and through these the feed wheel C. This feed motion can be adjusted to almost any degree, either by changing the position of the pawls D and D¹ to any of the holes 4 5 6, or the position of the stud g to either of the holes 1 2 3, or, lastly, by loosening the cord H and changing the position of the pulley G.

The inventors say: We do not claim operating the feed wheel by means of pawls operated by the saw frame through the medium of a lever.

But we *claim* giving motion to the pawls which actuate the feed wheel by means of the cord H and pulley or short cylinder G and its stud g, in combination with the slotted lever arm F and its plate E, the same being constructed, combined, and operated together substantially as set forth.

No. 15,559.—R. EICKMEYER.—*Improved Method of Regulating Velocity of Feed for Sawing Mills*.—Patented August 19, 1856.

When the shaft H¹ is rotated, a variable motion will be communicated to the shaft G; for when the pin h of the shaft G is at the inner end of the grooved plate i, the motion of the shaft G will be considerably slower than when the pin h is at the outer end of said plate, and the shaft G, therefore, will rotate about half a revolution quicker than the other half. By this means the carriage is operated quicker at one time than at another, and the log is fed to the saw in a proper manner; for if a vertical reciprocating saw is used, the log must be fed to the saw as the saw descends, and the crank on shaft H¹ must be so placed that the most rapid motion will be given to the carriage as the saw descends.

Claim.—Driving or operating the log carriage by means of two shafts I and G placed more or less out of line with each other and connected by a pin *h* and grooved-plate I, or draw-link *j*, or any equivalent device, for the purpose of giving a desirable movement to the carriage, thereby feeding the log to the saw as described.

No. 16,034.—A. S. WALBRIDGE.—*Improved Self-acting Head and Tail Blocks for Sawing Mills.*—Patented November 4, 1856. Canada, July 20, 1853.

The principal features of this invention will be understood by reference to the claims and engravings, a detailed description thereof would take up too much space to be given here.

Claim.—The combination and arrangement of the T-shaped carriage blocks B B, connecting rack C, and setting-off shaft B, substantially as specified, whereby a self-operating carriage of any desired length or compactness is produced.

Also, the self-setting-off device, composed essentially of the ratchet I, disks V W, adjusting-stop O, and stationary cam U, arranged and operating substantially as described.

No. 15,330.—JOEL DAWSON.—*Improved Self-setting Tail-Block for Sawing Mills.*—Patented July 15, 1856.

When the carriage B is giggered back, moving in the direction of the arrow, the outer end of the lever E will strike against the oblique board H, the friction-roller *g* bearing against said board. The lever E will consequently be turned on the pin *d*, and the pawl D¹ will act upon the rack *c* and throw out the block C on which the end of the log rests. The tail end of the log will consequently be adjusted to the saw at each stroke of the carriage; as the carriage B moves forward the lever E will strike against the screw G, and will be thrown back to its original position to be again acted upon by board H, when the carriage is giggered back.

Claim.—The bent or curved lever E, with pawl D secured to it, adjustable block E, with the screw G and oblique board H attached, and the sliding-block C with rack *c* secured to it.

No. 14,305.—NATHAN T. COFFIN.—*Improved Mill Saw.*—Patented February 26, 1856.

The numbers in the engraving represent the distances in inches.

The inventor says: I do not claim the spreading of the square-edged teeth by the use of the forked punch, or otherwise; nor do I claim the bevel or diamond pointed teeth, nor the topping down or turning of the points of the teeth by the use of the hammer, or otherwise. But what I do claim is, the arrangement of the common shaped mill-saw teeth on

the blade in sets of three teeth each, with a wide deep space under the lower tooth of each set of teeth.

Also, the increasing of the spaces of the teeth from the centre of the saw each way to the ends.

Also, the regular combination of the square edged and the diamond or bevel pointed teeth, the former standing straight with the blade.

No. 14,909.—BELA GARDNER.—*Improved Method of Operating Saw-Mill Blocks.*—Patented May 20, 1856.

While the carriage A is moving and the log is being fed to the saw, the two clutches H N are out of gear with their respective pinions G M; but when the carriage reaches the end of its stroke and is giggered back, the operator depresses the rod Q, throwing thereby the clutch N in gear with the pinion M; and as said pinion rotates with the shaft L, the endless chain J will be operated, and also the pinion G, the clutch H being also thrown into gear with its pinion G, and the screw F will be rotated and the head-block D moved laterally on the carriage A the proper distance corresponding to the thickness of the stuff required. The operator then removes his foot from rod Q, and the spring S throws the clutch out of gear with the pinion M, and the motion of the endless chain ceases.

Claim.—Operating or adjusting the blocks of saw-mill carriages by means of the screw F, endless chain J, and shaft L, in connexion with the pinions G M and clutches H N.

No. 14,844.—GEORGE W. HILL, assignor to FRANCIS LYONS and GEORGE W. HILL.—*Improved Saw-Mill Dogs.*—Patented May 6, 1856.

The arm G acts as a guide in moving the bail block, preventing any swaying, while it answers as a brace when at rest. The die H is movable in a mortise through the bail block, and is thrown in or out of gear at the will of the operator by means of spring I. Thus if the spring be raised into the bearing *e*, it exerts a lateral pressure forward on the die. The spring has also a downward pressure at the die, which causes it to drop below the guard *f*, which secures it in its connexion against the liability of an accidental disconnexion. By dropping the end of the spring bar I from the rest *e*, the die is thrown out of connexion with the screw, leaving the bail block free to be moved by the bar of the sawyer. The tail block is of a construction analogous to this.

Claim.—The peculiar form of the bail block A, having a front and back rest or bearing, in connexion with the arm G claspings the shaft of the screw C, in the manner and for the purpose described.

I also claim the die or dies H and H¹, in connexion with the spring-bar I, the rest *e*, and the guard *f*, the whole arranged, combined, and operated in the manner herein set forth.

No. 15,893.—SAMUEL C. NORCROSS.—*Improved Adjustable Stirrup for Saw-Mill Pitmen*.—Patented October 14, 1856.

The stirrup B fits over the end of the pitman A, and is secured thereto by the bolt C and keys D D¹; when it becomes necessary to lengthen the pitman, the bolt and keys are removed and the stirrup B is drawn out, as represented in fig. 2, and there secured by the bolt and keys as before.

The inventor says: I do not claim the bolts E, by which the stirrups and pitman are secured to the saw; but I *claim* the manner of attaching the stirrup to the pitman, substantially as set forth; whereby its position on the pitman, and consequently the length of the pitman, may be varied for the purpose of altering the position of the saw with respect to the log.

No. 14,206.—JOHN S. SNIDER.—*Improvement in Saw Mills*.—Patented February 5, 1856.

Fig. 2 represents a front view of the machine. D D are horizontal slides to which the log *c* is dogged; said slides being provided with racks *a* on the under side, which move in grooves in the head-block A and tail-block B, by the action of pinions *c* on shafts Q, which latter have their bearings in the blocks A and B, respectively. The large wheels G upon the outer ends of shafts Q gear into pinions Q², which latter are fastened to short hollow shafts O, through which (the holes in the shafts being square) the square shaft F passes. The scale or ratchet-wheel R is fastened to the outer end of shaft F. The hollow shafts O have their bearings in boxes P attached to the blocks A and B, so that these latter are free to slide (together with the hollow shafts and the pinions Q²) towards or from each other upon the said shaft F.

Claim.—Such construction of the scale wheel R and its combination with the large cog-wheel G, that the position of the lever, when on its rest, will be always zero, and that the log may be moved at both its ends equally any required distance; by raising the lever from its rest and counting one eighth of an inch or a different fraction, according to the cast of the wheels for each cog that the pawl may pass over, and pressing the lever down again upon its rest when the requisite distance is obtained, so that the setting of the log requires no calculation or reference to a scale, and may be done with perfect accuracy by the ear or by the eye, and it is thus set at both ends by a single scale wheel and a single pawl, and thus necessarily set alike at both ends, which is not the case where the ends are set each by its separate framing.

Also, the combination of wheels, which are so adjusted as to effect the above named objects and also to give greater power to the lever in moving heavy logs, and more accuracy in adjusting them, as the log is thus made to move slow in proportion to the motion of the lever, and is not subject to be put out of its place by its own momentum or by the spring of the rods. In this construction and combination the journal and the pinion wheel and the scale wheel are cast together, and the rod passes through the journal and moves with it, so that the lever, when

pressed down, moves the pinion wheel Q², which gives motion to the wheel which moves the head block slide, and at the same time the journal moves the rod, and by it the tail-block slide, so that the rod communicates motion to the tail-block slide only, and is not put to the strain requisite to move both slides and with them both ends of a heavy log.

No. 14,700.—E. H. STEARNS.—*Improved Head and Tail Blocks for Saw Mills*.—Patented April 15, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The eccentrics 15 15, one, two, four, more or less, or their equivalents, in combination with the setting-arms 11 11, and ratchet-racks 9 9, or their equivalents, for the purpose of moving and setting the log laterally to the saw.

2d. I claim the combination of two or more pieces composing the sliding-dogs 6, passing through one or more openings 20 on the same side of the saw, so near each other that they may be driven in or out of the log by the same blows of the mill-bar, the ends of these dogs being so bevelled or chamfered as to cause them to bind and tighten themselves in the openings through which they pass, which dogs may be made in separate parts, or jointed partially at their heads, but not so close or firm as to prevent the parts from binding in their openings when driven into the log.

3d. I claim the combination of the levers 22 and 23, and recess 25, made in the under part of the sliding-head 5 in the foot-block, and operated by the motion given to the sliding-head, which combination forms an extra safety-trip for stopping the saw carriage when the dogs come opposite the saw, to prevent the saw from striking the dogs; all substantially as and for the purposes set forth, or any other mechanical equivalents which are operated by the motion given to the sliding-head 5, as before mentioned.

No. 14,943.—LUCIUS B. ADAMS.—*Improved Method of Operating Head-Blocks of Saw Mills*.—Patented May 27, 1856.

As the carriage B commences its backward movement, the roller K will pass up one of the inclined planes M, and the lever I will be raised, the pawl *b* turning the ratchet H, and the pinion F and rack E will move the slide D, to which the end of the log is secured by dogs; the slide being also moved in a similar manner by the other inclined plane at the termination of the backward movement of the carriage. The log will thus be properly set at both ends when the carriage moves towards the saw.

The inventor says: I do not claim operating the slide D by means of the ratchet and rack and pinion, for these have been previously used; but I *claim* the lever I with pawl *b* attached, and lever or arm J having a roller K at its lower end, and the inclined planes M M attached to the flooring L; the above parts operating in connexion with the ratchet H, pinion F, and rack E, substantially as shown.

No. 15,062.—JOHN M. CARLISLE.—*Improved Method of Operating Head-Blocks of Saw Mills.*—Patented June 10, 1856.

Motion being given to the driving pulley S, the endless belt K is operated by the gearing N O, and the carriage C has a reciprocating motion communicated to it as it is attached to the belt K by the arm T. As the outer end of arm T passes around the pulleys L M, it will strike against the pins *d d* and actuate the slide I, which causes the pawl J to turn the ratchet F¹, thereby moving the bar H and also the log which is attached to said bar. The log, therefore, will be set to the saw at each stroke of the carriage; and as one of the pins *d* is adjustable, the log may be moved a greater or less distance at each stroke.

Claim.—Attaching or connecting the carriage C to an endless chain or belt, by means of an arm T, arranged as shown, so that it will actuate, at each end of the stroke of the carriage, a slide I, having a pawl J attached, which, by means of suitable gearing, as shown, moves or sets the log to the saw; whereby the feed movement of the carriage, and also the setting movement of the log are rendered automatic or self-acting.

No. 14,172.—PHILOS B. TYLER.—*Improved Method of Attaching Teeth to Saw Plates.*—Patented January 29, 1856.

The nature of this improvement will be readily understood from the claims and engravings.

Claim.—1st. The hardened nib-holders *b*, attached to the saw-plate S, at each tooth, to hold a small cutting-nib *e*, as described.

2d. The cutting nibs attached to the saw teeth; whether by means of the nib holder, or directly connected with the plate, constructed and combined with the saw specifically, as herein specified.

No. 15,304.—ORRIN RICE.—*Improved Method of Guiding Circular and other Saws.*—Patented July 8, 1856.

A is a hollow tube, closed at the back end to confine a spring, to be operated against by a set-screw B, for strengthening or weakening the spring at pleasure; the front end of the tube is open to admit a wooden peg, into which a screw is placed through the slot I, to prevent the spring from being pressed beyond a certain limit, and the wooden pegs bearing against the sides of the saw hold the same in a line.

Claim.—The application of the spring, in any shape or form, to any anti-friction substance to be applied directly against the saw, and, by traversing over the uneven surface thereof, preventing the saw from trembling, and for strengthening, steadying, and guiding the same while in motion; thereby enabling a much thinner saw of the same diameter to be used than otherwise could be, without the application of my improvement, thereby effecting a great saving in power, timber, and repairs.

Also, the application to govern the side-moving or lateral motion of large saws for sawing logs, occasioned by the springing of the same.

No. 14,950.—WILLIAM CLEMSON.—*Improvement in Grinding Circular Saws.*—Patented May 27, 1856.

The metallic roll E serves the double purpose of feeding the saw to the stone and of revolving it upon its mandrel. The saw is secured in the clamps *h h'*, and turns upon the pivot *f*, which latter is made flat, the width of the central portion *f* being equal to the diameter of the eye of the saw; the notches *e* passing over the ears *g*, upon the clamps, and holding the two parts *h h'* together.

Claim.—The combination of the roll E with the grindstone B.

2d. The use of the flat pivot for the purpose of enabling the stone to operate upon the entire surface of the saw.

No. 14,957.—HENRY GROSS.—*Improved Guard for Circular Saws.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The mechanical construction and arrangement of the circular saw-guard E, to wit: The whole in combination as a useful and novel invention to protect the workman from injury while working the saw, thereby keeping his hands and person away from the saw-teeth, and also preventing injury to him by keeping down the ends of the plank or stick while the saw is passing through it.

No. 15,130.—GEORGE HUTTON.—*Improved Mechanism for Adjusting Circular Saws Obliquely to their Arbors.*—Patented June 17, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The combination of the two spherical faced and peculiarly perforated movable collars C and D, with the concave fixed collar E, and the concave washer F, substantially as described and for the purposes set forth.

I also claim the employment of the adjusting screws J and K, in combination with the above described collars C and D, the concave fixed collar E, and the concave washer F, as set forth.

No. 14,379.—ANDREW L. WHITLEY.—*Improved Method of Adjusting Circular Saws.*—Patented March 4, 1856.

In order to bring the lower portion of the teeth of the saw X directly over the upper portion of the teeth of the saw Y, the screws *o* in the ends of the fork *p* are adjusted: this operation causes the arm I to turn on its pivot *j*; the forked ends of the arm I are hinged to the saw-shafts *a* and *h*, and thus the position of the saws can be adjusted by operating the screws *o*. The saws can be adjusted into the same vertical plane by raising and lowering one end of the frame *g* and

operating the screws *n*, which cause the frame *g* to move horizontally. When the saws become smaller by use, the bolts *L* are loosened, which relieves the bar *g* from the arcs *G*, and the bar *g* is then moved along the arcs *G* until the saws are brought as near each other as desired.

Claim.—I do not claim any construction by which the shaft is prevented from having any lateral motion; but I claim—

1st. The adjusting of the two saws at the same time towards each other by means of the swinging arm and its set screws, as herein described, or in any other way substantially the same, and without allowing any end play to the shaft.

2d. The combination of the device above claimed with the devices *L m n* and *l* for the purpose of adjusting the saw in every direction, as hereinbefore described.

3d. So constructing the adjusting mechanism that it follows the shaft when moved around on the arc.

No. 14,705.—JAMES M. KERN, assignor to ENOCH P. FITCH and ISAAC SCOTT.—*Improved Method of Adjusting Circular Saws for Concave and Convex Work.*—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: Saws have been so arranged that greater or less concavity may be given to them, and the saw has been cut from the eye to the rim so that it may be sprung into a dished form. I do not claim either of these things. But I *claim* so arranging a circular saw *B* with its followers *E* and *F* upon a shaft *A*, that said saw may be converted from a disk to a concave saw *B*¹, or *vice versa* without removing any of the parts from the shaft.

No. 14,268.—JAMES M. KERN, assignor to ENOCH P. FITCH and ISAAC SCOTT.—*Improved Method of Concaving Circular Saws.*—Patented February 12, 1856.

Claim.—The making of a dish-shaped saw from a flat circular saw plate by cutting away a portion *B B B* of the interior of the plate, and drawing a portion of the remaining metal into the spaces thus cut away, by which the desired concavity may be attained without cutting out to the periphery of the plate.

No. 15,368.—JOHN BROUGHTON.—*Improved Method of Driving Circular Saws.*—Patented July 22, 1856.

As the driving shaft rotates, motion is given to the saw by belts *g f*. A plank or log being laid on the table *B*, the operator takes hold of the rod *K* and draws the frame *C* and saw *E* forward, and cuts off the plank or log; then by letting go the handle it slides back to its former position. While the saw and arbor move forward in a horizontal line

the arbor and pulleys on the back end of the frame *C* will move in an arc of the centre *J*. This arrangement, while admitting a sliding saw and stationary table, will allow the saw to be driven with the smallest number of pulleys and least amount of belting.

Claim.—The sliding frame *C* placed and working between the horizontal and segment guides or ways *b e* in the frame *A*, the frame *C* having the saw *E* placed within it, and driven by the belts *f g* from the shaft *J*, arranged relatively with the frame *C*, as shown and described for the purpose specified.

No. 14,241.—WESTEL W. HURLBUT.—*Improved Method of Hanging and Adjusting Circular Saws.*—Patented February 12, 1856.

The bearings *H H* are intended to be placed upon and bolted to a proper frame.

The saw *A* and saw guides *F F* may be set for sawing the lumber obliquely or square, by raising or lowering the bearing *C*¹ by means of turning the bolt *N* to the desired height. The bolt *O*, passing through slide *K* into the bearing *C*¹, is used to set the saw and guides in the desired position sideways.

Claim.—1st. The arms *B B B*¹ *B*¹ as connected with the bearings *C C*, and supported by the pins or centres *G G* in connexion with the slide *K*.

2d. The moving of the saw *A*, either sideways or diagonally, by the use of the slide *K* and the bolts *O* and *N*, or their equivalent.

No. 14,188.—JOHN GODFRED ERNST.—*Improved Saw-Set.*—Patented February 5, 1856.

The object of this improvement is to produce a centre upon which a circular saw can revolve. The arms *a* are hinged to the screw *D* and rest against stops *b* upon plate *C*. By turning the screw *D* a little, the ends of the arms *a* may be thrown out more or less, in order that the circuit formed by their extremities may suit the size of the central hole of the saw-plate. The arms, when properly adjusted, may be fixed in their position by screwing down upon them a nut *E*. *H* is the hammer, and *B*, with the saw upon the centre *a a a*, can be inclined more or less so as to give the saw-teeth the required set.

Claim.—The use of the expanding arms *a a a* in connexion with the plate *C* and screw nut *E*, arranged and operated in the manner herein described.

No. 14,936.—EDWARD S. WATSON.—*Improved Saw-Set.*—Patented May 20, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The arrangement of the side set-screws *H*, under the bed *A*

for the saw-plate and the central adjusting screw D, for giving to the bed and the saw-blade the inclined position, and thus allowing the tooth of the saw to have given to it the curved or twisted face.

No. 15,007.—BENJAMIN GILPATRICK.—*Improved Saw-Set*.—Patented June 3, 1856.

The cone J receives the various sizes of circular saws, and by raising or lowering the cone J it may fill any ordinary sized hole in the circular saw, so as to constitute its guide around which it revolves when the teeth are being set, and this cone also raises or lowers the saw so as to give more or less set to the teeth. The cone J and pedestal F can be advanced or receded from the setting-punch on the track E.

Claim.—The pedestal F, the screw H attached thereto, and the check-nut I and truncated cone J, or their mechanical equivalents, arranged and operated essentially in the manner and for the purposes set forth.

No. 15,119.—LEBBEUS BROOKS.—*Improved Saw-Set*.—Patented June 17, 1856.

By making the upper surface of the adjustable bed D angular and arranging it with respect to the jaws *a b*, the said bed may be adapted to operate on a saw tooth of any ordinary length or width, as the bed may always be brought between the two next adjacent teeth between which said tooth may be situated. When the bed has been elevated so that the top surface shall stand at the required angle to the bearing face of the jaw *a*, the gauge G has only to be adjusted a distance from the jaw equal to the depth of the saw-tooth, and the instrument will be ready for use.

Claim.—Arranging the adjustable angular bed D in the jaw lever, and with respect to the jaws and sliding-gauge G applied thereto.

No. 15,679.—WYLLYS AVERY.—*Improved Saw-Set*.—Patented September 9, 1856.

To set a saw by means of this machine, the frames Q and R are adjusted to the desired angle by turning the blocks S, and the saw is then placed upon them, and the punch D is set to suit the angle of the teeth; the pin M is then adjusted in such a manner that when it is in a score between the teeth, one of the teeth will be in a proper position on the anvil C under the punch, so as to hold the pin in that position, when the tooth is set by striking the punch with a hammer.

The inventor says: I claim a traversing punch arranged so that it can be vibrated or turned to suit the form or position of the saw-teeth, being set substantially as described.

I do not claim a vibrating pin acting upon the teeth of the saw to traverse it endways.

But I claim the adjustable stationary pin M, so arranged as to bring

the teeth of the saw into a proper position under the setting-punch, when the scores between the teeth of the saw are forced into said pin, substantially as described.

I do not claim a vibrating frame to support the saw, hung directly opposite the setting-punch and anvil.

But I claim two separate frames, one hung each side of the anvil and setting-punch, so arranged that when one is turned back out of the way of the handle the other will support and sustain the saw, substantially as described.

I claim the revolving blocks for the above mentioned frames, which support the saw during the process of setting, substantially as described.

No. 15,731.—ABRAHAM CASEY.—*Improved Saw-Set*.—Patented September 16, 1856.

The saw-set being adjusted to the condition represented in fig. 1, the saw-blade is placed in the kerf E and clamped against the shoulder *j*; the plate F is then shifted from the position shown in fig. 1 to the position in fig. 2, and the screws *i* are tightened; then by pressing the lever B against the stock A, the punch C is forced forward against the tooth to be set. By raising or lowering the bolster D it can be adapted for the setting of coarse or fine teeth.

Claim.—1st. The combination and arrangement of the stock A, having a transverse kerf E, bevel bolster D, and punch B, substantially as and for the purpose set forth.

2d. Arranging the bolster on a turning screw-pin which moves in a slot and has a clamping nut, substantially as and for the purpose described.

No. 14,055.—JACOB ERDLE.—*Improvement in Filing Saws*.—Patented January 8, 1856.

The eccentric E, keyed on the crank shaft A, will elevate the file frame on the return motion of the file, which is accomplished by keying the eccentric, so that its throw shall be at right angles to the crank. The eccentric rod passes below the frame in which the crank shaft &c., are fixed, and is connected to the file frame by the bar screwed thereon. The file frame is hinged to the bed on which it rests at the points 3 and 4, and after being raised by the action of the eccentric is lowered for the forward stroke by means of a spring R or its own weight. In order to feed the file into the saw or the saw up to the file, the rock-shaft *c* is connected with the crank shaft by means of a secondary crank *b* and its connexions. This operates the pawl P and ratchet wheel W in a well known manner.

Claim.—The use of the eccentric *e* and the various parts co-operating therewith for raising the file as it recedes; the lever I, plate H, and their connexions for feeding the saw through one or more teeth, and for regulating the depth of the cut and its angle; all arranged and constructed substantially as herein shown.

No. 15,940.—HORACE R. HOWLETT, assignor to Himself and A. W. GOODELL.—*Improvement in Filing and Setting Saws*.—Patented October 21, 1856.

The gauge B placed between two plates forming the stock A is formed of a bar *a*, which may be set as shown in figure 1. The frame C¹ contains the file D, which is pressed down by the spring *k*, and allowed to turn with the rod *f*, its position being determined by the gauge B.

The triangular guide plate C may be adjusted by the set screw *l*, and be moved obliquely in the stock A, thereby determining the depth and length of the teeth of saw E.

The setting of the teeth is done by the die H, provided with the set screw *q*, connected with the lever *g*, as shown in figures 1 and 2.

Claim.—The file frame C attached to the stock A, in connexion with the gauge B, guide C, and lever G, with saw-set H attached; the whole being arranged, as shown and described for the purpose specified.

No. 15,773.—ALBERT S. NIPPES.—*Improved Machine for Grinding Saws*.—Patented September 23, 1856.

A revolving motion being imparted to the screw-shaft J, the shaft L is caused to turn, and causes the face-plate E to revolve on the pillar-block D of the carriage C, which latter is caused to advance towards the revolving grinding-stone H; the saw-plate being fastened on table E. As the carriage advances, the roller *i* presses down the pattern X, which rocks the shaft T, and the latter being connected by means of cranks V and rod W to shaft U, shaft U will rock in the same manner as shaft T, causing the cams *d* to turn with them, which thus raise the table C. This arrangement serves to compensate for the wearing off of the grinding-stone during the time of grinding from the circumference to the centre of the saw-plate.

Claim.—In combination with the face-plate of a machine for grinding saws, a guide pattern or former, which can be used for giving shape to the saw-plate, by causing the face-plate or stone to approach or recede from each other to vary the bevel or thickness of the saw-plate, or to compensate for the wearing away of the stone, whilst acting on said plate or both, substantially as described.

No. 16,223.—EMANUEL ANDREWS.—*Improved Machine for Grinding Saws*.—Patented December 16, 1856.

The saw is attached to the sides of the face-plate E, and secured to it by collar *c*. Motion being imparted to shaft D, the grinding-stone B is caused to revolve, and thus to operate on the sides of a circular saw. The stone B is mounted on a frame *a*, which has a pivot on its lower end to turn upon; and by adjusting the set screws *b*, the stone B can be set so that a small portion of the grinding surface will ope-

rate upon the saw. The transverse motion of the stone B on the sliding rods *j*¹ is produced by a belt running over the conical pulley N, whence motion is transmitted to pulleys N¹ and K, and to screw O, passing through a nut in the piece P.

Claim.—1st. The manner described, or its equivalent, for decreasing the transverse motion of the stone when I wish to grind the most, as at the outer edge of the saw, and increasing the same when I wish to grind less, as at the centre of the saw, as set forth.

2d. The manner described, or its equivalent, for the adjustment of the stone, for the purpose of using a portion of the grinding surface of the same at pleasure, or all the grinding surface if desired, as set forth. Grinding-saws to a taper, as described, by means of the adjustable face-plates, in combination with the pivot boxes O², and sliding and yielding guides M and O¹, as set forth.

No. 14,413.—THEODORE SHARP.—*Improved Method of straining Mulley Saws*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—Straining the saw by attaching its ends to a pivoted elastic bar E¹, substantially as shown and described.

No. 14,480.—HIRAM WELLS.—*Improved Method of suspending Circular Saw Spindles*.—Patented March 18, 1856.

This improved method of sustaining the saw spindle A will not only permit the lateral play that may be necessary to accommodate the saw to the lateral spring of the log, but the weight of the spindle will aid in restoring the saw S to its normal position.

Claim.—The arrangement and application of the eccentrics *c c* with respect to the shaft boxes B B and their stationary and adjoining screw-pins D D, substantially in the manner and for the purpose as described.

No. 14,485.—J. Z. A. WAGNER.—*Improved Method of adjusting Reciprocating Saws*.—Patented March 18, 1856.

The gate E has two cross pieces *b b* at its upper and two at its lower end. The nuts *c*, which are allowed to slide laterally between these pieces, have straps *d* attached to them, between which the saws H H are strained.

The inner ends of each pair of screw-rods I lock into each other so as to become connected. By operating the arm Q the rods may be detached or connected.

Claim.—1st. Hanging the saws H H within the saw-sash or gate E on or to nuts *c c*, which work, or are fitted, on right and left screw-rods I, substantially as shown, for the purpose specified.

2d. I claim operating or adjusting the saws H H laterally in the saw-

sash or gate E by means of the pinion K placed loosely on the shaft J, so that said shaft may work freely through it, the shaft J having bevel pinions *e e* at its ends, which pinions gear into corresponding pinions *d¹* at the outer ends of two of the screw-rods as described.

2d. I claim connecting and disconnecting the screw-rods I by means of the levers O O P and arm Q, arranged substantially as shown and described for the purpose specified.

No. 14,930.—JOHN ROBINSON.—*Improved Method of Hanging Reciprocating Saws*.—Patented May 20, 1856.

The arm G is attached to a shaft *a*, the ends of which are fitted in bearings at the end of frame E. The upper end of the pitman H just above the shaft *b* is pivoted to plate I, which is attached to the lower end of the saw J.

By this arrangement the teeth of the saw as they perform their work recede, and the saw-dust is allowed to pass freely out of the kerf.

The inventor says: I do not claim merely attaching the lower end of the saw to the pitman, for that has been previously done in cases where the saw has been placed in a sash.

But I claim attaching the upper end of the saw J to the pendant or arm G, which is connected to the upper frame E, and the lower end of the saw to the pitman H, just above the point of connexion of said pitman with the lower frame E, substantially as herein shown and described, for the purpose specified.

No. 15,890.—JOHN H. MORE.—*Improved Method of Hanging Reciprocating Saws*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

Claim.—1st. The hinged-jaws J J and screws *e e e e*.

2d. The finished faces on the jaws J¹ J¹ of the fixed body of the stirrup, in combination with the hinged-jaws, and for the purposes set forth.

No. 16,062.—GEORGE D. LUND.—*Improved Method of Hanging Reciprocating Saws*.—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Placing or fitting the rod or shaft C, to which the lower strap or socket D is attached, loosely in the slides B B, substantially as described for the purpose specified.

No. 16,295.—JOHN STOWELL.—*Improved Method of Hanging Reciprocating Gig-Saws*.—Patented December 23, 1856.

As the saw J is operated, the two levers E work parallel with each other, and the saw is allowed to work in a vertical right line in

consequence of the oscillating forward and backward movement of the frames C D, said frames compensating for the curvilinear movement of the levers E.

The inventor says: I do not claim attaching the ends of the saw to the two levers E E, for this device or its equivalent has been previously used.

I claim attaching the saw J to the two levers E E when the axes of said levers are fitted in an oscillating frame D, the journals of which are fitted in slots or grooves, or in a swinging frame C, to allow a forward and backward movement of the frame D, as described.

No. 15,220.—E. S. CLAPP.—*Improved Method of Framing and Straining Wood-Saws*.—Patented July 1, 1856.

By moving the upper part of the bow E towards D the saw will be strained, the rack G catching on the edge of the slot in the plate *f*.

Claim.—Constructing the saw frame A with the two bows D E connected by a hinge *a* and having the rack G attached to the bow E, the rack passing through a slot in the bow D, the saw C being connected to the bows E B and the straining rod F connected to the bows D B, substantially as shown for the purpose specified.

No. 15,082.—M. L. PARRY.—*Improved Method of Repairing Circular Saw-Teeth*.—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The stop or mandrel E, fitted within an adjustable socket *e*, which is attached to an arm D, the arm being secured to the frame A; the above parts being arranged as shown for the purpose specified.

No. 14,101.—A. KENDALL.—*Shingle Machine*.—Patented January 15, 1856.

The rods *e* connect the cranks of a rock-shaft with the two right angled levers *f g h* and *i* at *e¹*. The levers have their fulcrum at *h¹ i¹*. The bar *j* is attached by a pin joint to lever *g*, and the knife levers *k* and *l* and bar *m* are connected by a pin joint to the lever *f* and knife levers *n* and *o*. The bar *p* is connected in like manner to shaft *h*. Knife levers *o* and *t* and bar *u* are connected in the same manner to lever *i* and knife levers *v* and *w*. From this it will be seen that, as the rod *e* is advanced, the knives of the set M¹, as well as of the set M, are caused to approximate so as to shave the shingles to the desired taper, which may be altered by adjusting the sweep of the rock-shaft cranks.

The drivers E E¹, connected to the carriage by the rods F F F¹ F¹, are provided with wrists, which slide in grooves or slides N N¹ N² N³.

The upper and lower drivers move simultaneously, and while the upper driver is in the slide N², the lower driver is in the slide N¹ and

passes along to the tumbler P^1 , which the driver turns down and slides over, but, as soon as the driver has passed over, it moves back in place by the action of the spring Q turning the arm Q^1 , which latter is on the tumbler-shaft. When driver E returns to E^1 , the lever R is raised to R^1 by the action of the end D^2 of the carriage on the arm R^2 ; by this means the driver is raised up to the slide N^2 ; at the same time the lever is raised, the arm D^3 , which extends from the carriage, passes over the end R^3 of the lever, by which means the lever is retained in the position indicated at R^1 , after it is first raised there, long enough to allow the driver to enter the upper slide N^1 .

The broken lines represent the pieces of wood.

Claim.—1st. The herein described arrangement of devices for operating the approximating knives whereby the shingles are shaved to the desired taper, according to the length of the shingle.

2d. The manner of raising the driver E from the slide N to the slide N^1 by means of the carriage D acting on the arm R in combination with the lever R^1 and arm r , and the action of the arm D_3 on the end R^3 of the lever R , as herein before described.

3d. The tumbler P^1 , as combined with the springs Q Q and arms Q^1 Q^1 , operating in the manner and for the purposes set forth.

No. 14,103.—SAMUEL M. KING.—*Shingle Machine*.—Patented January 15, 1856.

The bolts are placed inside the boxes J , the bottoms L of which can be set by screws K according to the required thickness and taper of the shingles. I are the knives.

Claim.—The combination of cast iron boxes J with adjustable bottoms L and sliding lids H , operating with the knives in front alternately by connecting rods G , so as to cut and regulate the size and taper of the shingle, substantially as described.

No. 14,347.—RANSON CLIFFORD.—*Improved Shingle Machine*.—Patented March 4, 1856.

The driving-bars G G , fastened to and carried by the endless chains H , are moved by the said chains along the bed-plate B and beneath the rifling knife D , until a piece is split off from the under side of the block C . The block is then carried back by hand and placed upon the bed-plate ready for the next driving-bar. When the piece has been forced nearly through the shaving knives K K^1 , the uprights L L come in contact with cross-bar M , by which means the driving-bar is turned underneath so as not to interfere with the knives. As the driving-bar is forcing the shingle through the knives it strikes the end of the two levers N N , and carries them along with it until it has driven the shingle its whole length through the knives; and thus the chains Q are made to wind about pulleys P , drawing the horizontal sliding-rods S , and causing the knife K to approach the knife K^1 by means of the arms T ,

which are pivoted to rods S , and to which arms the knife K is attached. Thus is produced the taper of the shingle.

Claim.—1st. The combination of the driving-bar attached to and moved by endless chains, and the lever or levers N N , for the purpose of communicating motion to the shaving knives, substantially as described.

2d. The construction of the driving-bar, with the upright arms L L , carried by the endless chains and chain gears, and its combination with the cross-bar M and knives K K , in such a manner that the driving-bar shall be turned on its axis and made to run clear of the knives just before it reaches them, substantially as herein described.

No. 14,765.—JOHN B. EVINS.—*Improved Shingle Machine*.—Patented April 29, 1856.

The block X from which the shingles are cut is placed upon the bed-block G , and by depressing the outer end of the lever J the knife E is brought down over the edge of the blocks with a drawing cut in consequence of the bolts b b fitting in the slots a a , which give an oblique motion to the knife frame, and cause the knife to cut diagonally with the grain of the wood. The panel E of course rises and falls with the knife frame C , as they are connected by the pivot c , and the knife frame oscillates on this bolt.

The inventor says: I do not claim the reciprocating knife and panel, for they have been previously used for the same purpose; but I claim, first, the combination of the knife frame C and panel frame D , when constructed, arranged, and operating conjointly, as herein shown and described.

2d. I claim operating the knife and panel frames C D , by means of the lever J , when connected to the two levers K K^1 , so that two movable fulcrums are obtained; the pitman being attached to the lever between the fulcrums, for the purpose specified.

No. 14,914.—EDWARD HEDLEY.—*Improved Shingle Machine*.—Patented May 20, 1856.

This apron is composed of two leather bands, which play over four pulleys D D . The bands are covered and connected by a series of iron plates c c . On the underside of each plate are cast three metal ribs, one on the centre and two near the edges of the plate. These ribs are double and wedge-shaped, so as to give the proper taper to the shingle by running on solid bars of iron placed under the ribs.

Claim.—As new the formation and invention of the endless feeding bed of bevelled slats c c c , so as to give the required taper to the shingle as it passes beneath the knives of the revolving arms.

No. 14,977.—HARVY WHITE.—*Improved Shingle Machine*.—Patented May 27, 1856.

The shingles are dropped in front of the knives G G , when the carriage E is run back; the butt of the shingle falling between two inclined

plates *b b*, which bring it into the centre of the carriage. The plates *H H* are drawn apart by means of rods *I I*, to allow the shingle to fall between them. The shingle is then carried forward until the edge strikes the standard *k*, which stops it, while the carriage carries the knives across each side and shave the shingle smooth; and as the knives leave it, it is seized by the spring forcep *L*¹, which removes the shingle when the carriage is run back, and drops it beyond the end of the frame *A*.

Claim.—The plates *b b*, so arranged as to bring the butt of the shingle into the centre between the knives and hold it there while it is being shaved.

I claim the spring forceps, so arranged as to seize and remove the shingle after it is shaved.

No. 15,081.—JASON PALMITER.—*Improved Rotary Shingle Machine.*—Patented June 10, 1856.

The blocks *A*¹, shown in dotted lines, from which the shingles are sawed, are secured by the dogs *T* to the several carriages on the wheel *G*. As the wheel *G* rotates, the saw *C* cuts the shingles from the blocks, and the lever *P*, of each side or face of the wheel, as said sides approach the saw, is operated by a projection *U* on the frame *A*, and the sliding-bars *O* are actuated, and the pawls *b b* turn the ratchets *N*, and the pinions *M M* move the racks *K K* and the carriage *J* and block towards the saw.

Claim.—Placing a series of carriages *J* on the sides or faces of a polygonal wheel *G*, and giving said carriages the proper feed motion by means of the racks *K*, pinions *M*, ratchets *N*, and sliding-bar *O*, with pawls *b* attached; the above parts being arranged as shown, and in connexion with the circular saw *C*, substantially as described for the purpose specified.

No. 15,302.—ADRIAN V. B. ORR.—*Improved Shingle Machine.*—Patented July 8, 1856.

When the reciprocating plate *E* is set in motion by means of handle *O*, pinion *N*, and driver *M*, and connecting rod *P*, the bolt resting on said plate, with its end against the stop *D*, will have its under surface made smooth by the stroke of the knife *S* (figs. 1 and 2) passing under it. The froe *I* will follow and split from the bolt a piece of the necessary thickness; this piece drops off on the inclined face *s s*, and rests with its end on the offset *R*. The motion of the plate being now reversed, the piece is pushed under roller *H* and shaving knife *F*, by means of which its upper face is shaved and tapered as desired. The teeth of the arm *J* of the lever *K* now seize it and hold the shingle until the plate passes from under it and its forward motion allows it to drop on the shoot *L*.

The inventor says: I am aware that reciprocating plates have been constructed with tapering faces or recesses to give the necessary taper

to a shingle in carrying it under a stationary knife, and I am also aware that froes or riving knives have been used which were moveable. I do not claim either of these devices separate from the combination in which I use them. But I *claim*, first, combining, in a single reciprocating plate *E*, a straight face *a a*, a tapering face *s s*, with an offset *R* between them, and a movable froe *I*, being combined for the purposes specified and constructed substantially as described.

2d. I claim the compound lever *K*, constructed as described, or its equivalent, for the purpose of taking the finished shingle off the plate, as already set forth.

No. 15,749.—DAVID D. TUPPER.—*Improved Shingle Machine.*—Patented September 16, 1856.

The cutter cylinder runs in boxes *p*, which slide in slots in the standard *L*, and to which are also pivoted at *s* the plates *r*, which carry the pressure rolls *M*. To the lower plate *r* is secured the bent arm *N*, the extreme end of which carries a rack-bar *P* that engages with the cogged wheel *t*. This wheel is turned a quarter of a circle, more or less, alternately, in one direction and the other, each time the carriage advances, and a cut is made; and thus the rolls receive the required inclination upon each side to enable them to bear upon the inclined face of the bolt. The arm *N* is locked and held stationary while the cut is being made, by the spring dog *z*, that falls into one of the two notches in the frame work.

Claim.—The described method of arranging and operating the cutter-head, whereby the pressure rolls are inclined, to correspond to the inclination of the face of the bolt, for the purposes set forth.

No. 15,747.—PHILO O. SHERWIN.—*Improved Shingle Machine.*—Patented September 16, 1856.

The timber is held on the face side of the block *G* by means of dogs or sets. The set-wheels *I* have an onward movement with the carriage *g*, and are provided with teeth at unequal distances apart, and so arranged that one pawl will catch the tooth over a long distance in one wheel, while the other will catch the tooth over a short distance in the other wheel, and thus the timber will be fed to the saw *o* at an angle sufficient to form the thick and thin end of the shingle. The stops *K*, which are adjustable on the frame by means of the slots *y*, act upon the teeth *t*, and serve to stop the carriage at the precise point, so as to prevent the jar in the frame experienced heretofore in machines of this construction, which caused the timber to be fed unequally to the saw, and thus produced shingles of unequal thickness.

Claim.—The stops *K K*, in combination with the notches or teeth *t t* on the set-wheels, arranged and used for the purposes and substantially as set forth.

No. 14,792.—CHARLES F. BEVERLY.—*Improved Rotary Shingle Machine*.—Patented May 6, 1856.

The inventor says: I do not claim the knives or cutters E E secured to the wheel A as shown, irrespective of the manner of attaching said knives or cutters to the wheel.

But I *claim* securing the knives or cutters E E to the wheel or disk A, by means of the bolts *i i* which pass through the knives or cutters near their cutting-edges, and through the ears *h* at the ends of the plates *g*, the heads of said bolts being bevelled; and employing the screws *j* for securing the ears to the bars *e* attached to the wheel or disk; and adjusting the knives or cutters by means of the screws *k k* which pass through the bars *e*, substantially as shown.

I further claim the bar H attached to the elastic bars J J by rods *l*, which work in slotted rails G G at the ends of the platform or bed F, the lower ends of the bars J J being connected to a rock-shaft K, having a treadle L attached to it, and against which treadle a spring M acts for the purpose of feeding and properly presenting the block to the knives or cutters.

No. 15,728.—JOHN BROUGHTON.—*Improved Feed-Motion for Shingle Machines*.—Patented September 16, 1856.

The block *c* of which the shingles are to be cut, being secured between the holding dogs M, is shoved towards the disk-wheel D until the block *c* touches the face-guide G, the wheel D rotating in the direction of the arrow; the face-guide at the ends where it meets the back of the knives F is flush with the faces of the knives, and from these points it gradually recedes until its face at the opposite ends near the cutting edges of the knives stand back from the faces of the knives the distance of the thickness of a shingle at the middle of its length. This, combined with the tilt motion given to the bed H on its fulcrum *a*, by means of the arm I, roller J, and cam K, gives the thickness and taper to the shingle.

The inventor says: I do not claim the disk-wheel D with knives attached, for that device has been previously used.

But I *claim* the disk-wheel D with knives F, face-guide G, and face-cam K, attached and used in connexion with the vibrating bed H, the whole being arranged and operating as shown, for the purpose set forth.

No. 15,756.—GEORGE CRAINE.—*Improved Method of Feeding and Sawing Shingles*.—Patented September 23, 1856.

The dogs *l* serve to hold the bolt during the process of cutting, and the saw B enters the bolt near the centre in length of the shingle and cuts towards both its ends at the same time, by which operation the shingles are delivered with a perfectly smooth surface. The bolt is fed to the saw by means of the screw H operating upon tooth *c* of the hinged piece G, which, being fastened to the carriage F, moves said

carriage and bolt towards the saw B; as the pinion L is rotated by pinion E, the latter receiving its motion from the driving shaft D, and as the lever *v* strikes against the projection *z* it is turned on its fulcrum *w*, and the pawl *s* is disengaged from the ratchet *u*, and the weight R causes the drum P to rotate and with it the worm-wheel O, which operates the racks *q*, and by which arrangement the bolt is fed to the saw, so as to take the shingles therefrom "butt and point" alternately.

Claim.—So arranging the carriage, with regard to the saw, as that the saw shall enter the bolt at or near the centre in length of the shingle, and cut towards both its ends at the same time, in manner, and for the purpose set forth.

Also, a device for feeding the bolt to the saw so as to take the shingles therefrom "butt and point" alternately; the worm-wheel O working into the double-racks *q q*, in the manner set forth.

Also, the combination of the hinged-piece G, with its pin *i* and feeding tooth *c*, and the ledge *f* and trigger *g*, on the fixed piece M, for the purpose of connecting and disconnecting, at proper times, the carriage with the feeding-shaft H, so that it may traverse on its ways, as set forth.

No. 15,720.—LEWIS A. GOODSSELL, assignor to Himself and DANIEL H. HOLT.—*Improved Shingling Bracket*.—Patented September 9, 1856.

The braces E and F are pivoted to the base A, which is fastened to the roof by means of the claws B; the braces can be adjusted by means of catches, the dovetailed tongue G, and the wedge J; the planks to support the workmen in shingling a roof are laid on the brace E.

Claim.—A combination of the foot or feet D D, the claw or pin-pointed base, and the hinged braces E F, made fast and adjustable to each other by the catches and dovetail-tongue receiving the wedge J; the whole constructed, combined, and operating as set forth.

No. 16,121.—EDWARD JULIER.—*Improved Machine to aid in Making Spokes by Hand*.—Patented November 25, 1856.

A roughly hewn piece of wood being attached to the chuck *i* at one end of fig. 2, and the other end being held by the centre-screw V, the pawl *i s* is temporally thrown off the ratchet-wheel *k*, the stop *f*² brought down, and its pin *g*² inserted into one of the four holes of the ratchet-wheel *k*. By resting an ordinary drawing-knife on the gauge *z z*², and operating the same, one side of the blank is shaved, and the other three sides are shaved in a similar manner, the pin *g*² being inserted successively into each of the holes of wheel *k*. The stick being squared, the pawl *i s* is brought again in gear with wheel *k*, by which the pattern-cam *s*² is turned; and as the knife-rests *z z*² rest on said cam by means of saddle *a*² they are raised and lowered according to the shape of cam *s*², and the shape of the spoke must be exactly the same as that of the forming-cam *s*².

Claim.—The construction and arrangement of the pattern-cam gauge

device $s^2 s^2$, the jointed-lever device $m^2 m^2 k^2$, the collar-shank $f^2 h^2$, and spring-pawl I^2 , when operated by the pedal P^2 , or its equivalent together and with the stop or dog $f^2 g^2$ and ratchet K , in the manner substantially as described, or in any equivalent manner.

Also, the graduating straddle-gauge $w w w w^2$, and hinged or jointed forming gauge rest $z z^2$, with the graduating set-plate and yoke devices $a^2 b^2$, &c., with the knife-shields or buffer-heads $g g u u$, substantially as described and shown.

No. 14,718.—CHRISTIAN HAAS and JOHN C. NOLL.—*Machine for Driving Spokes*.—Patented April 22, 1856.

The hub-bed is adjusted to the length of the hub by moving timber h^1 along bar t , and securing said timber by screws m . The spoke S is secured between boxes s , and its lower end inserted in the mortise of the hub, which is uppermost, the guide r being elevated for that purpose, by passing along its attachment q . The power is applied to the wheel W^1 , which lifts and releases the driver a by means of arm d , the spoke-guide slipping down the guide attachment as the driving proceeds.

The inventors say: We make no claim to the driving arrangement separately considered; but we *claim* the adjustable hub-bed and spoke-guide, in combination with the driving apparatus, the several parts being constructed and arranged substantially as and for the purposes set forth.

No. 14,018.—ELIJAH HOLMES.—*Spoke-Shave*.—Patented January 1, 1856.

The two ends of the knife A are formed with chamfers $a a$, and the stock B is formed with corresponding dovetail-sockets b to receive these chamfers. A set-screw c is extended through one of these sockets and the stock B , so that its head shall overlap one of the chamfers a . When the nut e of the set-screw c is turned, it will force the knife longitudinally away from the set-screw and hard into the opposite socket b , so as to confine it firmly in its place.

Claim.—I do not claim the manner of fastening the knife, viz: by a single screw-clamp, chambers, and sockets; but what I do claim is supporting the ends of the knife, or plane, on shoulders inclined or arranged with respect to the bearing of the stock, substantially in the manner specified, and so as to enable the distance of the cutting-edge of the knife from the said bearing surface to be changed, in the way and for the purpose as explained.

No. 14,635.—MARTIN SNOW.—*Improved Spoke-Shave*.—Patented April 8, 1856.

Fig. 1 is a near edge view of the knife; fig. 2 is a transverse section; and fig. 3 represents an edge view of a shave with said knife applied to it.

The inventor says: I am aware that it is not new to hold an article in place by means of a spring, therefore I do not claim such; my invention relating to a new or improved manufacture, which, of itself, is a new article in the market, and, from its peculiar construction, is rendered one which is not only very simple, but one of great utility.

But I *claim* my new or improved manufacture of a heel, or spoke-shave knife, made of one piece of steel, and with both of its starts $A A$ bent or formed in the shape of springs, in the manner specified.

No. 15,446.—AUGUSTIN D. WAYMOTH.—*Improved Machine for Manufacturing Spools*.—Patented July 29, 1856.

The boring-carriage C is moved on its parallel ways $a a$ by pinion d of shaft b meshing into rack e , the shaft b being turned by means of the wheel c ; the tool-carriage H , which can also be moved on the ways a , bears the socket-head I of a rounding cutter f ; the head is made trumpet-shaped for the reception and guidance of the piece of wood to be turned, the mouth terminating in the tubular rest e^1 of the diameter of the cylinder to which the piece of wood is to be reduced. The tool-holder K , which holds the body-tool k and severing-tool i , can turn on the journals $g g$, supported by bearings $h h$, and can be made to vibrate on the journals g . It can be operated upon by means of bent lever L , rod l , and an arm extending outwards from the bent lever for the operator to act upon.

The inventor says: I do not claim combining one or more cutters with a sliding-carriage made to slide horizontally and at right angles to the axis of the work to be turned.

But I *claim* combining the rounding, severing, and body-cutters with a carriage made to slide between the chuck and boring-carriage, and in line with the latter, and so as to be moved towards the chuck by the boring-carriage, while it is moved towards the work, in the manner set forth.

I also claim arranging the body and severing-cutters, and combining them with the cutter-carriage by means of a turning-holder K , as specified, whereby the said cutters may be made to operate and be put in operation by means substantially as explained.

No. 15,757.—A. H. CROZIER.—*Improved Stave-Jointer*.—Patented September 23, 1856.

The staves to be jointed are placed upon the plates G , and are kept against the rim of the wheel A by pressing the frames d ; and as the rim of the wheel is dish-shaped, the staves will be jointed with more or less taper, according as the plates G are adjusted higher or lower, which adjustment is obtained by operating the set-screws $c c b$.

The inventor says: I do not claim the wheel A , for that has been previously used.

But I *claim* the wheel A , with cutters D attached, in combination with the adjustable gauges or plates G , arranged as shown and described, for the purpose set forth.

No. 16,095.—BARNET McKEAGE.—*Improved Stave-Jointer*.—Patented November 18, 1856.

The stave to be dressed being placed upon the carriage C, motion is imparted to the latter; and as it is moved along, the pattern plates *m* move in contact with the edges of the jointing-disks E, or against suitable projections on their carriages G, and thus separate said disks by their wedge action till one half of the length of the stave is jointed. During the last half of the motion of the carriage, the pattern-plates *m* taper together, and thus leave the jointing-disks to approach gradually. By means of this arrangement, the cutters *c* of the jointing-disks dress the staves to the exact form presented by the pattern-plates *m*.

Claim.—The device described for automatically jointing staves of different widths to the proper bulge, consisting essentially of the pattern-plates *m m m* and the guiding slots *n n p p*, or their equivalents, respectively set at such different angles as to separate the two ends of said pattern-plates unequally and exactly in proportion to the bulge required, arranged and operating substantially as specified.

No. 15,285.—J. K. DERBY.—*Improved Stave-Jointer*.—Patented July 8, 1856.

The stave K to be jointed is clamped upon the bed G; the edges of the stave project beyond the sides of the bar E, so that the saw C may act upon the edges of the stave. As the carriage D is shoved along on the frame A, the slotted plate J will tilt or vibrate the bed, the front end of which will be depressed at the commencement of the operation, the plate J gradually raising it to an elevated position; the front end of the bed being elevated to its extreme height at the completion of the forward stroke of the carriage D. This tilting of the bed gives the proper bilge to the stave, as the bed and stave being necessarily at one side of the saw are placed obliquely to the plane of rotation of the saw, and the ends of the staves will be thrown across the saw, so that the edges of the stave will be cut taper from the centre. When one edge of the stave is sawed, the bed G is placed at the opposite side of the saw by turning the bar E, and the opposite edge of the stave is sawed.

Claim.—The vibrating or lifting bed G, fitted or pivoted to a bar E within the carriage D, as shown, the bed being operated by the pattern I, or its equivalent.

No. 14,299.—GEORGE W. LIVERMORE, assignor to THE LIVERMORE MANUFACTURING COMPANY.—*Improved Stave-Machine*.—Patented February 19, 1856.

Power being applied to the eccentric rods *g g*, the jointers D are vibrated up and down, and the saws *a*, the crozing cutters *c*, the chamfering cutters *d*, and the cutters *e* for trimming the edge of the croze, are caused to revolve by pulleys and bands not represented in the engravings.

The staves are previously shaped in the grooved rollers patented by the inventor in 1854. The operator, laying hold of handle *f*², opens the clamp, and inserts a stave; its upper end resting against the stationary stop *m*² attached to the frame work, the position of the stave in the clamps being otherwise regulated by the stops *h*². The handle *f*² is then depressed, and the stave is held firmly in the clamp. The operator, still holding by this handle, revolves the clamp around the axis of the shaft H; the stave being brought to the desired length, and its two ends dressed as it passes the revolving saws and cutters. The stave is now borne up against one of the jointers, by which one of its edges is jointed, the adjustable stop *w*² serving to arrest the motion of the clamp, and bring all the staves to an equal width. The stave is then swung round to the opposite side of the machine, and its other edge is jointed; the clamp is then opened, and the finished stave falls out. The jointers D move in a vertical plane, passing through the axis of shaft H; and as the staves are brought to the exact curve, both longitudinally and transversely, which they are to occupy in the cask, it is evident that each stave will be jointed in a plane passing through the axis of the cask, so as to form a tight joint.

Claim.—The within described machine for jointing, crozing, and chamfering staves, consisting essentially of the clamp for holding the stave, the jointers D, and the crozing chamfering cutters, combined and operating in the manner substantially as herein set forth.

No. 15,429.—JOHN MCMURTRY.—*Improved Stave-Machine*.—Patented July 29, 1856.

The staves are fed into the machine at the rear end, and pass between the cutter-heads G, and are held down firmly by the pressure-rollers R R. The end of the stave is presented to the cutter-heads G just as the rollers of the chain carrying the stave commence ascending the bilged part of the ways *m m*, and, as they proceed, continue to rise until they reach the centre of the bilged way, and also the centre of the stave; and then they commence descending until they reach the bevel part of the way, and then passing under the surface cutter-head *f f*, the faces of the spoke are planed, and the spoke is ultimately delivered at the front end of the machine.

Claim.—The combination of the endless chain, or its equivalent, with the undulating bed or bearing, and the combination of these two devices with the planer for dressing the outer surface, and bevelling the two edges to suit any size cask required, in the manner substantially as set forth.

2d. I claim the obtuse joint in the endless chain B B at the carrying wheel, for the purposes specified.

No. 15,423.—CHARLES HOYT.—*Improved Devices in Stave Machinery*.—Patented July 29, 1856.

The staves T, shown in dotted lines, are placed one at a time upon the strip D; and the lever B being depressed, the two plates G G are

moved latterly inward, and adjust the stave T precisely in line with the feed-rollers H H. The pin *p* on the eccentric *o* acts against the lower part of the lever F, and the feeding-block E is thrown forward, and the stave T passes precisely at the proper time between the feed-rollers H H and between the jaws I I, the stave expanding the jaws and causing the two frames J J and cutter-heads *s s* to move a little outward at equal distances from the strip D; the cutters on the heads *s s* then act upon the end of the stave one at each side; the frames J J and heads *s* being held permanently by the wedge-shaped bars *p¹ p¹* are moved upward by the eccentric *o*, and the bars *q q* and cutter-heads *s s* are gradually thrown outwards and expanded till the centre of the stave reaches the point precisely between the two heads. The heads *s s* are then thrown gradually inward by the springs P, for the wedge-shaped bars *p¹* begin to descend till the stave has entirely passed between the heads; the stave then passes between the dressing cylinders R R, and is discharged from the machine by the rollers *s s*, the stave being cut with the swell or proper taper.

The inventor says: I do not claim the cylinders R R for dressing the stave, for they have been previously used.

But I *claim* 1st. Adjusting the staves T in line with the feed-rollers H H and jaws I I, by means of the sliding bed or plate C and laterally sliding-plates G G, arranged as shown and described.

2d. I claim the feeding-block E, when operated by the spring *e*, lever F, and eccentric *o*, substantially as shown, for the purpose of feeding the staves to the cutters.

No. 14,136.—JOSEPH W. KILLAM.—*Machine for Dressing Sticks to Polygonal Forms*.—Patented January 22, 1856.

The engravings represent, by broken lines, a square stick *s* as being operated upon by the machine. It will be seen that the four sides of the stick will be planed straight and out of wind at one operation; in case other polygonal shaped sticks are to be planed, the heads I K, bed B, and guide-plates L, are made of a corresponding form, so that all the sides will be planed at one operation.

The inventor says: I do not claim any of the parts of the above described machine separately; but what I *claim* as new, and desire to secure by letters patent, is—

Planing at one operation sticks of timber of polygonal form straight and out of wind, without confining the same to a carriage, by using the combination and arrangement of the feed-rollers F F¹, and the bed B, and the guide-plates L, and weights *p*, with the rotary cutter-heads I K, as shown and described.

No. 16,041.—ALFRED TIPPETT.—*Improved Tool for Tenoning, &c.*—Patented November 4, 1856.

The chisels C are attached to the stock A, and their distance from each other can be regulated by means of set-screw *b*. The cutters C

can be adjusted in such a manner as to be capable of cutting a long or short wedge-shaped tenon.

Claim.—So making the chisels adjustable in the stock as that they may be made to cut also a dovetail tenon with the same tool, and without reversing the same, and so that said tool may be used in any ordinary mortising machine, and thus avoid the expense of two machines; the whole being arranged specially as set forth and for the purposes described.

No. 15,572.—JOHN POTTER.—*Improved Tenoning Machine*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—The combination of the revolving knife cutter-heads *c d* and rotating saws *a b*, when these devices are arranged in relation to each other and for operation together, as shown and described, causing the knives of the cutter-heads to relieve the saws from binding, and insuring many other advantages in the cutting of the tenon, as specified.

Further, I claim the alternate arrangement on the cutter-heads *c d*, when operating in specified relation to and connexion with the saws of the square and level nosed knives or cutters *s s¹*, for action with each other and the saws, in the formation of the shoulder, as set forth.

No. 14,289.—JOHN H. PALMER.—*Machine for Tenoning Window-Blinds*.—Patented February 19, 1856.

The carriage M, with the slats upon it, is pressed by hand in the direction of arrow *a* until it arrives in the position represented in figure 2. The outer ends of the cutters K cut the slats the proper length, and the two cutter disks are pressed inwards by the cams G G operated by belts *b b*. As the cutter disks are pressed together, the concave edges of the cutters cut the tenons on the slats, the tenons entering the holes *e*; when the prominent parts of the cams have passed the ends of the arbors F F, the disks are thrown back by springs I I, and the carriage is moved back for the reception of new slats.

The inventor says: I do not claim the disks J J and carriage M, in themselves considered, nor when operating conjointly, irrespective of the peculiar manner of operating the disks, as herein described.

I *claim* operating the disks J J, to which the cutters K are attached, by means of the cams G G, arranged substantially as shown, for the purpose specified.

No. 14,220.—B. J. BARBER.—*Improved Method of Tonguing and Grooving Tapering Boards*.—Patented February 12, 1856.

As the board (represented in the engravings by broken lines) is fed along on the bed G, the bed can be gradually raised by revolving the

screw N, worm-wheel L, pinions J J, and racks I I, (these latter being attached to bed G,) so that the taper of the board is compensated for, and the cutters are brought gradually nearer together; it being understood that shaft D¹ with its cutter-head F¹ is connected to bed G, and moves with it. The feed-roller E is pressed upon the board by a spring F.

Claim.—The movable bed G, with shaft D¹ and cutter F¹ attached; said bed being operated substantially as herein shown and described for the purpose specified.

No. 14,173.—ELBRIDGE WEBBER.—*Improved Device in Tree-Nail Machines.*—Patented January 29, 1856.

One end of the piece of wood from which the tree-nail is to be turned is secured in the square socket S, and the other end entered into the mouth of the box P, the gauge-rod *g* being adjusted to give the requisite size to the tree-nail by turning set-screw *h*. The socket S is then revolved, and at the same time the box P moved towards the said socket, when the cutters *c* and *d* will give the proper form to the tree-nail as it passes through the box. The open mouth of the box admits of the tree-nail being turned so that any curvature of the block will be followed, and the tree-nail turned without cutting across the grain. Fig. 1 represents part of a plan, and fig. 2 a vertical section of the machine.

The inventor says: Disclaiming the traversing of the forming box over the tree-nail, and the alteration of the size of the tree-nail by the expansion and contraction of the cutter-box, broadly considered—

I *claim*, as an improvement in tree-nail machines, the construction of the traversing forming-box of a flaring-mouthed bit-holder, combined with a slide *g*, whose upper surface composes so much of the form box opening as lies below the plane of the bit-seat produced, perpendicular to which plane said slide is adjustable for changing the size of the tree-nail, the operation being as herein set forth.

No. 15,913.—SIMON INGERSOLL, assignor to THE FARMERS & MECHANICS' MANUFACTURING COMPANY.—*Improved Method of Felling Trees.*—Patented October 14, 1856.

In operating this machine, the outer end of the frame A is placed against the tree U to be sawed down, the end of the frame being attached to a hook driven in the tree. Motion being given to the shaft G, the crank pulley D and pitman P give a reciprocating motion to the saw O, which is fed to its work by the spring R, the saw O cutting as it is drawn backwards. The feed is regulated by adjusting the lever S so as to increase or diminish the strength of the spring.

Claim.—Attaching the saw O to the bar M, which is connected with the levers J J L L and bars K I, as shown, the bar I being connected with the spring R; the whole being arranged as described for the purpose set forth.

No. 15,178.—GEORGE C. ERSHAM.—*Improved Method of Felling Trees by Saws.*—Patented June 24, 1856.

The collar A being fitted to the tree, the rack or rim C and cutter G are rotated around the tree by turning the crank shaft I, the chisel cutting into the tree circumferentially, and being gradually fed into it by the threads F *f* on the collar and chisel till the body of the trunk is cut through.

Claim.—The collar or band A, with annular rotating rack or rim C attached, and the chisel or cutter G fitted within the socket D, which is attached to the rack or rim, the chisel or cutter having portions of screw-threads *f* on its under side which fit between a spiral thread E on the collar or band A.

No. 15,310.—ELBRIDGE WEBBER.—*Improved Turning Machine.*—Patented July 8, 1856.

The pattern is secured between the upper pair of centres C C¹, and the material to be turned between the lower pair. If the turning is to be performed from a reverse pattern, the frame A is left free to vibrate, the cutter-carriage is run towards it, and the protrusion of the gauge-rod G regulated so that the reverse form shall always press against its head. The weights *n*, by keeping the upper portion of the frame A drawn back, will insure a constant contact between the reverse form and the gauge-rod G. Motion is imparted to the main shaft, the cutter-wheel H, the reverse form, and the material to be turned; the gradual movement of the carriage E in the guides *v* causing the cutters to act upon the entire length of the piece to be turned. To reverse the motion of the carriage, that end of the chain *t* which has drawn the carriage is cast loose, and the other portion of said chain fastened to it.

The inventor says: I do not claim turning from a reverse pattern by suspending the pattern and turning centres in a vibrating frame; nor do I claim turning from a fac-simile pattern by means of a movable cutter-carriage; but I *claim* the arrangement of the frame containing the pattern and turning centres relative to the gauge-rod and cutter-carriage, whereby the said frame may be fixed and the carriage movable, or the reverse, so that either a fac-simile or a reverse pattern may be used without any change in the machine.

No. 16,308.—JOSEPH H. GOODELL.—*Improved Machine for Cutting Veneers from the Log.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claims and engravings. Motion is imparted to the log-carrier B by means of the reciprocating driving-shaft *a*.

The inventor says: I am aware that the same character of double movement of the stuff to be operated on by a fixed knife, namely, combining with the curvilinear movement of the stuff a simultaneous lateral action or drawing stroke, by means of a hinged frame or table,

working in connexion with fixed guiding strips, is common to stave-cutting and other similar machinery; such, therefore, I do not elaim.

But I *claim*, in veneer cutting, the combination and arrangement, shown and described, of the reciprocating log-carrying slide B, unsupported by trunnions or axles for its curvilinear play, with the fixed guiding strips c and stationary knife D, when said guiding strips serve as the sole guide to give to the log-carrier, operated as specified, its curvilinear movement, and simultaneous side action, as and for the purposes set forth; and whereby a steadier and more reliable double bearing is given to the log in its two movements, the log may be secured with facility to the carrier, and the driving power is communicated to the log in a more positive and direct manner for cutting with increased ease and precision thin veneers, as set forth.

I also claim hinging the knife-holding frame G to the main knife-feeding slide or frame H, for the easy and double adjustability of the knife, as shown and described.

No. 14,337.—CHAUNCY H. GUARD, assignor to JOHN A. SCROGGS and CHAUNCY H. GUARD.—*Improved Wheelwright Machine*.—Patented February 26, 1856.

The levers E E¹ are secured to the front ends of the shafts D D¹. The weighted outer end of arm E, acting through the medium of the lever E¹, the shafts D D¹, the toothed segments H H, and the toothed saddles I I, will force inwards both the shafts C C with sufficient force to drive the boring bits e e, when they are rotated, into the hub A.

Claim.—The combination of the boring and mortising shafts C C with the levers E E¹, through the medium of the toothed saddles I I, the toothed segments H H, and the oscillating shafts D D¹, or their equivalents, substantially in the manner and for the purpose herein set forth.

No. 14,577.—JOHN SITTON.—*Improved Wheelwright Machine*.—Patented April 1, 1856.

Fig. 4 is a view of a clamp D; n n are arms which hold the clamp in position by being inserted into holes in the wheel B. The timber to be cut is secured to the wheel by means of the screw O.

a a (fig. 3) are guides between which the knife-slides b b work; d is a clamp for securing the guides and slides. The cutters e e are secured in a groove by means of a dovetailed plate f, which catches into a notch at the end of the cutter. By operating the brace h, the screw g moves the slide forward or backward by means of the nuts i.

Belt P operates a shaft which carries the polishing wheel and the finishing wheel L.

The polishing wheel contains a groove (as seen in fig. 2) which contains the polishing material. S is a felly mitre for the purpose of measuring and cutting fellies to the proper length. J J J J are saw guides, (fig. 2); u u u u are pins, adjustable to any size of wheel, in the holes.

The carriage-wheel M is secured to the wheel L by means of the clamps N N. Q is a rest upon which a gauge is held for the purpose of finishing up the rim of the wheel.

Claim.—1st. The double-faced wheel B, working upon an axle and made strong by flanges on the axle, upon which the blocks C C, from which the fellies are cut, are secured by the clamps D, as herein set forth.

2d. The construction, operation, and use of the clamps D, as herein specified.

3d. The construction, arrangement, and operation of the knives or cutters E, as herein set forth.

4th. The construction and operation of the grooved wheel, fig. 2, as herein set forth.

5th. The felly mitre S, constructed and operating as herein specified.

6th. The attachment of a carriage or other wheel M to the finishing wheel L, as herein set forth.

All other parts and operation of the machine I disclaim.

No. 15,593.—ABIJAH D. STOWELL, assignor to JOHN A. PLACE.—*Improved Wheelwright's Machine*.—Patented August 19, 1856.

The spoke-set A A is attached to the front end of the hub C, with the carriage F containing the hollow auger G attached. The gauge D is set the proper length for the spokes by means of the thumb-screws B; the spokes are then driven into the hub, and their position adjusted by means of the gauge D; and the tenon is cut at the end of each spoke by means of the hollow auger G.

Claim.—The combination of the spoke-set with the carriage carrying the hollow auger, when the whole is attached to the hub while resting over the pit, as set forth.

No. 15,901.—JOHN SITTON.—*Improved Wheelwright's Machine*.—Patented October 14, 1856.

Motion is imparted to the various tools of this machine from the pulley B, and by means of the shaft C.

The hub, being fastened on hub plate P, can be turned thereon; the hollow auger of the sliding-shaft D serves to cut the tenons on the ends of the spokes; it can be replaced by a common bit for boring the mortising holes in the hub. The augers E serve for boring the holes in the spoke tenons and the dowel holes in the end of the fellies. The fellies rest on the blocks R, and are secured there by means of the levers L. The circular saw F serves for cutting the ends of the fellies to the proper slope, the fellies being placed for this purpose on the sliding leaf M.

The inventor says: I do not claim the several devices described separately, but I *claim* them when combined and operated as specified.

No. 15,079.—A. S. MACOMBER.—*Improvement in Wheelwright's Machinery*.—Patented June 10, 1856.

This invention consists in holding or clamping the hub D upon a suitable bed, in the manner as shown in the engravings.

Claim.—The jaws E, operated by the screws H, worm-wheels F, and connecting-rods G, one pair of jaws being attached to an adjustable bar B¹, the above parts being arranged as shown, for the purpose specified.

No. 15,944.—THOMAS BLANCHARD.—*Improved Method of Bending Wood*.—Patented October 21, 1856.

The timber to be bent is fitted into the strap R and placed upon the bed-piece K, one end of it being clamped to the bending-lever D, between the abutment F and the clamping-piece I, operated by screw G. The timber is clamped on all sides and subjected to pressure whilst it passes from the straight mould O to the curved mould Q. The operation of bending is accomplished by turning the bending lever D on its fulcrum by means of a rope and windlass, as represented in the engraving.

The inventor says: I do not now claim submitting the timber to compression upon its ends.

But I *claim*, 1st, subjecting the timber to pressure upon all sides, and continuing the same whilst it is being transferred from the straight trough to the curved mould, as set forth.

2d. The described machine for the purpose of bending timber, consisting essentially of the following elements, or their equivalents, in combination: 1st, the bending-lever; 2d, the device for compressing the timber while it is being bent; 3d, the curved mould in which the pressure is continued, and in which the timber is removed from the machine after the bending operation is completed.

No. 15,851.—EDWIN KILBURN, ARTEMUS KILBURN, and CHENEY KILBURN.—*Improved Method of Bending Wood*.—Patented October 7, 1856.

The stick to be bent is placed into the channel E, and the driver C, being set in motion towards the mould, forces it endwise into and along the mould, causing it to assume the form thereof without injury in any part.

Claim.—The bending of wood by forcing it endwise of its fibres into a mould, which is closed on all its sides, but has an open end, is curved longitudinally in the required form, and has the dimensions of its internal transverse section of the piece of wood; thus causing the wood to be confined in a lateral direction during the bending process, for the purpose of preventing the separation of the fibres, as described.

No. 15,441.—NELSON RUGER.—*Improved Devices in Carving Wood*.—Patented July 29, 1856.

The pattern R is attached to the cylinder D, and the pieces of wood to be carved similarly to the pattern R are attached to the cylinders C and G, motion being imparted to the shaft B from pulley E, and the screws F and H are rotated in a reversed direction by means of the pulleys a a. The pattern passes underneath the tracer g, raises the arms N, and a corresponding motion is given to the cutters e c, the bar Q communicating said motion to the arms K L. The cylinders C and D are fed by the screw H; the cylinder G is cut in a reverse manner, and is fed by screw F. The work on the pulleys C and G may, when desired, be cut larger than the pattern R, by shoving the bar Q back on the rod P, the latter being attached to the bar O, so that the ends of the bar Q may be nearer the bars I J, thereby causing the outer ends of the arms K L to vibrate or work with a greater stroke or vibration.

Claim.—The cutters c d g, in combination with the bars I J, having arms K L N attached to them, these arms having bars M O pivoted or jointed to their outer ends, to which the cutters e and tracer g are attached, as shown and described.

2d. I claim the bar Q, placed on a rod P, which is attached horizontally to the vertical bar O, the ends of the bar Q fitting between the arms K L, as shown, for the purpose set forth.

No. 14,472.—PHILIPP SCHWICKARDT.—*Mode of Producing Designs on Wood*.—Patented March 18, 1856.

The nature of this invention consists in compressing wood, artificially softened, between two forms containing the design to be produced, (one the obverse, and the other the reverse of the design).

The forms used are such that the contour and all the higher points are equally high, and all the lowest points equally deep.

The inventor says: I *claim*, not the production of raised designs, but of veins, streaks, drawings, pictures, and designs on the plane surface of the woods, by means of pressure, the forms of dies above described, and the application of the same for the productions of such veins, streaks, drawings, pictures, and designs; the exclusive use of the design produced through the body of woods when compressed between proper forms, and the combination of two or more kinds of wood to produce the mosaic or inlaid work, by compressing, joining, and separating them, as above described.

No. 14,636.—EDWARD J. UPDEGRAFF.—*Improved Machine for Bending Wood*.—Patented April 8, 1856.

The dotted lines in the engravings represent the form, strap-block, and wood, as in the starting position, the strap lying upon the platform D, with the clevis e hooked over the pins; one end of the wood being stuck in the clevis e¹. it comes between the strap and the form G, which,

being pressed down by means of the screw *o*, turns as the platform *D* moves along. The ends of the wood 1 2 3 4 are secured to the form by means of bar *g* and hooks *c c'*. The spring *u*, upon which the lower end of the screw *o* presses, is designed to accommodate the pressure to any irregularities in the platform *D*.

Claim.—The peculiar method of operating the form upon which the wood is bent, by bringing it hard down upon the platform by means of the screw *o*, and giving it motion by means of the platform beneath it, (whether endless chain or otherwise,) separately and in connexion with the arrangement of the wheels *F* and *I*, the screw *o*, the spring *u*, the frame *K*, and the slide *H*, substantially as set forth.

No. 16,157.—JOB WHITE.—*Improved Method of Applying Steam to and of Cutting Scraps from Wood.*—Patented December 2, 1856.

A detailed description of this invention would take up too much space to be given here; the principal features of it will be understood by reference to the claims and engravings.

The inventor says: I do not claim the discovery or invention of cutting a board from the circular surface of a log by means of a circular or revolving disk, with cutters moving laterally; that was patented by me and Phineas P. Quimby, September 12, 1827. That machine never was able to work with any degree of facility or success, and remained my exclusive property.

Nor do I claim that steaming wood for the purpose of working it is an invention.

But I *claim*, 1st, the arrangement of the cams and beam in combination with the feeding-gear, by which the perpendicular and rotary motion of the log is made immediately after the cutter has passed through, giving exact feed to continue a circular kerf around the diminishing surface of the log, making a board of uniform thickness.

2d. The mode and arrangement by which I apply steam or heat to a log in the process of being sawed, by which I am able to apply it to the surface of the log immediately before the cutters, and at the particular time and place required for the work designed; the same result may be obtained by a cast-iron hollow form, by which either steam or heat may be applied to the surface of the log.

No. 14,405.—JOHN C. MORRIS.—*Improved Method of Bending Wood.*—Patented March 11, 1856.

The levers 7, strip 5, and piece of wood 4 (to be bent), are first in the position represented by dotted lines. By winding the cords 11 upon windlass 14, the levers, etc., will finally be brought into the position represented by full lines.

Claim.—The clamps 6 6 to prevent end expansion, and the levers 7 7, working on fixed fulcrums 8 8, when in operation; all substantially as and for the purpose set forth in the foregoing specifications.

No. 14,807.—CHARLES DAY and ALANSON D. LORD.—*Improved Machine for Splitting Wood.*—Patented May 6, 1856.

The handles of the axes *G* hang in an upright frame *E*, the ends of the handles coming under a horizontal wheel *C* on which are cams *D*, so arranged as to raise the axes a sufficient height that their weight shall give the required force to go through the wood to be split.

The inventor says: I do not claim the wheel and cams as my invention, as cams or wheels and shafts have long been used for giving motion to other parts of machines before. But I *claim* the particular application of the axes, raised in the manner set forth, for the purpose of splitting wood.

XV.—STONE AND CLAY.

No. 16,174.—JAMES H. BUCK and F. A. CUSHMAN.—*Improved Machine for Pressing Hollow Brick or Building-Blocks.*—Patented December 9, 1856.

The operation of this machine is as follows: The clay passes from hopper *U* into box *S*, and motion being imparted to driving-shaft *G*, the cam *K* operates lever *V*, and moves the filled box *S* over mould-box *M*; the clay passes down said mould-box, and box *S* is removed again under hopper *U*. At this time the cross-head *P* descends, and the plunger *Q* compresses the clay within the mould-box *M*; the cam *F* which regulates the movement of plunger *Q* causes said plunger to rise when the brick is formed; and now cam *L* raises plunger *N*, and the formed brick is raised flush with bed *T* and forced off therefrom by box *S* as it is moved over mould-box *M*.

The inventors say: We do not claim the sliding-box *S*, nor the general arrangement of the machines; for machines similarly constructed have been previously used.

We *claim* operating the plunger *Q*, by means of the peculiarly constructed cam *F*, in combination with the toggle *R* and cross-pin *i*, when the same are constructed and arranged to operate in relation to each other in the manner and for the purpose set forth.

No. 15,293.—JAMES A. HAMER.—*Improvement in Brick Machines.*—Patented July 8, 1856.

B represents the mould-wheel on shaft *C*, represented in part at fig. 3; *D* are the plungers working in the moulds on the wheel *D* and operated so as to move to the required points, as shown at fig. 2, by means of a shaft *E* passing through the end of the plunger, as shown at fig. 4, said shaft carrying on its ends small rollers, which run in the grooves

of the guide-plate, fig. 2. This plate is stationary, with the exception of the segment F, and the mould-wheel in its revolution causes the plungers to travel backward and forward. The segment F can be set up at the pressing point in order that the brick may be gauged to any thickness. The wheel M, fig. 1, being set in motion, and clay being thrown into the hopper P, the screw in the shell O receives the clay and fills the moulds as they revolve; at the same time the dust-box S is filled with fine sand, and the fan T set in motion; each mould is dusted previous to its being filled with clay, to prevent the brick from adhering to the mould. As the wheel revolves, the brick are first pressed, then the plunger backs a short distance, in order to free from the brick, after which the plunger again comes forward and gradually forces the brick from the mould into the endless belt. During this process the gates G are operated in such a manner that they are closed when the mould is filling, and open as soon as the brick begins to discharge. The scraper R closes the end of the mould at the pressing points; during the remainder of the revolution the end is open.

The inventor says: I do not claim the mould-wheel or the manner in which the plungers are operated, viz: by means of the stationary guide-plate, fig. 2.

But I *claim*, 1st, the adjustable segment F of the guide-plate, fig. 2, in combination with the plungers D, arranged as described and set forth.

2d. I also claim dusting the moulds of the mould-wheel with fine dry sand, preparatory to their being filled with clay, by means of the arrangement and combination of the blower or fan T, the sand-box S, the shaker-board Q, the arm U, weight-ball V, and shaker-rod W.

3d. I also claim the sliding-gate G, so constructed and operated by means of a small roller H running in the guide-plate I, that the mould is filled at the end by means of the screw in the shell O, while the wheel is in operation; said gate being closed while the mould is filling, and open during the discharge of the brick.

No. 14,100.—RICHARD W. JONES.—*Improvement in Brick Machines.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engraving, which latter represents the carriage and moulds in two positions—one in full, the other in broken lines.

The inventor says: I do not claim the pug-mill or mode of tempering the clay, for that has been previously used; neither do I claim the reciprocating carriage J, in itself considered.

But I *claim* feeding the moulds N underneath the grate F and pressing-roller C, and discharging them therefrom by means of the reciprocating conveyor J, springs L, catch-spring M, and roller K, when combined, arranged, and operated as shown and described.

No. 14,155.—LOUIS THEODULE DELASSIZE.—*Improvement in Brick Machines.*—Patented January 29, 1856.

The cylinder A contains the brick-moulds c, each provided with a movable bottom plate D. It will be understood from the engravings

how these plates are moved in and out, so as to perform the pressing process, by means of rods I and J connected to the arms of a rock-shaft E.

Claim.—The combination of the sectional pinion L and spring-toothed crane M with the rock-shaft E and pressing rods I J, arranged and operating substantially as and for the purposes above set forth and described.

No. 14,713.—PATRICK S. DEVLAN.—*Improvement in Brick Machines.*—Patented April 22, 1856.

By turning the hand-wheel D, a vertical reciprocating motion is given to the plunger I. When the plunger descends, the pin *i* passes through the slot *m*, until near the end thereof, without moving the bar *z*; but when the pin arrives at the bottom of the slot, it carries down the bar *z* and the follower *n*, until said follower rests upon the cross-piece *J*¹ of the frame. The brick being formed, the plunger rises; and when the pin reaches the top of the slot, the follower rises up also, carrying the pressed brick up into the receptacle O immediately above it; at this point of the operation, the wheel N is again brought around a portion of a revolution, (by means of pin *a*, arms *b b*¹ on shaft *c*, weighted arm *d*, bar R, bell-crank lever S, and ratchet-wheel U, with pawl V,) and the operation of pressing and delivering is again repeated.

Claim.—In combination with a stationary mould L and a reciprocating piston or plunger I, an intermittently rotating, feeding, and conveying apparatus N, through which the plunger passes to compress the clay and form the brick, and which remains to receive the brick as it is ejected from the mould, and carries it forward out of the way of the succeeding clay box; the whole being operated by an arrangement of devices, substantially as described.

No. 14,873.—EDMUND KINGSLAND.—*Improvement in Brick Machines.*—Patented May 13, 1856.

The clay, after having been worked and tempered, is deposited in the hopper M, from whence it is forced into the moulds by the revolution of the mould cylinder towards the pressure roller E, and is compressed in the moulds by the said rollers E as they arrive opposite the said roller. The moulds pass now in contact with the finisher F, and then onward till the ends of their respective piston-bars G G come in contact with the rollers *d d*, the action of which drives out the bricks, and deposits them on the apron W. The empty moulds then move onward till the ends *b* of their piston-bars G come in contact with the roller C, and at about the same time as this is effected, the dirt is sprinkled into the mould by the action of the revolving box or fan I, when the mould is in a state to be recharged with clay.

Claim.—The oscillating finisher F, provided with a pair of fixed *p p*, and a pair of movable bearings *o o*, and operating in combination with a

mould cylinder, containing flat-faced moulds, for the purpose of finishing the bricks with flat outer surfaces, as herein set forth.

2d. The employment, for varying the depth of all the moulds simultaneously to vary the thickness of the bricks, of the two cones H H, the right and left handed screw-shaft C¹, and the nuts g g, all applied to the mould cylinder-shaft, and operating in combination with the inclined edges e e on the piston-bars G G.

No. 14,947.—MARTIN BUCK, JAMES H. BUCK, and FRANCIS A. CUSHMAN.—*Improvement in Brick Machines*.—Patented May 27, 1856.

Motion being given to the pulley C, the shaft L will be rotated, the crank M and pitman N drawing inwards the upper end of the lever-frame O, and pushing the clay box X from underneath the hopper Z and over the mould V. The upper ends of rods D¹ are thereby disconnected from the projections k on frame T by means of the projections a¹ and rods D¹. When the parts are in this position, the pin m on the shaft L strikes the pin l on the shaft F¹, and said shaft, with the segments E¹ E and part pinions C¹ C¹, will be turned; and as the segments E¹ gear into the racks h¹ and the part pinions C¹ gear into the racks i, the block W and the rods D¹ will descend. The crank M and pitman N then throw the upper part of lever O outward, whereby the box X is thrown underneath the hopper Z. H then gears into pinion J, and I is turned by the wheel E, which now gears into pinion F, the crank P and pitman Q drawing inward the toggle R, and forcing the plunger U within the mould V. When the two arms of toggle R are in line, the plunger is depressed, and the crank P and pitman Q now raise the frame T and plunger U, and the springs n n force the hooks j on the rods D¹ over projections k; and as the racks i gear into the part pinions C¹, it follows that, as the frame T and plunger U rise, the shaft B will be turned, and the mould-clearer W will also be raised by means of pinion A¹ and racks h h; and the pinions A¹ C¹ are so proportioned that the block W will rise slower than the plunger, so as to allow said plunger to be sufficiently raised and be beyond the reach of the pressed brick, which is forced up out of the mould by the block W.

The inventors say: We do not claim the mould V, plunger U, and sliding sand or clay box X; for they have been previously used for moulding and pressing hollow brick, although operated separately, and quite differently arranged from the plan herein described.

But we claim connecting the plunger U with the block or mould-clearer W, by means of the rods D¹ having the racks i on their lower parts, which racks gear into the part pinions C¹ C¹ on the shaft B¹, whereby the plunger is allowed to rise more rapidly than the mould-clearer.

No. 15,276.—E. BRAMAN and R. PETERSON.—*Improvements in Brick-Machines*.—Patented July 8, 1856.

The clay is placed within the hopper B, and the beaters C mix the clay; the beaters on the lower shaft fill the mould-box T, when under-

neath the hopper B; when the box T is filled, the hook j on the wheel Q will come in contact with the teeth g on the bar O, and the mould-box will be moved forward below the front plate b and underneath the plunger D, which is raised at this time; the tooth j on the wheel Q then leaves the teeth g on bar O, and the mould-box is at rest while the plunger D is forced down by the toggles E upon the mould-box, compressing the clay therein. When the clay is compressed, the plunger D is raised by the toggles E, and the three teeth i on the wheel Q then fall in gear with the teeth g, and move the mould-box outward, and a vertical plate W is placed in front of the plunger; the springs s will throw the plungers l in the mould-box T upward, as the curved ends of the slots q will allow the rods o to rise, and the pressed clay will be raised to the surface of the mould-box. The teeth h on the wheel now fall into gear with the wheel R, and the bar O and mould-box are moved back to their original position, the pressed clay passing down the inclined plate U upon apron V.

Claim.—1st. The mould-box T, provided with the plungers l, when said plungers are operated by the springs s and rods o o working in the grooves q r, for the purpose of allowing the mould-box to receive the clay, and also to eject the compressed clay therefrom.

2d. We claim operating the mould-box T, when constructed and arranged as above set forth, or giving it a reciprocating motion with the necessary "dwells" to allow the box to be filled with clay, and also to allow the clay to be pressed therein by means of the rack-bar o and the wheels R P Q.

3d. We claim the combination of the plunger D and rods o o, working in grooves q r, with the mould T provided with the plungers l.

No. 15,546.—ISAAC HARMAN, assignor to Himself and WILLIAM BICKEL.—*Improvement in Brick Machines*.—Patented August 12, 1856.

The clay passes from the hopper W into the space between the two sliding moulds N N¹. Motion being imparted to the machine from the shaft H, the counterbalance r operates upon levers T, and links t so as to project the knife U forwards, and to separate the clay in the hopper from that in the mould. When the knife U has reached the farthest point, the machine commences its reverse stroke, and the points of the latches S have caught underneath the radial plate Q, rendering the latter a permanent base for the clay in the sliding-moulds to rest upon. The whole sliding-mould is now carried forward, until the two halves N¹ and N have been pushed so close together that the angular projections of one side with the angular projections of the other, and the reverses of both, form a series of oblong spaces in which the bricks are moulded. As the machine continues its movement, the motion of the connecting-rod L reverses, and the latches S are removed from under the plate Q, which drops down; and when the moulds N and N¹ are released from each other, the bricks fall on to the endless band and are removed.

Claim.—The moulds, composed of two halves N and N¹, having any convenient number of angular projections and recesses, the points of the angular projections of one half coinciding with those of the other half, the said moulds being caused to expand and contract, and being constructed and operated substantially in the manner and for the purpose set forth.

No. 15,618.—HENRY B. RAMSEY.—*Improvement in Brick Machines.*—Patented August 26, 1856.

As the cog-wheel A revolves, and the wrist B is moved towards the knuckle-joint P, the latter is straightened, raising the moulds J to the knives K K; at the same time that the wrist B is moved towards the knuckle-joint P, the wrist F draws the reciprocating car I back by means of the pitman 2, the goose-neck lever h, and the lever L; the cranks G also move back the pitmen 3 and the catches m, letting the springs S S pass the knives K K across the top of the moulds J. The slides N are worked by the knuckle-joint P, and are attached at the bottom to the pitmen Z Z, which pitmen are attached by joints a to the bottom of the springs S, which work upon the fixed pivots at B. At the raising of the slides N, the springs S are forced out by pitmen Z, moving the top of the springs in and the knives K across the top of the moulds J.

Claim.—1st. The wheel A, cranks G G, and catches m m, in combination with the springs s s, for the purpose of regulating the stroke of the knives K K, for cutting the clay at the top of the moulds J, as described.

2d. I claim the sliding mould-table T, for the purpose of raising the mould to the grate under the clay box, when the same is constructed, arranged, and operated in the manner and for the purposes set forth.

No. 15,766.—WILLIAM A. JORDAN.—*Improvement in Brick Machines.*—Patented September 23, 1856.

Motion being given to the shaft c, the cranks and pitmen h and h¹ operate the shoving boards e and f on which the moulds are placed; the moulds are thus moved on the two tables A and B in an opposite direction, and at each revolution of the shaft c, one row of moulds on one table is filled with clay from the hopper, while on the other table an empty mould can be replaced behind the shoving boards e and f; thus one operator, standing at each end of the tables A and B, can replace the empty moulds on one table and withdraw the filled moulds from the other table at the same time.

The inventor says: I do not claim the use of double tables, or the employment of a rotary scraper, as such devices have been used before; but I *claim* the tables A and B, and shoving heads e and f, when arranged to operate in relation to each other in the peculiar manner described, in combination with the rotary scrapers K K¹ and curved guards O O¹, the whole being constructed and operating in the manner and for the purposes set forth.

No. 15,798.—HENRY BRAD.—*Improvement in Brick Machines.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—I claim the self-adjusting frame a, for the purpose of removing the brick from the moulds on to the apron b b after they are pressed, operated by means of spring t and projections O o on the revolving journal H, when the above parts are constructed, arranged, and operated as set forth.

No. 15,808.—JOSEPH A. HILL.—*Improvement in Brick Machines.*—Patented September 30, 1856.

The mixed clay passes from the hopper A into the case I underneath the semi-cylinder H; and as said semi-cylinder oscillates, the clay is forced into the moulds N, which are carried underneath the case I by the carriage J, which is moved forward underneath the case when the rod k is moved by the hand of the attendant, so that the pinion j will be thrown in gear with the rack-bar K, said pinion being out of gear with the rack-bar when the mould reaches the proper point or position. The return motion is given to the carriage by throwing the pinion i into gear with the rack-bar. The filled moulds are pressed forward or thrown out from underneath the case I by the succeeding moulds.

Claim.—The drum L, provided with the pinion i, when constructed as shown, and arranged to operate relatively to the rack-bar K and pinion j as described, for the purpose of reciprocating the carriage J, in the manner and for the purpose set forth.

No. 15,863.—GEORGE ISHABOD WASHBURN and EPHRAIM H. BELLOWES.—*Improvement in Brick Machines.*—Patented October 7, 1856.

The arm L at its lower end rests in a suitable bed or cavity h in the top of the plunger I; and as the plunger is carried forward with the cylinder D, by the rotation of said cylinder it is forced down into the mould C, and the requisite pressure is put upon the clay. As the plunger passes the centre, the arm L escapes from the cavity h, and is carried back to its vertical position by the weight N². As the plunger I rotates with the cylinder D, after the escape of the lever L, it is withdrawn from the mould as follows: r r are rollers attached to the plunger, which strike against the arms O pivoted to the frame at q. These arms are forced back by the plunger; and as their upper extremities lie immediately beneath the rollers, the latter are raised, and thus the plunger is drawn out of the mould; at the same instant the pin f, escaping from the pin g upon the cylinder, permits the plunger to be carried back, ready to be again operated when the next mould C comes round.

Claim.—We claim the combination of the balanced arm L with the weighted reciprocating plunger I, operating in the manner and for the purpose substantially as set forth.

2d. We claim the means by which the plunger is locked with and disconnected from the cylinder D, consisting essentially of the pins *f* and *g* and the arms *o*, operating in the manner substantially as described.

No. 15,005.—GEORGE CRANGLE.—*Improvement in Rotary Brick Machines*.—Patented June 3, 1856.

The shaft C being rotated, lever M is depressed and lever T is lifted, which latter being coupled to the ratchet R by means of the pawl U, causes the cylinders to rotate until checked by the lower branch-lever P engaging with the ratchet Q. One of the plungers now comes in contact with one of its moulds and forms the clay into a brick. The radial arm L¹ depresses now lever N, lifting P and drawing back the pawl U into the next notch, whilst the plunger which has just pressed the clay rises, and the other one descends, and the cylinders are rotated the length of another notch of the ratchet R, and a second brick is pressed in the other cylinder, and so on.

The inventor says: I do not claim a rotary double-cylinder brick machine, as such machines have been used before; nor do I claim arranging the moulds around the cylinders so as to alternate with two plungers on one actuating shaft.

But I *claim* the apparatus for rotating and stopping the cylinders of rotary brick machines. The said apparatus consisting of the armed disk I, the branched-lever M, the bent lever T, pawl U, and the ratchet wheels Q and R.

No. 15,471.—JOHN BOYNTON.—*Improved Brick Press*.—Patented August 5, 1856.

An intermittent rotary movement is imparted to the horizontal circular moulding-plate C, whereby it is made to stand still during each up and downward motion of either of the plungers U and V. In consequence thereof, each of its matrices *a* in succession will be charged with clay from the hopper K, and afterwards be moved around underneath the compressor U, and when subjected to its action be moved around underneath the discharger V.

The inventor says: I do not claim a brick press, composed of a revolvable moulding cylinder or prism, having moulds placed in its perimeter or cylindric surface, a mechanism for supplying or filling clay into the moulds, a pressing mechanism, a discharging mechanism, and a mechanism for imparting to the moulding-cylinder an intermittent rotary motion.

But I *claim* the rotary matrices *a a* and the plate C in which they are formed, hopper K, filling-plunger L, compressor U, bed or mould-plate B, and discharger V, arranged in relation to and in combination with each other so as to be operated by mechanism, as described.

No. 15,778.—ETHAN ROGERS.—*Improved Hydraulic Brick Press*.—Patented September 23, 1856.

The mould C being filled with clay, the pumps are put in operation, and the water is forced through the tubes B¹ and C¹ into the cylinders D E, through the passages K L, the valves O¹ *o* being open, and the valves *d f* being closed. The two plungers F H are consequently forced towards each other, and the clay in the mould C will be compressed with a power equal to the pressure of the water in the cylinders D E.

Claim.—The employment or use of two pumps with the mechanism for working the same under different pressures, when arranged to operate in relation to each other and mould C, for the purpose of pressing and removing the brick, in the manner described.

No. 14,012.—JOHN B. COLLEN.—*Improvement in Brick Presses*.—Patented January 1, 1856.

Fig. 1 represents a side elevation of the machine.

Fig. 2 a longitudinal vertical section.

The operation of this machine is as follows: The clay is thrown into the chamber E. On giving motion to the shaft B, the roller R will be made to traverse the chamber E, and force the clay into the mould-box *m*, in front of the piston P. The pressure of the roller *a*¹ in cam C drives the piston forward and forms the brick; the motion of the piston then ceases, and the small cams *c* (fig. 1) begin their pressure on the short arms of the levers *l*, causing their long arms to lift the gate G; simultaneously with which movement, the roller *a*¹ of cam C, acting on the projection *f* on the opposite side, withdraws the piston to permit the free upward motion of the gate. At the completion of this elevation, the roller *y* of the cam C comes in contact with the frame D on the side of the acting piston, and, pressing the piston to its extreme stroke, delivers the brick into the box *v*.

The inventor says: I make no claim to stationary mould-boxes of themselves, nor to the use of cams, in producing the intermittent action of the pistons, nor to the peculiar shape of cams; but what I do *claim* as new, and of my own invention, is, the employment of stationary mould-boxes, in combination with the vertically moving-gate, actuated substantially as set forth, and the intermittent action of the pistons, whereby the brick is pressed and delivered by a single piston, as specified.

No. 14,195.—HARVEY J. HUGHES.—*Improvement in Brick Presses*.—Patented February 5, 1856.

A is an oil globe, (fig. 4 represents a section of the same on an enlarged scale,) for the purpose of introducing oil into the chamber *o* in the stationary head of the press, and through holes *c c* into the mould. The recesses *d* serve to prevent the holes from closing up during the passage of the mould up and down.

The operation consists in adjusting the bricks upon the movable head of the press and bringing down over the bricks, after they are thus placed, the mould D, by the action of the cam upon axis A¹. After this, (the cam being properly shaped,) the mould remains stationary for a time, during which, the press-head G is made to rise, by the action of eccentric E¹ and levers 1 2 3 and 4; the cam then raises the mould, leaving the brick free to be removed from the off-bearing table E, by another being brought into position upon the movable head of the press by the feed, and displacing the one already pressed, which operation is performed by the further revolution of the cam.

Claim.—1st. The table actuated as above described, or by any other equivalent means, by which the bricks are discharged after being pressed, and by which they are borne away from the press-head.

2d. The specific arrangement, above described, for oiling the mould during its passage up and down over the head.

No. 15,135.—LEWIS KIRK.—*Improvement in Brick Presses.*—Patented June 17, 1856.

The dry clay passes from the hopper in front of the compressing piston, which, by the action of crank J, forces it against the head of piston P, at this time constituting the back of the mould, as shown in fig. 2. As the crank J withdraws piston P¹ from the face of the moulded brick, pin *i* is drawn by groove *f* towards the axis of shaft I, forcing rods *r* towards the mould-chamber, thereby moving cranks *s*¹, and thus turning the trunnions *a* of the mould-chamber. This position is represented in fig. 1. During this movement, bar *d* is forced to traverse the slot *c*, and is thus carried towards the axis of trunnions *a*, forcing piston P into position shown in fig. 1, which discharges the brick. As the chamber A passes downward, the clay-guard B covers the opening below the hopper and prevents the issue of clay therefrom.

By the continued rotation of shaft I, the pin *i* is, after the passage of point *x*, carried from the axis of the shaft, causing the mould-chamber to rise. During this movement, slot *c* draws piston P backwards, and the chamber is ready for moulding another brick.

Claim.—The oscillating mould-chamber A, in combination with the clay-guard B, concentric with its trunnions *a* and the piston P, actuated by the oscillation of the mould-chamber.

No. 14,052.—EDGAR CONKLING.—*Improvement in the Form of Building-Bricks.*—Patented January 8, 1856.

The nature of this invention consists in a form of brick that affords improved facilities for grouting one or several courses of brick after laying, and enables the mason to lay the bricks either wholly without the use of a trowel, or with mortar courses so thinly spread as to exclude the disintegrating action of the weather, and thus to attain greater strength and durability, and a neater and more lasting finish.

The inventor says: I disclaim forming bricks with holes running

vertically through them, such having been proposed in the English patent of Caleb Hitch; but I *claim* the brick, as described, having marginal ribs *d e* skirting three sides, and a central rib *f* across the middle of the bottom surface, (or of the top and bottom surfaces thereof,) said ribs enclosing cavities *b b*¹ adapted for the reception of grouting, in combination with covering on the inner edge, affording passage for grouting from above to the cavities *b b*¹ below the bricks, or devices substantially equivalent.

No. 14,846.—S. W. WOOD.—*Improvement in the Manufacture of Machine Bricks.*—Patented May 6, 1856.

The hopper B, being filled with prepared clay, is elevated to any required height by rotating the cam E; when the point V of this cam passes from beneath the lug F, the hopper B drops upon the table, forcing by the concussion the clay into the moulds.

Claim.—Moulding brick by concussion, whether it be by this or any other mechanism.

No. 15,329.—MARINUS P. CRAPS.—*Improved Machine for Striking Unburnt Brick.*—Patented July 15, 1856.

The clay passes from the apron F into the hopper C under the follower D, and fills the moulds K. The follower D is then pressed down by means of a lever, and the lever I is moved forward, which causes the bevelled edge of the striker G to separate the clay in the mould-box from that in the hopper, and to run over and press down into the mould any small lumps, gravel, or stone, thus rendering the surface smooth and firm.

Claim.—Operating the follower D and striker G by means of mechanism constructed and arranged as above described.

No. 15,374.—AMBROSE FOSTER and G. M. FOSTER.—*Improved Machine for Moulding and Pressing Building-Blocks from Clay, &c.*—Patented July 22, 1856.

The material is placed within the hopper M, when in the position shown in dotted lines; and as the driving shaft is rotated, the hopper M is moved forward by cam *j j* and lever N to a point directly over the press box J, and the material falls into the press box. The hopper then moves backward till the cross plate U covers the press box; the plunger I is now forced upward by cam H, and the material compressed within the box. Just previous, however, to the rising of the plunger I, the cam *l* will strike against the lower end of the lever Q, and will force the press box J and plate L against the cross plate U, and retain it there until the material is pressed, when the press box falls to its original position.

Claim.—We do not claim a sliding hopper, nor do we claim a core

placed within a press box for the purpose of moulding hollow bricks; for these devices have been previously used.

But we claim, 1st. The sliding hopper M, plunger I, and vibrating press box J, when the above parts are moved or operated relatively to each other as shown, for the purpose specified.

2d. We claim operating the hopper M, press box J, and plunger I, by means of the cam H on the shaft G, the ledges j j^1 and l on the wheel F, and levers N Q, the above parts being constructed and arranged substantially as shown and described.

No. 15,197.—CARL F. SCHLICKEYSEN.—*Improved Pug-Mill for Mixing Clay*.—Patented June 24, 1856; England February 24, 1856.

In order to obtain a regular feed for every degree of tenacity of plastic material, the inclined knife k is used, its action being both to work and press the matter above it, and to prevent the adherence of the clay.

The overlapping of the blades h prevents the possibility of the clay escaping from under the rotating blades, except at the outlet r .

The vessel m turning with the shaft g assists in the discharge of the plastic material from the case a , forcing it upwards towards the opening r , in the same manner that the mass is pressed towards the opening r from above.

The inventor says: I wish it to be understood that I do not intend to claim the use of radial blades or beaters for forcing down clay into or through moulds or dies, as that has long been practised.

But I claim, 1st. The employment of the clearing knife K, in combination with the hopper b , the tapering case c , and beaters h .

2d. I claim the rotating bottom m , in combination with the beaters h .

No. 15,540.—GEORGE H. WOOD.—*Improved Rock-Drill*.—Patented August 12, 1856.

Motion being given, the crank K will, during one half revolution, carry the hooked pitman L away from the gripping levers, while the other half revolution carries the hook a^1 on the pitman under the lever N, which, acting upon O, causes it to gripe the drill firmly and lift it up, while the arm of the griper O, working in the angular guide, causes the drill to rotate a certain distance during each upward motion. The hook a^1 having been carried away from beneath the lever N, the coil-spring S instantly depresses the lever N, thereby loosening the hold of the griper O, and fastening the griper N upon the drill-bar, which is then thrown down by the combined action of the spring and griper N, with a force greater or less, according to the position of the spring upon the rod R. When the under surface of the griper N strikes the horizontal plate a , it is thrown into a position at right-angles with the drill which is thus loosened and passes freely down to its work.

Claim.—The combination of the hooked pitman, crank, and strap, when arranged as described, as a mechanism for lifting the drill, substantially as set forth.

No. 16,146.—MARTIN GORE and JOHN P. GORE.—*Improved Rock-Drilling Machine*.—Patented December 2, 1856.

The machine being set in motion, the cam L in revolving comes in contact with collar M, and raises the drill-bar A, which brings collar N in contact with arm O, and causes the levers P and Q to vibrate as it rises and falls with the drill-bar. The pawls S and T attached to levers P and Q operate the ratchets U and V, and thus feed the frame and drill down as fast as the drill cuts.

Claim.—We do not claim feeding the drill at the end, or during its down stroke, by the action of its head on the device holding its suspending mechanism, another operation being required for turning the drill, as such constitutes no part of our invention.

We claim the combination of the rock-shaft and its arms O P Q with the pawls S T, ratchets V U, and the collar N on the drill-shaft, for effecting the feed and turning of the drill by the upward movement of its shaft, as set forth.

No. 15,595.—WILLIAM M. BARTON, assignor to Himself and ROBERT M. BARTON.—*Improvement in Rock-Drills*.—Patented August 19, 1856.

The main shaft C, receiving its motion from a crank G, bears a wheel H, the teeth upon which cover only small segments, being that of the desired number of blows of the drill during a revolution of the shaft. The teeth are made to catch against the teeth of the ratchet-wheel I upon the shaft D, and this shaft bearing also the cog-wheel J, which gears into the cylindrical rack K of the drill, effects its intermittent rise. The shaft D is provided at one end with a coiled spring L, riveted to a drum M, which is loose on the shaft D, and can be kept stationary by inserting the catch N into one of a series of holes on its circumference. When the drum M is loose, the drill B falls by its own weight as often as the ratchet-wheel I is released from the teeth of the wheel H; but when the drum is fixed, it forms a resistance to the spring, which reacts when the released end drives down the drill B with a force graduated by changing the hole into which the spring N catches, whereby the tension of the coiled spring L is regulated.

Claim.—The combination of the segmentally toothed-wheel H, gearing into the ratchet-wheel I, with the spring L and its drum M, when their parts are arranged as set forth.

No. 15,665.—JOHN F. McCULLY.—*Improvement in the Manufacture of Black Bottle Glass*.—Patented September 2, 1856.

The nature of this invention consists in using a combination of sand, soda-ash, lime, common salt, and clay slate, for the purpose of furnishing the coloring matter of black bottle glass, as well as forming one of the bases of the glass itself.

The inventor says: I do not claim as new the process of reheating the batch, as applied to the ingredients heretofore used for making

black glass, but only as applied to and necessary for the batch, if the specified clay slate is used as one of the constituent ingredients.

I *claim* the introduction of the above specified clay-slate as one of the ingredients in compounding the usual batch for the manufacture of black glass, in the proportion and in the manner as specified.

No. 15,548.—HENRY W. ADAMS.—*Improved Mould for Pressing Glass Fountain Lamps*.—Patented August 19, 1856.

A sufficient quantity of molten glass being poured into the mould A, the pistons C and E are pressed down, forcing the glass into the proper recesses, which correspond with the shape of the reservoir *b* and cup *c*, the piston D serving to compress the glass and to cause it to fill the mould completely. When this is accomplished, the pistons D C and E are removed from the moulds, and the part K, which closes the passage from the reservoir to the cup, is removed by the arm G of a mould resembling in its shape a pair of tongs, as represented in fig. 2, the part F being inserted in place of the mould E. The plate H is then applied to the bottom of the mould, and a piece of glass is inserted into the aperture *s s* corresponding with the one made by the core *j*; and, when said piece has been inserted, it is pressed downward and kept from spreading by means of a piston I driven into said aperture. The cast is now completed, and the mould may be ultimately removed.

Claim.—The mould, composed of the several parts specified, combined and operating substantially as specified.

No. 14,838.—WILLIAM P. WALTER and JACOB GREEN.—*Improvement in the Ladling of Molten Glass*.—Patented May 6, 1856.

The action of the bar G and pulley J, to which the ladle P is suspended, as well as the assistance they render in facilitating the operation, will be too apparent to need further description.

The inventors say: We do not wish to confine ourselves to the exact form or position of the rail G; but we *claim* the employment of a suspended ladle for facilitating the manufacture of glass, substantially in the manner set forth.

No. 16,085.—PHINEAS BURGESS.—*Improvement in Machinery for Polishing Glass*.—Patented November 18, 1856.

The glass slabs F are secured to the frames E attached to the cranes D by means of the pivots *d* and the polishing-bed B, which is covered with felt or cloth, and is rotated under the glass plate. The polishing-bed is provided with concentric circular grooves *a*, which are eccentric in relation to the axis C of said polishing-bed, in order to prevent any part of the surface of the glass being escaped by the polishing surface in their rotation.

The inventor says: I do not claim the grooving of the beds for pol-

ishing glass; but I *claim* an improvement on Alfred Broughton's patent of November 7, 1854, and reissued February 12, 1856, viz: the employment and use of grooves arranged eccentrically upon the polishing-bed B, in combination with the cranes D and frames E, as set forth.

No. 14,411.—JOB SANDS.—*Improvement in Lime Kilns*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim and engravings.

Claim.—Having the fire-chamber B¹ of the kiln so constructed that the bottom will be but a short distance below the door C, no grate-bars being employed; and having an aperture *a* made through the door, so that the air that feeds the fire will act horizontally upon it and nearly in line with the opening *a*¹, for the purpose specified.

No. 15,549.—LEVI AVERILL.—*Improvement in Lime Kilns*.—Patented August 19, 1856.

The fire passes from the furnace A through the small flues *e e* into each branch C C of the shaft B, from whence the heat ascends through the mass in the furnace. By this arrangement the fire is carried through every part of the charge, burning the centre and sides equally.

Claim.—The construction and arrangement of the kiln with small separate branches attached outside or around a single furnace, from which the heat is conducted through converging passages to several points of their peripheries, substantially in the manner and for the purposes set forth.

No. 16,033.—GEORGE J. WARDWELL.—*Improved Machine for Sawing Marble and Stone*.—Patented November 4, 1856.

The vibration of the saw-frame B carrying the pin I causes the lever D with its friction-roller G to swing with it. The friction-roller G is thereby made to pass over the circular bearing-surfaces O of the cross-levers C, allowing them, with the cords K and weights J, to fall when the saw-frame B swings from, and to rise when it springs towards, the centre of its stroke; thereby giving the saw-frame B a straight motion, and allowing the saws to remain in the cut the whole or greater part of its stroke.

Claim.—Suspending the swinging saw-frame B from levers C C, when arranged as described, and constructed with or without the circular bearing-surface O resting on the friction-roller or rollers G, in the end of the vertical lever or levers D, attached to and swinging with the swinging saw-frame B, the whole being arranged in the manner and for the purpose specified.

No. 14,296.—PHILIP SCHRAG and WILDERICH JOSEPH KAMMERHUBER.—*Improvement in Machines for Sawing Marble in Obelisk Form.*—Patented February 19, 1856.

A is a frame suspended by weights and moving vertically between the frame-posts B; frame B has slots on each end to receive the standards C C¹, which latter are provided with guide-pieces D D¹, through which the ends of the saw-frames E slide. The angle of the saw-cut is changed by sliding the standards in the above-mentioned slots, after which they are secured by set-screws. The saw-blades F are strained in their respective frames E, the ends of the latter being provided with head-blocks G (fig. 3), to which the shafts of the ratchet-pulleys H are secured by means of two set-screws. To each pair of pulleys are fastened the ends of a cord, which is tightened by being wound upon their respective pulleys, which are kept in position by the ratchet-wheels *w* and pawls. The cords, in passing from one pulley to the other, are bent around the friction-rollers *l* at the top of the standards C. The cords are grasped at one side of the saw-frame by the tongue J, to which a horizontal motion is given by the rod N, whereby the saw-frames are caused to vibrate. The pulleys H and rollers *l* may be lowered or raised as seen in figures 6, 7 and 8, so that one saw may be set higher than the other when it is necessary to saw at acute angles, which requires the cuts of the saws to cross each other.

Fig. 10 shows the setting of the saw-frames when the blades do not cross, and fig. 11 when they cross each other.

Fig. 9 represents the setting of the saw-frames when obtuse angles are to be cut.

The inventors say: We do not limit ourselves to the material or form of the different parts of our machine as long as the peculiar character of the said parts is retained; and we do also not limit ourselves to the material which shall be sawed by this machine. We do not claim the use of pulley-belts, or their equivalents, or guides for the sole purpose of converting the direction of the motive power into the direction of the saws; nor do we claim the straining of saws by means of belts or chains, as these all have been done prior to our invention.

But we *claim*, 1st, the above-described use of belts, or their equivalents, adjustable in their length, substantially as above described, in combination with the saw-frames, which are strained independently of said belts, whose adjustability is solely for the purpose of permitting change in the distance or in the angle of the saws.

2d. The saw-supporters, adjusted both horizontal and vertical, substantially as described, whereby we are enabled, when cutting parallel or incline grooves, to place the saws in the same plane, that they may commence and end their work simultaneously; and also, when it is desired to cut crosswise or to a point, to place the saws in different planes, the one above the other.

3d. The vertical adjustability of the roller *o* 3 upon the shaft *b* of the straining apparatus, which permits the retention of the belts in a horizontal plane, whether the saws and their frames are placed in the same or in different horizontal planes, as described.

No. 14,532.—JOHN A. BAILEY.—*Improvement in Machines for Sawing Marble in Obelisk Form.*—Patented March 25, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The peculiar means employed for gradually moving the saws H H laterally or apart, in the saw-frame C, as said saw-frame descends, viz: having the pulley J attached to the centre of the right-and-left screw rod I, and a chain *j* passing around said pulley, and also around pulleys K K, at the outer end of the pitman K; the ends of the chain *j* being attached to the upper and lower ends of the rod L, to which the outer end of the pitman is attached, and on which it slides; motion being communicated from one screw-rod to the other by any known means.

No. 14,536.—ISSACHAR A. HEALD.—*Improvement in Machines for Sawing Marble in Obelisk Form.*—Patented March 25, 1856.

The frame C and saw-frames I are elevated by turning the shaft D. The frames I work with the frame F, and the guide-bars M give a lateral vibrating movement to the saws J while they are working longitudinally, so that the saws will cut angularly or obliquely.

At each end of the stroke, the roller *l* will strike against one of the pins *k*, and the bar O will be moved a short distance, and the rock-shafts N will be turned, so that the rollers *i* at the end of the arms *h* will raise the frame E together with the saws.

Claim.—The rock-shafts N N, provided with arms *h*, having friction-rollers *i* at their ends, the rock-shafts being operated by the bar *c*, having pins K K upon it, between which the roller I on the pin *m* works, said pin being attached to the reciprocating frame F, substantially as shown and described, for the purpose of raising and lowering the saws at each end of their stroke, so that sand may be admitted into the saw-kerfs.

No. 14,658.—J. E. HAVILAND.—*Improvement in Machines for Sawing Marble in Obelisk Form.*—Patented April 15, 1856.

The saws E O will cut two opposite sides of a block of marble at the same time in taper form; the taper being adjusted by the set-screws P P.

Claim.—Adjusting the saw-frame F more or less angularly or obliquely with the saw-frame D, by means of the adjustable or sliding plates M N, which are fitted over curved surfaces on the cross-pieces of the frame F, substantially as described, for the purpose specified.

No. 14,729.—JAMES MILLER.—*Improvement in Machines for Sawing Marble in Obelisk Form.*—Patented April 22, 1856.

The saw-frames B B may be set at the desired angle by means of the bolts E E, which pass through openings in the girths C and D.

The saws are secured at each end to the rocking bars K K, and guided by means of the rollers H H, while the saw-frame allows the saws to descend in a perpendicular direction.

Claim.—The combination of the crank-shaft S mounted above the saw-frame B B, the loosely jointed pitman P P, and the rocking-bars K K vibrating on fulcrum upon the adjustable frames B B, which guide the saws, operating substantially and for the purpose above set forth.

No. 14,342.—CHRISTOPHER AMAZEEN.—*Improvement in Machines for Sawing Marble in Taper Form.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The jointed guide-bars F F, arranged as shown, so that two pairs of saw-frames may be driven from one shaft, and one pair of saw-frames be set, if desired, at different angles or degrees of obliquity from the other pair, for the purpose specified.

No. 14,471.—CHARLES A. SCHULTZ.—*Improvement in Machines for Sawing Marble in Taper Form.*—Patented March 18, 1856.

The shaft of pulley C is hung upon two levers E, and moved by means of levers *f* and rods *g*. The pulleys G and H swing each in a lever-frame I. The straps *i* and pins *j* serve to hold the lever-frames in position.

Claim.—Adjusting the said saw S by means of the swinging-pulleys G and H acting laterally upon it, combined, as herein described, with the pulley C regulating the tension, the several parts being arranged and operated substantially as described.

No. 14,277.—WALLIS BULL and GEORGE BULL.—*Improvement in Machines for Sawing Marble.*—Patented February 19, 1856.

Claim.—Securing the saws H H in a frame D by means of the boxes F, provided with rollers *j* and rods G, having on their inner ends swivel-boxes *l*, to which the ends of the saws are attached, whereby the saws may be properly strained in the saw-frame, and at the same time allowed to move laterally therein.

No. 15,792.—ALONZO WEBSTER and D. K. BENNETT.—*Improvement in Machines for Sawing Marble.*—Patented September 23, 1856.

A reciprocating motion being imparted to the frame B moving on frame A, the cogged wheels *g* are caused to revolve by passing over the rack L, thereby turning the shafts I, which are provided with right-and-left-handed screws, by means of which the stirrups D and nuts E are moved simultaneously, guiding the saws F and causing them to cut tapering blocks.

The inventors say: We do not claim giving to the saws a lateral motion by means of horizontal shafts, having right-and-left-hand screws thereon; but we *claim* the combination and arrangement of the movable stirrups D, cross-bars H, and the arbors I, in the reciprocating frame B, as set forth.

No. 14,177.—HIRAM L. HOUGHTON, assignor to ABEL H. GRENNELL.—*Improvement in Machines for cutting Mouldings on Marble.*—Patented January 29, 1856.

The table B being in a horizontal position, the block of marble F is placed upon it and firmly attached to it by the bar D and bolts E E. It is then turned upon hinge C to a vertical position, advanced upon track G close to the disks K K¹, and there secured by bolt H. The disk-frame L is elevated upon ways M M¹ to the top of the block, and then allowed to descend, the disks (having been properly adjusted) being rapidly revolved by means of band and pulley J.

But when the moulding is to be cut sideways, the disks K K¹, together with their fixtures, are removed, and instead of them the disks *e e*¹ attached to the frame L.

The inventor says: I do not claim the cutting of rectilinear mouldings upon marble by the use of revolving disks or grinders, that having been known before; but I *claim* the method above described of cutting mouldings upon the edges of blocks by the employment of the disks K K¹ or *e e*¹ and the adjustable table top B, operating in the manner and for the purpose above set forth and described.

No. 14,072.—ABRAHAM STRAUB.—*Improvement in Machines for Sawing Marble Obelisks.*—Patented January 8, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—The combination of the divided toggle jointed shaft A A¹ with a hinged or adjustable section of the frame, so that two or more saw-frames hung to and driven by said shaft may be worked in an inclined position to each other, but at right angles to the axis of motion, and so that the shaft, saw-gates, and their guides, as well as the sectional or hinged frame, may all be adjusted simultaneously, and held in adjustment, substantially as described.

No. 14,688.—LEBBEUS BROOKS.—*Improvement in Adjusting the Angle in Machines for Sawing Marble Obelisks.*—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

Fig. 1 denotes a top view.

Fig. 2, an end view.

Fig. 3, a longitudinal vertical section.

The inventor says: I do not claim separate saws or gangs of saws

running in the same plane at any desired angle, and furnished with mechanism and guides to regulate their vertical and longitudinal movements.

But I *claim* the peculiar combination of mechanism by which each of the saw-frames B C is moved relatively to the other, and so as to dispose its saws $a a^1 b b^1$ either in or out of parallelism with those of the other, as circumstances may require; the same consisting of the upright rod l , the bell-crank rod l^1 , their slides $k k$, and staple guides $h h$, the same being applied to the main frame and a saw frame, as specified.

And I also claim combining with each of the bell-crank shafts l^1 and the rod l , and each of the saw-frames and its suspension-rod, the movable frame D or E, whereby said suspension-rods are adjusted or moved at their upper ends simultaneously with the movements of their lower ends and in the same directions.

No. 15,814.—M. M. MANLY.—*Improved Machine for Sawing Marble in Taper Form*.—Patented September 30, 1856.

The nature of this invention consists in providing two saw-frames A and a of any of the usual constructions, to each of which are attached marble saws C and c in any required number. These saw-gates run within standards G, and are directed in their course by adjustable guides B and b , that enables them to saw the marble to any required angle. The gates may be connected to and worked by one pitman by a forked connexion, or they may be driven by an independent but uniform motion attached to each of them.

Claim.—A machine for sawing marble in angular or tapering forms by means of two horizontal saw frames or gates with adjustable guides, run in connexion, one above the other, with the saws running and working in one plane, for the purposes set forth.

No. 14,839.—A. F. WARD.—*Improvement in Marble-Sawing Machines*.—Patented May 6, 1856.

The marble block is placed underneath the saw-frame or sashes, and two opposite sides of the block will be sawed at the same time, the taper of the block corresponding to the relative angular position of the frame K with the frame C. The saws feed themselves to their work by their own gravity, the weights $e e$ serving as counterpoises. The frames will descend vertically, and also the connecting-rods J J, in consequence of the chains $a a$ and rack-bars E G, connected by the pinion g .

Claim.—Suspending the saw-frames or sashes D D¹ within the frames C K, by means of the chains $a a$, which are attached to rack-bars E, having weights or counterpoises e connected to them; the rack-bar E being connected by pinions g with rack-bars G, to which the connecting-rods J of the saw-frames or sashes are attached, substantially as shown, for the purpose specified.

No. 15,024.—JOHN A. TOLL.—*Improved Marble-Sawing Machine*.—Patented June 3, 1856.

By means of the adjustable fenders d the saws can be set to any desired angle. $m m^1$ are pressure-rollers resting on the tops of the saw-gates. Their journal bearings work in adjustable boxes n , allowing the rollers to bear on the saw-gates with equal pressure.

Claim.—Combination of saw-gates e , adjustable fenders d , and pair of actuating rollers $f f$, having simultaneous vibration; the rollers $f f$ being secured in bearings in the top of rockers $g g$, so as to admit of being easily removed when it is desired to take out or replace a gate.

No. 15,015.—ROBERT MYERS.—*Improved Marble-Sawing Machine*.—Patented June 3, 1856.

The boxes $a a^1 b b^1$ are moved upon the trams $c c^1 d d^1$, so as to give the shafts B C the requisite inclination, and the guides h adjusted to permit the saw-frames to conform to the lines of direction of the pitmen. Motion is then given to the shaft H, by which the saw-frames are reciprocated through the gearing connexion.

The inventor says: Disclaiming the method of adjusting the crank-shafts around the driving-shaft, and of adjustable guides to govern the saws, I *claim* the arrangement of the shafts B and C relative to the driving-shaft H and to each other, in combination with the saws P and varying pitmen K, for effecting the simultaneous cutting of three or more taper blocks at a single operation.

No. 15,115.—CYRUS AVERY.—*Marble-Sawing Machine*.—Patented June 17, 1856.

The office of the sliding-bars C C is to guide the saw-frame when in motion, and also to receive and keep in position one end of the vibrating link E. There are bolt-holes in the slide-bars for the purpose of moving the regulating link E, in order to give the desired lateral motion to the saws.

Claim.—The combination of the slide-bars C, link E, lever F, with the rack and movable stirrup H. The whole being constructed, arranged, and operated in the manner and for the purpose set forth, and not otherwise.

No. 15,242.—HENRY LAWRENCE.—*Improved Marble-Sawing Machine*.—Patented July 1, 1856.

Figure 1 represents a plan of the machine bisected by line $x x$, with the rocking frame for operating the saw-gates in section.

Figure 2, an end elevation.

Figure 3, a cross vertical section taken at the line A a .

Figure 4, a section taken at the line C c .

The inventor says: I am aware that to avoid varying the length of

the stroke of the saw-gate, as it is moved up and down, the pitman has been rigidly attached to the end of the saw-gate, and the other end adapted to slide up and down on a rod attached to a reciprocating frame that slides on horizontal ways, and therefore I do not wish to be understood as making claim to such mode of connexion; but it will be seen that such mode of connexion could not be applied to operate two saws simultaneously in opposite directions, that one may make its cut whilst the other returns, and that it could not be applied to a blade or saw-gate whose plane of motion requires to be shifted.

And I am also aware that saw-gates have been variously mounted, so that they could be set to cut at various angles; and therefore I wish it to be understood that I do not claim broadly the mounting a saw-frame or gates, so that they can be set to cut in planes at various angles.

But I *claim* mounting the two saw-frames *j j* each in ways *h h*, on the side of a frame *g*, substantially as described, in combination with, and when such frame *g* is provided at its ends with slides *m* fitted to slide up and down in separate ways *e e* connected with the main frame *a* by journals or stems *d d d d*, adapted to turn and slide in suitable slots *c c c c*, and there held and secured, substantially as described, whereby the said saws *k k* can be set each independently of each other, to have its cutting and feeding motions at any desired angle, by simply turning or shifting the journals of the said ways.

Also, in combination with the before described manner of mounting the two saw-frames in adjustable sliding frames adapted to shifting and turning ways, the mode of imparting motion to said saw-gates by means of pitman or connecting-rods *p p*, hinged at one end of the saw-gate, and at the other fitted to slide and turn in rockers *r r*, mounted in and free to turn in a rocking-frame *S*, which receives motion from some suitable motor, substantially as and for the purpose described.

No. 15,328.—IRA CARTER.—*Improved Marble-Sawing Machine.*—Patented July 15, 1856.

The marble block to be sawed is placed upon the flooring *A*, the saw-frame *C* being raised, and the saws *U U* are set angularly with each other to correspond with the taper intended to be given to the sides of the block, by adjusting the levers *l* and *n*, racks *p*, and arms *T*; motion is then given to the crank *c*; a reciprocating motion is given to the saw-frame *C*, and a lateral vibrating motion is given to the saws *U U*, by means of the arms *I* and *T*, levers *l n*, and racks *p*; and the saws will consequently cut angularly with the sides of the saw-frame, and the saws *V V* will cut parallel with the sides of the gate.

Claim.—Giving the saws *U U* a lateral vibrating motion, while the the saw-frame or gate *C* is being operated by means of the rods *R S* attached to sliding frame *P*, in combination with arms *I T*, levers *l n*, and racks *p*.

No. 15,383.—JOHN M. MOTT, JR.—*Improved Marble-Sawing Machine.*—Patented July 22, 1856.

The marble block *M* to be cut tapering, according to the dotted lines *w l* and *t p*, is set into the frame of the machine. The horizontal saws *S* attached to the gate *C* are adjusted over the lines to be cut, by means of set-crews *g* in the head *D* of guide-rod *d*. The adjustable guide-bars *y* are now passed through the slides *z* on the guide-rods *d*, one rod parallel to the line *w l*, and the other parallel to the line *t p*; and when the saws are set in motion, they will cut a taper according to the lines *w l* and *t p*.

The inventor says: I do not claim the manner of suspending and driving the saw-gate, nor the method used for raising the same, nor the mode of supplying water to the saws, nor the use of adjustable guide-bars, guide-rods and slides; for these have been long known, and much used.

But I *claim* the use of adjustable guide-bars, guide-rods and slides on the guide-bars, or their equivalents, substantially as described, in combination with the slides carrying the saws, and for the purpose specified.

No. 14,995.—JOSIAH ASHENFELDER.—*Improvement in Marble-Sawing Machines.*—Patented June 3, 1856.

To raise the drums *A A*¹ and saws *J*, it is merely necessary to turn the drum *F*, which will wind around it the chains by which they are suspended.

To saw at an angle, the chains must be adjusted by which the saws are hung on the pins *K* on the drum *A*.

Claim.—Operating the saws by means of pins *K* and shaft *L* attached to the drums *A A*¹, in combination with connecting-rods *M M* and slotted guide-bars *S S*, when the above parts are constructed, arranged, and operated substantially in the manner and for the purpose set forth.

No. 15,713.—JOSE TOLL.—*Improvement in Marble-Sawing Machines.*—Patented September 9, 1856.

The two sets of saws are attached to the frames *H h*, which are secured to fenders *J j*. In operation, both sets are simultaneously drawn forward by means of a crank; each set is compelled, by its respective guide-strips *F* and *f*, to move in a path parallel with its saw blades, the links *K* permitting lateral divergence while causing both sets to advance and recede together.

The inventor says: I am aware that there have been heretofore machines for sawing marble in taper form, and therefore make no claim to such; but I *claim* the particular combination and arrangement of the fender bars *J J j j*, with the adjustable guide-pieces, when the same are constructed and arranged to operate in relation to each other in the manner and for the purposes set forth.

No. 15,419.—LEWIS S. FISCHER.—*Improvement in Machines for Sawing Marble*.—Patented July 29, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Operating the saws *ff* by racks *ee* and cog-wheel *d*, in combination with the guides *zz* and *mm*, when arranged and operated in the manner and for the purposes set forth in the foregoing specification.

No. 16,086.—WILLIAM D. GALLAHER.—*Improvement in Machines for Sawing Marble*.—Patented November 18, 1856.

The axis C of the two beams R C D and D¹ vibrates vertically, the beam having been adjusted to the same angle with the supporting frames A A *a*, and being retained in this position by means of a screw-pin in the connecting arc E, which is attached to the beam R C D. The two beams form, with the beams F and G, parallel joints, to each of which one end J of the two frames H for containing the saws is attached by means of pivot I. The frames H for containing the saws are supported at their other extremities K K, and work on the pivots L, in the parallel joints placed in the frames M, in a vertical position, and are so arranged as to pass one above the other without contact in crossing. Motion is imparted to this machine by applying power at the point R of the vibrating beam R C D.

Claim.—The frames H H, and the mechanism connected therewith, when constructed and arranged to operate in relation to each other in the manner and for the purpose set forth.

No. 14,823.—SAMUEL NICKELSON.—*Improvement in Machines for Sawing Marble in Kerfs of varying Angles*.—Patented May 6, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The adjustable or sliding bars H attached to the bars E, as shown, when said bars are curved or bent so as to form saw-frame guides, in combination with the pivoted pitmen L L and eccentrics K K on the shafts F F, whereby the saw-frames and the devices for drawing them are all attached to and move with the bars H, thereby allowing the saws to be adjusted more or less angularly with each other, and at required distances apart, with the greatest facility.

No. 14,613.—HENRY W. HUNT and JOHN SANDS.—*Improvement in Machines for Mixing Lime and Sand for Mortar*.—Patented April 8, 1856.

The shaft C being drawn around by a horse, the wheel D spreads out the lime and sand upon the bed, and the drag E gathers it in a narrow ridge, so that it can pass through the door F. The drag E may

be adjusted laterally upon the bed A by means of the pinion H and rack-bar G.

Claim.—The combination of the annular bed A, wheel D attached to the rotating shaft C, and drag E; the above parts being constructed and arranged substantially as shown, for the purpose specified.

No. 15,847.—BENJAMIN F. FIELD.—*Improvement in Machines for Mixing Mortar*.—Patented October 7, 1856.

The operation of this machine is as follows: The machine is taken to the sand bank and placed with the top part A of the revolving cylinder uppermost. The clamps O are unhooked and taken off, and the top part A of the cylinder is raised by means of the chains, pulleys, gears, and crank, E, F, G, H, etc. The bottom part B of the cylinder is then filled with sand and water; the top A is replaced and secured; and as the machine is drawn along, the cylinder revolves on the ground upon its fellies D, mixing the mortar in the most efficient manner. When the machine is to be unloaded, the top A is removed and the wheels P are made fast by the hubs N to the axles I of the cylinder; as the machine is now drawn forward, the bottom part of the cylinder B is turned over, dropping the load to the ground.

Claim.—The use of a revolving box, of a cylindrical or other form, made to roll upon the ground for the purposes of mixing the mortar by the action of the cross-rods, substantially as described, whilst at the same time it serves to carry the material from place to place; in combination with the method, substantially as described, for discharging the mortar from the revolving-box.

No. 15,230.—JOHN GRASON.—*Improved Machine for Sawing Stone*.—Patented July 1, 1856.

A reciprocating carriage frame, composed of the rack-beam G, the uprights I I, and the braces H H, is combined with the saw-frame which carries the saws *q q*¹ in such a manner that the said saw-frame can be moved vertically the entire length of the said uprights I I. The reciprocating carrying frame, which is combined with the saw-frame that carries the saws *p p*¹, is composed of the rack-beam G¹, the uprights I I, and braces H¹ H, arranged and combined with the saw-gate in a similar manner as the carrying frames G, I I, H H. A toothed wheel L, whose bearings are connected to the sliding-beam N, is placed in such a position that it is at all times in gear with the rack-beam G, while it can be thrown into or out of gear with the rack-beam G¹ by means of lever O.

Claim.—Operating double sets of saws, arranged at right angles with each other, by means of the power-moving rack-beam G, combined with the rack-beam G¹ by means of the toothed wheel L, which works upon the adjustable sliding-beam N, substantially as herein set forth.

No. 14,656.—WILLIAM B. HATCH.—*Improvement in Straining Marble-Saws.*—Patented April 15, 1856.

The saws Q are strained by tightening the bands S by means of the nuts h, which work on right-and-left-hand screws.

Claim.—The rectangular saw-frame, constructed with centre-bars R and tension braces S, for straining the saws Q, in the manner and for the purpose set forth.

No. 14,684.—HENRY H. WHITE and EDWARD A. GRAY.—*Improved Stone and Marble Saw.*—Patented April 15, 1856.

The inventors say: We are aware that notched disks and rollers with chilled projections have been used for cutting and dressing stone, by rolling them over the same with pressure; but these are not saws, in the true sense of the term, and do not act in the same manner; therefore we do not claim such. But we *claim* cast-iron saws with chilled teeth, for the purpose of sawing stone.

No. 15,526.—ST. JULIEN RAVENEL.—*Improvement in Artificial Stone.*—Patented August 12, 1856.

The material for the manufacture of this artificial stone is composed of two parts of pulverized marl and one part of slacked lime; these are mixed and moistened sufficiently to be moulded, and when brought into the desired shape, they are exposed to the influence of the atmosphere, and by it they will become sufficiently hard to be used as a substitute for stone for building purposes.

Claim.—The described substitute for stone, marble, or brick, produced substantially in the manner set forth.

No. 14,824.—ROBERT NEISCH.—*Improvement in Preparing Artificial Stone.*—Patented May 6, 1856.

By adding cold solutions of alum or ammonia, the calcined plaster must assume the consistency of mortar, when it is dabbled into the mould in the same way as the clay is worked into moulds in the potteries. The newly formed article is then left for some time in a dry atmosphere, and finally immersed in a boiling hot solution of alum, and suffered to cool therein. When the article, after the immersion, is entirely dry, it will have all the hardness required for practical purposes.

The inventor says: I do not claim the combination of alum solution with commonly calcined plaster of Paris or gypsum, as I am aware that such mixture has before been used; but I *claim* the preparation of artificial stone by treating plaster of Paris, previously calcined, together with sulphuric acid, with solutions of alum and carbonate of ammonia.

No. 15,335.—A. M. GEORGE.—*Improved Stone-Dressing Machine.*—Patented July 15, 1856.

The stone M to be dressed is placed upon the carriage B and underneath the cutters I; motion is then given to one of the shafts K, and the arms L act upon the rollers J of the toggles G, the arms on one shaft forcing the cutters I down upon the stone, and the arms on the other shaft raising them, the stone being fed underneath the cutters by the carriage B.

The inventor says: I do not claim separately the toggles G, with cutters I attached; for they have been previously used.

But I *claim* as an improvement on the stone-dressing machine of Nichols & George, patented December 18, 1855, the toggles G, with the rollers J and knives or cutters I attached, in combination with the rotating shafts K K, with the adjustable arms L upon them.

No. 15,591.—WILLIAM M. BARTON, assignor to Himself and ROBERT M. BARTON.—*Improvement in Machines for Drilling and Dressing Stone.*—Patented August 19, 1856.

The pitman J, which is operated upon by a crank and fly-wheel I, is not directly connected with the lever L, which causes the drill Q to rise and to descend; as in such a case the drill would advance its full stroke at each revolution of the crank, and would not advance steadily, as is required for drilling a hole. By attaching the pitman J to a stiff spring T, which latter is attached to the lever L near its fulcrum U, the crank and pitman are permitted to continue their motion at full stroke, when the drill and arm L are arrested.

Claim.—The arrangement described of the drill a on one side of the slab or stock A, and the crank F, and connecting-rod J on the other with the spring T and vibrating arm L to connect the said drill and connecting-rod, as set forth.

No. 14,495.—JOSEPHUS ECHOLS.—*Improvement in Stone-Drilling Machines.*—Patented March 25, 1856.

The water enters the cylinder A and is injected into the cup g through the openings c, the valve D being in a position so as to close the apertures c c in the bottom and leaving open those in the top; cup g lifts the griper F and the drill-bar, until spring h¹ comes in contact with the valve D, and causes the water to escape through the apertures c c into the cup g¹, thereby driving the tube B downwards. The ring H releases the griper F and the drill is driven into the stone. The turning of the drill is effected by the action of the water on the spiral vanes p p.

Claim.—1st. The cylinder A with the apertures c c in its heads, the double-valve D with its hollow-stem d, and the tube B with its cups g g¹, all combined, arranged, and operating substantially as herein set forth.

2d. The gripper F, constructed as described, and operating in combination with a ring H, as herein set forth, to gripe and let go the drill-bar E.

3d. Furnishing the interior of one of the metal cups g g^1 with spiral vanes, to be acted upon by the water for the purpose of turning the bar at every stroke, substantially as herein set forth.

No. 15,410.—HENRY J. BEHRENS.—*Improvement in Machines for Sawing Stone in Taper Form.*—Patented July 29, 1856.

The nuts C into which the saw is fastened are mounted on the shafts b provided with right-and-left screw-threads f running from the centre of the said shafts. A reciprocating motion is imparted to the gate a by means of a crank and pitman, at the same time that a revolving motion is imparted to the shafts b by means of the crank f , levers d , and rod e ; by this combined motion the saws will cut straight cuts tapering towards each other.

The inventor says: I do not claim giving the saw a compound motion, irrespective of the means.

But I *claim* giving to a saw placed in a line inclined to the line of motion of the saw-frame a lateral motion, independent of the motion of the frame, or at right angles to the line of motion thereof, by means of the several devices, substantially in the manner and for the purposes set forth.

No. 15,380.—MATTHEW J. MCBIRD.—*Improved Machine for Sawing Stone or Marble.*—Patented July 22, 1856.

The stone F is placed on the bed E, and by turning the arms j j , the turn-table D is caused to revolve, thereby enabling the operator to adjust the stone or marble F in any desired position under parallel saws h h h ; said saws are then made to saw down through the stone F, cutting one side of the tapering pieces o o . The saws are then elevated, and the turn-table can be turned to any desired angle, according to the shape of the piece to be cut. By operating the arms, a lateral motion can be imparted to the table E, affording the means to cut tapering pieces.

Claim.—The combination of the turn-table D and the lateral moving platform or bed E, when connected and arranged substantially as shown, so that, when the turn-table D is revolved, the stone or marble F will be brought in oblique positions under parallel moving saws h ; while the platform or bed E, when that is given a lateral transverse movement to the parallel position of screws h , the stone or marble F is given a corresponding movement and brought to the position required, for the purposes set forth.

No. 15,289.—CHARLES FROST and A. W. WEBSTER.—*Improved Machine for Quarrying and Cutting Stone.*—Patented July 8, 1856.

The cutters I, as they pass around, are drawn inward when above the shaft E, in consequence of the pins h bearing against the arms J; but as

the cutters pass around below the shaft E and pass off the end of the arm J, the springs i throw the inner ends of the stocks H against the cam M, and the teeth of the cam, as said cam rotates rapidly, give a vibratory motion to the stocks H, and the cutters I are forced rapidly in and out from the lip e of the pulley G, the cutters making a groove into the slate and acting upon it till the pins H are caught by the opposite end of the arm J, when the cutters are again drawn inward and the inner ends of the stocks freed from the action of the cam M.

Claim.—We claim the combination of the cutter-stocks or blocks H and cam M, the stocks or blocks being pivoted to the pulley G, which is placed on a shaft E in the frame D, and the cam placed loosely on the shaft E.

No. 15,892.—JOHN NORTH.—*Improvement in Sawing Stone.*—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—For sawing two inclined sides of a slab of marble or stone at one operation. The two inclined reciprocating saws a a^1 , connected with one and the same rotating driving-shaft, by the oblique connecting rods c c^1 , each rod having four joints o o^1 , m^2 , and m^3 , as they are set forth, the whole being arranged and operating in the manner and for the purposes herein set forth.

No. 15,299.—C. A. MILLS.—*Improved Stone-Sawing Mill.*—Patented July 8, 1856.

The saws are mounted on the top of a frame A, and are worked by the usual arrangements of working beams and connecting-rods E^1 ; then the feed-plates H upon the frames are brought into contact with the feed-knuckles i ; the pins f in the sides of the plates, coming against said knuckles, bring the dogs h on the inner side into action with the ratchet-wheels d and screwed shafts e ; they, acting upon the collar by their nuts, draw the saws outward to any point desired, only one plate acting at a time, the motion being alternate. The stone is moved up to the saws by the rock-shaft, having its motion communicated to it by the working-beam E (fig. 1). The connecting-rod Z sets the upright arm V^1 in motion, by which the ratchet-wheel R and pinion R^1 are moved by the dog A^1 ; this operates the horizontal wheels S^1 , supported in position by the frame F^1 ; the wheel S^1 then turns the screwed shaft M, by which the stone is fed to the saw at pleasure.

Claim.—Operating the saws, when arranged upon the top of the frame A, so as to work at right angles to each other by means of the feed-plates H and knuckles i , in combination with the mechanism for elevating the block of stone.

No. 16,035.—THOMAS MAYCOCK, assignor to Himself and HENRY RICE.—*Improved Drain-Tile Machine.*—Patented November 4, 1856.

By the motion of the plunger G to which the ring I is attached, the clay in the box C is forced into the die B, and the tile is formed. By

making the plunger G smaller than the cylinder D, the plunger can easily be withdrawn from the cylinder, which otherwise would be difficult to withdraw, on account of the adhesive power of the clay.

Claim.—The combination of the annular ring I with the plunger, the latter having a smaller diameter than the ring and cylinder, constructed, arranged, and operating substantially in the manner and for the purpose set forth.

No. 16,021.—L. D. PHILLIPS.—*Improvement in Trowels.*—Patented November 4, 1856.

The chamber A being filled with mortar, the operator, by taking hold of handle I, places the hollow bottom in contact with the wall; gauges E being, suitably adjusted, prevent one of the trowels D from coming in contact with the wall, while the other D¹ smooths the plaster as the implement is operated, and *vice versa*. The handle I serves the double purpose of operating the implement on the wall, and also of operating the follower G, which presses the mortar from the chamber A. After all the mortar is discharged from the chamber, and handle I is relieved from pressure, the reactive force of spring B causes the follower G to resume the position as shown in the engraving.

The inventor says: I do not claim a mortar chamber, having a follower operated in it, as that has been heretofore known.

But I *claim*, 1st, the open-bottomed chamber provided with flanges or trowels D D, arranged in the manner and for the purpose described.

2d. The adjustable gauges E E, as applied to my trowel, operating in the manner and for the purpose described.

3d. The general arrangement of the follower and its appendages, viz: springs B B, guide or brace C, and handle I, in the manner and for the purposes described.

No. 16,139.—EDWIN BENNETT.—*Improvement in Earthen Vessels for Hermetically Sealing Purposes.*—Patented December 2, 1856.

The nature of this improvement will be understood by reference to the claim and engraving. The process of sealing this earthen vessel is performed by pouring molten wax into the groove between the lid and top of the jar, the porous surfaces absorbing the beeswax, thus securely closing up all parts.

The inventor says: I am fully aware that rims, ridges, grooves, or gutters, and also ground surfaces, have been employed; and also that in some kinds of jars or vessels, formed from plastic material, the lower surface of the lid and the upper surface of the vessel or jar have been left unglazed; and, consequently, I disclaim all such.

I *claim*, in the manufacture of earthen vessels, constructing the covers or lids of such vessels with the bevelled or sloping edge *d d* and plane surfaces *e e* unglazed, or in the biscuit state, when said lid or cover is used, in combination with a vessel the contiguous surfaces *b b c c* of which are also left unglazed, and in an absorbent state, for the purpose set forth.

No. 14,537.—PHILIP SCHRAG.—*Improved Mould for Earthen Vessels, Pots, &c.*—Patented March 25, 1856.

The part F is made so as to slide on D, and to fit to the bottom part E. In pushing F down, the lining of India-rubber will be peeled off the sides of the mould.

I do not claim the turning of earthen vessels in moulds by chablons, nor the mere use of a lining to prevent adhesion of the clay to the mould; but I *claim* the combination of the mould, made in two separate parts, one F for the sides, the other for the bottom E of the vessels, with the lining of the same with India-rubber, or any other suitable material which is fastened on both parts of said mould, in the manner and for the purpose substantially as herein described.

XVI.—LEATHER, ETC.

No. 16,128.—GEORGE C. TODD.—*Improvement in "Edge-Keys" for Making and Polishing the Edges of Boot and Shoe Soles.*—Patented November 25, 1856.

This key is represented in two views in the engraving. The polishing edges C D are fastened to the shank B of the handle by a screw-bolt. The improvement consists in using these turned disks C D, instead of using edge-keys which are filed by hand.

Claim.—A turned or circular edge-key, constructed substantially as described and for the objects specified.

No. 14,432.—LORENZO STRATTON, assignor to LORENZO STRATTON and LUTHER HILL.—*Improvement in Manufacture of Boot and Shoe Soles.*—Patented March 11, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The above described improvement in the manufacture of shoe soles, viz: striking them up in nests between formers and counter-formers B E F, substantially in the manner herein set forth.

No. 14,353.—GEO. FETTER.—*Improvement in Boot-Crimps.*—Patented March 4, 1856.

The nature of this improvement will be understood from the claims and engravings.

In the sectional fig. 4, (which is drawn on an enlarged scale,) L represents the leather, its ends being held between the pincers *n n n*,

which can be made to descend by turning screw E, so as to stretch the leather over the instep.

The inventor says: I do not claim the method herein described of changing the relative position of the foot and leg by the regulating-screw D and its appendages, as other mechanical devices for accomplishing the same end might be substituted.

I claim, 1st, the crimping of the upper-leathers of boots, by confining and submitting them to the action of the leg A, and operated in the manner set forth, or any equivalent to the same.

2d. The radial adjustable guide C, with its traversing pincers *n m n m*, in combination with the leg A and foot B, the whole being arranged and constructed substantially in the manner and for the purpose herein set forth.

No. 16,123.—M. C. CHAMBERLIN and W. FILKINS.—*Improved Machine for Turning Boot-Legs*.—Patented November 25, 1856.

In using this machine, the crank *d* is turned until the plunger I arrives at the points *x* of the expansion tube *g*; the follower *h* should then be at the opposite end of the tube. The boot-leg is then pulled over the expansion leg *g*, and the straps attached to the hooks *i*. The gate *k* is then raised, and the follower *h*, by means of rack *e*, is adjusted to the length of the boot-leg, so that, as the plunger descends, the follower will ascend, pushing the leg, as the plunger and hooks draw it, within the tube. When the boot-leg is adjusted to the expansion tube, the crank *a* is turned, and the leg is drawn into the tube and thus turned.

Claim.—The expansion tube *g*, the rim-follower *h* encircling said tube, the disk-plunger J, provided with hooks *i i* and operated inside of said tube *g*, as described, in combination with racks E and *f* and pinion *o*, for the purpose of imparting adverse longitudinal motion to said rim-follower and disk-plunger, as set forth.

No. 14,380.—SYLVANUS H. WHORF and CHARLES RICE.—*Improvement in the Application of Soles to Boots and Shoes by means of Pressure and Gutta-Percha or other Cement*.—Patented March 4, 1856.

The nature of this invention will be understood by reference to the claim. The machine for pressing the sole to the upper is illustrated in the engraving, where H represents a metal hollow last, into which steam can be introduced by means of pipe I, and the sole can be pressed to the upper by means of the pressing apparatus and the platen C.

Claim.—We are aware that a gutta-percha sole has been applied to a shoe by melting gutta-percha in a mould and subsequently pressing the shoe therein. We therefore do not claim such.

We are also aware that in book binders' presses and in smoothing irons, the platen of the one and the body of the other have been provided with a spare chamber for the reception of either steam, heated air, or other means of heating; we therefore do not claim such, as we use

heat not for either drying or smoothing alone, but for a different purpose, and in a process of manufacture wherein it has not been before applied, to our knowledge, in the way in which we employ it, being used by us for softening or melting gutta-percha after it has been applied to a last, as specified; and, therefore, we claim our improvement in the process of manufacturing and finishing shoes with either gutta-percha soles, or soles formed of leather and other material, and united to the upper and insole by means of gutta-percha, or its equivalent, and through the agency of pressing mechanism, as specified; our improvement consisting in supplying heat within a last by means of a chamber and pipe and steam, or means of heating said last, the same not only enabling the gutta-percha of the sole to be softened or rendered adhesive while it is being pressed upon the insole and upper, but also serving to smooth and finish the upper, as described.

No. 14,216.—JOHN M. WIMLEY, assignor to Himself and WASHINGTON H. PENROSE.—*Improvement in the Mode of Attaching Composition Soles to Boots and Shoes*.—Patented February 5, 1856.

The staples D (made of wire) are driven through the upper B and insole C so as to clinch on the inner side of the insole (as shown in the engraving) by coming in contact with the last, which at this part must be covered with metal.

The inventor says: I do not claim the mould, nor do I confine my claim to any particular form of the staples or nails by which the sole is secured to the boot or shoe; but I claim the use of the staples D D, in the manner substantially as described, for the purpose of attaching composition soles to boots and shoes.

No. 15,451.—JAMES W. WILDER.—*Improvement in Machines for Cutting Out Soles of Boots and Shoes*.—Patented July 29, 1856.

Motion is imparted the machine from the driving-shaft B, which operates the lever E of fulcrum *f* by means of crank D and pitman F. The pitmen K and L impart a vibrating motion to the heads G and H around the points *p* and *q*. The knives *g*, curved to suit the contour of the sole to be cut, are fastened by means of clamp *h* to the heads G and H, and the leather being fed in on the table M, the soles are cut as the knives descend.

Claim.—Arranging and vibrating the knives around the centres *p q*, in the manner and for the purpose substantially as set forth.

No. 15,762.—GEORGE W. GRISWOLD.—*Improvement in Metallic Braces for Heels of Boots and Shoes*.—Patented September 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I am aware a metallic plate has been inserted in the heel and counter of an overshoe for the purpose of forming a

bearing or nut for a screw to pass through to hold the overshoe to the inner shoe; this I do not claim, as it will not effect the object I have in view.

I claim the application to boots or shoes of a brace or support B to heel and counter D to prevent one from twisting or running over on the other, substantially as herein described.

No. 14,080.—SYLVANUS H. WHORF, assignor to Himself and CHARLES RICE.—*Improvement in the Manufacture of Boots and Shoes*.—Patented January 8, 1856.

The inventor says: I do not claim uniting the soles to the upper by means of cement made to extend through the upper alone; but what I do claim as my improvement in the manufacture of a shoe by connecting its soles and upper, is, extending the cement not only through perforations in the upper, but in or through the perforations made in or through the insole or the outer sole, or both; the same presenting great advantages not only in securing the parts together, but in rendering them water-proof when the cement employed is of a character to resist water.

No. 14,060.—SAMUEL R. JONES.—*Improvement in Peg-Cutters for Boots and Shoes*.—Patented January 8, 1856.

The nature of this invention can be understood by reference to the claim and illustrations.

Claim.—My claim is the above described and shown employment of the spring *f* in connexion with the curved surface *l* of that end of the handle (double lever) upon which the float G is pivoted, for the purpose of rendering the float capable of self-adaptation to the surfaces to which it is applied.

No. 14,269.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Pegging Boots and Shoes*.—Patented February 12, 1856.

The knife G is attached to the handle A by means of a pin *c*, and moves upon it as a fulcrum, when pin *e*, together with the haft C, is made to descend. During the time that the pin *e* moves through the oblique portion of the slot *f* in the knife, the latter is moved upon its fulcrum *c* so as to cause the lower edge of the knife to move across the peg-wood *g*, and separate one peg from it. During the above described operation, the workman holds the spring-catch K back with one finger of his hand; but whenever he wants to stop the side motion of the knife, (so as to shut up communication between H and *b*,) he removes his finger, when K will assume the position represented in fig. 3. Chips or splinters will escape through passage L. The engraving represents only part of the pegwood-carrier H and the spring *h* which presses forward the peg-wood *g*.

Claim.—The above-described new arrangement of the cutting-knife G, with respect to the pegwood-carrier H and the peg-receiver *b*, and

so as to operate against the side of the peg-wood *g* and cut into it from side to side, as specified.

Also, arranging or combining with the cutting-knife G and the handle A, as described, a spring-stop or catch K, so applied as to operate and retain the knife in position to shut off communication between the feeding-trough H and the peg-receiver *b*, under circumstances as stated.

Also, arranging in front of the peg-receiver and front of the knife a waste receiving and discharging chamber or mouth L, the same being made to operate as specified.

No. 14,020.—WATERMAN B. JOHNSON.—*Improvement in Machines for Pegging Boots and Shoes*.—Patented January 1, 1856.

The shoe is secured in the jack C, and the guard *b*¹ adjusted to the required distance of the row of pegs from the edge of the sole. The pin *k* is then inserted into the perforation *k*¹ (fig. 2) that will insure the clamp F the motion necessary for the desired distance between the pegs. The base *d* of the jack C is inserted between the jaws of the feeding-clamp, and the ratchet *b* (fig. 3) being removed from lever G, the knob *f* of the lever G is placed in a groove *c* of the jack C. The action of the spring *w* on the lever G tilts the jack until the sole of the shoe reaches the stop *x*, the edge of the sole being placed against the guard *b*¹. The cam-wheel B is then moved sufficiently to permit the spring-ratchet *b* to engage with one of its teeth the lever G, at which moment the jaws of the clamp F tighten upon the base *d*, and the shoe is ready for the awl perforation. The continued rotation of cam-wheel B brings radial stud *h*¹ in contact with the portion *p*¹ of awl-carrier, giving it a smart blow; the stud *s*¹ strikes the inner arm of the lever *t*¹, throwing up the awl-carrier, and removing the awl from the perforation. The curve of the cam-rim acting on projections *d*¹ *d*¹ of awl-frame (fig. 4) moves it, so as to bring the peg-tube *u*¹ over the perforation just made, to which the peg-wood is fed by means of any of the well-known devices. Radial stud *h*² strikes a seat of driver-slide 1 (fig. 4) similar to *p*¹ of awl-slide, driving the peg into perforation made by awl-stud *s*², then strikes lever *t*² and throws up the driver.

Claim.—What I claim as my invention is as follows:

1st. The vibrating jaws *g h*, constructed and operating substantially as described, for feeding the shoe, whether actuated in the manner set forth or in any other way which will enable them to perform the aforesaid function.

2d. The combination of lever G, stop X, and swinging-jack, constructed, arranged, and operating substantially as specified, for submitting the surface of the sole to the awl at a given angle in every position, substantially as herein set forth.

3d. The adjustment of the drivers on the perimeter of the cam, substantially as and for the purpose set forth.

4th. The double-binding slide-clamps for screwing the last in the jack, constructed and operating substantially as and for the purpose specified.

No. 14,370.—GEORGE SCHUH and PHINEAS L. SLAYTON.—*Improvement in Machines for Pegging Boots and Shoes.*—Patented March 4, 1856.

The last A^2 , with the shoe upon it, is secured upon the uprights $R^1 R^1$, and the peg timber I^1 is placed in the feed-box Z . Motion is then given to the driving-pulley N , and the cam L raises the plunger I , while lever A^1 throws back the box Z , so that spring K may force the plunger I downward within the cylinder E , and cause the awls $g g$ to be driven into the sole. When plunger I is raised, the spring B^1 will throw the box Z towards the cylinder, and the small cylinder C^1 will be placed underneath, and in line with cylinder E ; and when the plunger I again descends, the plunger D^1 will be forced downwards, the projection a^1 driving the pegs into the holes in the sole previously made by the awls. During the outward movement of the box Z , the peg timber I is fed towards the cylinder C^1 by the rollers $h^1 h^1$, which are operated by the pawl k^1 ; and the pegs are cut off from the timber by the cutter g^1 at the proper time, in consequence of the pin d^1 striking against the end of slot c^1 , in the end of lever F^1 . Lever E^1 throws the plunger D^1 upward in the cylinder C^1 , when it is drawn back from cylinder E .

The shoe is fed along underneath the rest i^2 by the screw L and shaft K^1 , the latter being turned by pinion M^1 and bar S ; and the shoe is turned around when the toe and heel are pegged, in consequence of the pins d^2 striking against the end of shaft N^1 , and the screw working into the rounded ends of rack Q , thereby turning the plates $P^1 O^1$ and shaft N^1 . When the plunger I is raised, the friction block X will be pressed against it by the cam U , and will regulate the force of the blow of the plunger, and also its stroke; that is, when the plunger I strikes against the plunger D^1 .

In figure 4, two positions of the parts are represented by full and by dotted lines.

The inventors say: We do not claim the plates or tables $P^1 O^1$ and rack Q^1 attached to the shaft N^1 , for the purpose of feeding the boot or shoe to be pegged, as these devices are applied in the pegging machine of J. J. Greenough, patented January 11, 1854; nor do we claim the vibrating frame J^1 and screw L^1 , as they are employed in the pegging machine of Joel Robinson, patented October 31, 1852.

But we do *claim* feeding the boot or shoe to the plungers $D^1 I$, so that it may be punched and pegged by means of the combination of the screw S^1 , plates $P^1 O^1$, shaft N^1 , frame J^1 , and pins d^2 , arranged and operated substantially in the manner as described.

We claim punching the necessary holes in the sole, and driving the pegs therein, by means of the plungers $I D^1$ fitted within separate cylinders, the points and awls g on one plunger I making the necessary holes in the sole at one stroke, and the other plunger D^1 being driven down, and forcing the pegs into the sole by the plunger I at its succeeding stroke, substantially as shown and described.

3d. We claim the friction-box X , operated by the cam U , for the purpose of regulating the stroke of the plunger I , and also the force of its blow, as described.

No. 15,866.—BENJAMIN F. STURTEVANT, assignor to ELMER TOWNSEND.—*Improvement in Pincers for Lasting Boots and Shoes.*—Patented October 7, 1856.

The manner of operating this instrument is as follows: One of the handles C being held in each hand, the pincers $A A^2$ are closed upon the leather upon one side of the last, and the pincers $B B^2$ upon the leather on the other side. The two handles are then brought together as in figure 1, and are held by one hand, while the leather is secured to the last by the other.

The inventor says: I do not claim a lasting-tool in which the two sets of jaws are brought together by means of a screw, as this is a well known method of constructing such tools.

I am also aware that the exterior jaws of such tools have been caused to close upon a central step or block, thus forming a species of compound pincers or lasting-tool.

But I *claim* the described instrument for lasting boots, constructed and operating in the manner substantially as set forth.

No. 14,140.—JEAN PIERRE MOLLIERE.—*Improvement in Machines for Hammering Leather for Soles and Heels of Boots and Shoes.*—Patented January 22, 1856. Patented July 22, 1853, France.

The cams D upon the revolving shaft E play within slots in the hammer rods $C C^1 C^2$, so as to lift them, and let them fall at proper times. The said hammer rods are hollow, so as to allow their weight to be increased or diminished by putting into or taking out of the hollow part heavy bodies. To prevent the hammer from striking the stone when no leather should happen to be there, the hammer is held back on the upper side of the frame socket s through which each hammer-rod slides.

Claim.—The hammering of sole-leather upon a hard surface, after it is cut into heel and sole strips, for the purpose of closing its pores, without any displacement thereof, in order to render it water-proof, by means of steel hammer heads, of slightly rounded face, attached to the hollow rods $C C^1 C^2$, which may be weighted at pleasure, and shall be so governed by a cam movement that no two strike at the same moment, while they are kept by their shoulder-piece from crushing the leather after it is hammered; the whole constructed and operated substantially as herein described.

No. 14,426.—WILLIAM WELLS and MELLIN BRAY.—*Improved Machine for Cutting Out and "Skiving" the Soles of Boots and Shoes and also for Cutting the "Rands" therein.*—Patented March 11, 1856.

The leather y is placed upon block H and moved around, together with stock F , by means of the spur-wheel E , the rack a , and the rollers $c c$. The edge of the leather passes between the rollers $P L$, and is cut out by the knives $Q R r$, corresponding to the form of the plate G ,

which, bearing against the roller K, remains in contact with the vibrating bed I, as shown in figure 2. The skiving knife R is raised free from the heel of the sole as set forth in the claim.

Claim.—Operating the knife R, which is attached to the bar S, by means of the lever *u*, rod *m*, with plate *l* attached, on which plate the bar S rests, and the ledge T on the heel of the stock F, substantially as shown for the purpose specified.

We further claim the knives Q R *r*, when attached to or connected with an elastic platform I, substantially as shown for the purpose specified.

No. 14,951.—CHARLES T. EAMES.—*Improvement in Boot-Trees.*—Patented May 27, 1856.

The lower end of rod D carries a cam F which works against an inclined plane G, formed with lips C C to embrace projections *d d*. When the cam is moved upward, it will separate the two parts A B; when pressed downward, it will draw them together. When the rod D is raised, the locking catch H will be forced by its spring K into a recess M, formed in the foot part C, the catch serving to confine the foot C to the leg portion B. During the depression of the rod D and the cam F the catch H will be moved out of the said recess so as to enable the parts B and C to be separated.

The inventor says: I do not claim the employment of either two levers or cams, arranged so as to simultaneously operate against both the upper and lower parts of the back portion of the leg of the tree; but I *claim*—

The arrangement or mode of applying a single cam F and inclined plane G with respect to the foot and leg portion of the boot-tree, whereby the said devices are made to first perform the function of setting the foot part C of the tree firmly into the foot of the boot; and next that of stretching the leg of the boot, the application of stretching mechanism directly to the upper part of the leg of the tree being rendered unnecessary.

No. 14,856.—BENJAMIN J. DAY.—*Improvement in Bridle-Bits.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the attaching of a gum elastic strap or other elastic material to the upper ring of the common curb and lever bit by one end, the other extending a few inches out on and attached to the rein, which itself is attached to the lower ring; nor do I claim straight, curved, and spiral springs. But I *claim* the screw *h*, the spring and folding limb *c*, applied and operating substantially in the manner described, by which the common curb and lever bit and the non-curb and lever bit can be changed at pleasure from one to the other.

No. 15,107.—H. G. ROBERTSON.—*Improvement in Machines for Stuffing Horse-Collars.*—Patented June 10, 1856.

The rack *c* ascends during the early part of the plunger's C advance stroke and descends towards the close of the return-stroke, and carries with it downwards the straw to the bottom of the hopper, furnishing a new feed to the plunger for its next advance stroke, the rack having teeth *s* which hold the straw.

To prevent the straw unduly rising by the action of the toothed rack *c*, two or more vertically reciprocating fingers *d* are employed, which move up and down, and simultaneously with the movement of the rack *c*, but in reverse directions to it; in this manner the straw is kept down from rising in a mass, (the teeth of the rack, though set inclined, having a tendency to produce an undue rising.)

Claim.—In combination with and specified relation to the movement of the reciprocating plunger or stuffing-rod C, the intermittently reciprocating mechanical feed formed by the bearded rack or toothed slide *c* and retaining fingers *d*, operating together simultaneously in reverse directions within the hopper.

No. 16,107.—JOSEPH ALBRIGHT.—*Improvement in Machines for Stuffing Horse Collars.*—Patented November 25, 1856.

The straw in the hopper A is seized by the teeth of the feed-wheel *a*, which revolves in the direction of the arrow, and carried into the recess *c*³, where, by the action of the reciprocating plunger B, it is forced into the collar, one end of which is attached to the funnel C.

The inventor says: I do not claim separately the toothed revolving feed, arranged for operation in connexion, from the outside, with a rack-built hopper, as such is described in the patent granted to Gerad Sickles, November 20, 1855.

Nor yet do I claim, separately of themselves, the crooked fed straw retaining spaces *c*³ described, as the equivalent of such is found in the bearded rack described in the patent of H. G. Robertson, June 20, 1856.

But I *claim* in horse-collar stuffing machines the intermittently revolving toothed feed-wheels *a*, when arranged at the back and on the outside of the hopper in combination with the crooked fed straw retaining spaces or chamber *c*³ at the bottom of the hopper, and extending backwards as shown and described; the teeth of the wheels, *a* which work from the outside at the rear into the hopper, urging the slip of the straw down the inclined rack or back of the hopper, and feeding it into the retaining spaces *c*³ to wait the action of the plunger, as set forth, and whereby the many advantages specified are obtained.

No. 14,803.—MELVIN C. CHAMBERLIN.—*Improved Mould-Press for Horse-Collars.*—Patented May 6, 1856.

When the collar is put into the mould, the rods *a a b b* are allowed to drop down so as to bring the plate *d* to rest upon the rim D D. The

plate *d* is thus put below the neck of the collar, and then, by turning the hand nut *e*, the collar may be stretched and shaped.

Claim.—Giving shape and form to horse-collars by means of a mould press.

No. 15,789.—G. G. TOWNSEND.—*Improvement in Feather-Edge Gauges.*—Patented September 23, 1856.

The feather-guard *F* forms a throat with the knife *K*, after the manner of a joiner's plane, and the point of the guard being split or nicked, so that the point of the knife may lie in it, effectually prevents the knife's point from cutting into the upper during the operation of trimming, while by the additional rigidity which it confers upon the knife, it very much improves its powers of shaving and trimming the welt.

Claim.—The combination of the knife *K*, and feather-guard *F*, for the purpose set forth—they being constructed and arranged substantially as described.

No. 14,469.—NATHAN POST.—*Improvement in Harness Buckles.*—Patented March 18, 1856.

In order to apply the block *B* to the buckle *L*, the tongue *C* is put through a hole of a strap, after which the slot *A* of the foundation *B* is placed upon the roller *O*, and the whole sewed and riveted together.

Claim.—Attaching to a three-barred buckle, 1st, the flanges *NNNN*, which keep the trace or strap in the centre of the buckle.

2d. The tube *O* on the centre bar, made loose, so as to revolve thereon, for the purposes described.

3d. The block or foundation *B*, with its stationary tongue *C*, made, constructed, and applied to the buckle, in the manner above set forth and described.

No. 14,477.—WM. P. THOMAS.—*Improvement in Harness for Shoeing Horses.*—Patented March 18, 1856.

It is the object of this invention to confine horses during the process of shoeing, and also to relieve the smith from the labor of sustaining part of the weight of the horse.

Claim.—1st. The combination of the windlass *M* with the traces *ee*, the tugs *tt*, and tail-lever or single-tree *K*, these or their equivalents, by means of which the horse is brought to his place, and secured from lateral motion, substantially as set forth.

2d. I claim the combination of the windlass *L* with the ropes *oo* and the hames *b*, these or equivalents, by means of which the horse is prevented from rearing or moving backward, in substance as set forth.

3d. I claim the combination of the cords *qq* with the pulleys *mm* *n*, the breeching *d*, and the traces *cc*, such an arrangement of the parts

that the breeching *d* is firmly held in its place by the weight of the horse, substantially as indicated.

4th. I claim the combination of the back-band *f* with the part *L*, the pulley *v*, the rope *aa*, and the breeching *d*, these or equivalents, by means of which the horse is prevented from raising his hinder parts, and the breeching *d* is prevented from rising up.

5th. I also claim the sliding-bar *Q*, by which the horse is prevented from pulling his foot away while the front shoes are being driven on, substantially as represented.

No. 15,993.—NOAH WARLICK.—*Improved Back-Band Hook for Plough Harness.*—Patented October 28, 1856.

To the band *B*, which passes over the back of the animal, is attached a hook *H* and guard *G*, by means of a strap *S*. The hook *H* is passed through one of the links of the trace-chain *C*; the guard *G* prevents the trace-chain from rubbing the sides of the animal, and the rise and fall of the chain cannot release it from the hook.

Claim.—The reverse hook *H*, in combination with the guard *G* enclosing the same, constructed, arranged, and operating as and for the purposes specified.

No. 15,057.—CHARLES K. BRADFORD.—*Improvement in Harness Trace Couplings.*—Patented June 10, 1856.

The fastening plate *d* is fastened to the whiffletree *B* by inserting the elongated tenon *C* in the slot *b*, and turning the former around. It is kept from turning by being pressed against the locking case by means of friction-bearer *E*.

The recesses *oo* of the button case serve to maintain the button with more certainty in its position by enclosing it.

Claim.—The combination of the India rubber plug or spring friction-bearer *E*, with the tenon button *C*, and its locking case *A*, the same being made to operate therewith, substantially as specified.

Also, arranging in the locking case, and transversely of its entering slot, the safety recesses *oo*.

No. 16,114.—WILLIAM CRANE.—*Improvement in Machines for Polishing Leather and Harness.*—Patented November 25, 1856.

The leather on the bed *A* is polished by rotating the pulley *G*, which will cause the tool *e* to pass over the leather, performing the required work. The tool is made with a smooth or grooved periphery, according to the nature of the work to be done.

Claim.—The suspended triangular swinging-frame *C*, having a socket or receiver *D* attached at one end, and a pitman or connecting rod *F* at the opposite end, substantially as shown; the whole forming an equal balance, giving a steady motion to the machine in operation.

No. 15,816.—JOSEPH PYLE.—*Improvement in Machines for Finishing Leather.*—Patented September 30, 1856.

The leather to be softened is drawn gently through and under the pin block *h*, which is caused to descend and rise to and from a corresponding block *r*, whence it is passed between the brush rollers *l*, and delivered from the machine.

The inventor says: I do not claim the form of pin-block, or the pin-block at all.

But I *claim* the combination of the pin-block *h* with its corresponding block, composed of wood or any malleable metal; the feed-rollers *m m*, composed of like materials, or of wood covered by India rubber cloth, as shown; with the corresponding brush-rollers *ll*, geared and arranged, set and driven, as set forth; for the purpose of softening leather or skins ready for finishing; or any other materials substantially the same, upon which it will perform the same operation.

No. 14,606.—WILLIAM P. GAMBLE.—*Improvement in Machines for Polishing Leather.*—Patented April 8, 1856.

E is a lever which connects the rocking-frame C with a crank or to the rim of a wheel F by means of a wrist pin. The handle K is fixed to the lever E so as to bring its flint end *l* in contact with the strap *b*, when the lever E moves in a horizontal position. The leather may be removed without stopping the machine, by means of the treadle lever Q, rods R R, levers O O, and saddle pieces N N. The usual spring beneath the strap bed affords the proper support for the strap during the operation.

Claim.—Effecting the rectilinear motion of the flint or glass, when in contact with the leather upon the strap, by means of the compensating devices herein set forth and described; the said devices being constructed, arranged, and operating substantially in the manner described.

No. 15,121.—CHARLES F. CROCKETT.—*Improvement in Making Sheets of Leather from Curriers' Shavings, or "Buffings."*—Patented June 17, 1856.

The inventor says: I do not wish to confine myself to any particular kind of cement, although I have found India-rubber cement to answer the best purpose; nor do I wish to limit myself to the mode of applying pressure, as any mode will answer the purpose which will compress the sheet and lay the edges smooth, although I have produced the best result by rubbing and pressing the surfaces with what is known as "the currier's glass," which has the effect at the same time of glazing the surface.

Claim.—Making sheets of leather of any desired size and thickness of curriers' shavings or buffings, by lapping and cementing them together while in a moist state, and then subjecting the mass to pressure.

No. 14,211.—JOHN B. WENTWORTH.—*Improvement in Machines for Softening Leather.*—Patented February 5, 1856.

The boarder F consists of sections *c*, each section being held in place by a bar *f*, which passes through all the sections and through the ends *b¹* of the frame. The rest of the claims can be sufficiently understood by reference to the engravings.

The inventor says: I do not claim boarding a skin S by doubling it and performing the remainder of the operation between two boards by manual labor in the usual way; but I *claim* the combination of the roller G, the rotary boarder F, and the bar or concave E, arranged and made to operate together, substantially as set forth.

I also claim the combination of the holding and draft mechanism or rollers H I, with the boarding mechanism or rollers, the boarder and concave, or bar, as specified.

I also claim the napping or filing mechanism, (or roller M and bed L,) in combination with the boarding mechanism, or the holding and feed rollers thereof.

I also claim combining with the movable table or bed K the rollers G H and bed L, so that they may be moved simultaneously either towards or away from the boarder F, the bed E, and rollers I and M.

I also claim, when the boarder is made of a series of separate rubbers, springs, and a holding-frame, as set forth, applying the sectional rubber to the frame by means substantially as described, viz: by a bar *f* and a movable end *b¹*, whereby the rubbers may be either detached from the frame or maintained within it, as specified.

No. 15,807.—JOHN GREENLEAF.—*Improvement in Machines for Softening Leather.*—Patented September 30, 1856.

The nature of this invention consists in softening leather by placing the hair side of it between a revolving cylinder B, provided with a flexible surface, and a flexible surfaced moving carriage A² D², with the flesh side of the leather passing around the edge of a metallic blade I, placed nearly between the cylinder and carriage; and then turning the cylinder and moving the carriage with the leather thereon by any convenient motor until it is sufficiently softened.

Claim.—The combination of the blade I with the cylinder B and M, and apron carriage A² and D², for softening and graining leather, when arranged and operated essentially in the manner and for the purposes set forth.

No. 14,430.—ELISHA PRATT, assignor to ELISHA PRATT and THOMAS PERKINS PINGREE.—*Improvement in Leather Splitting Machines.*—Patented March 11, 1856.

The journals *a* of the lower roll run in boxes *b*, which slide in bearings H, attached to the sides of the frame E. *d* is a plate suspended from the boxes *b* by the screws *c*. The plates and boxes are separated

by springs *f*. The position of the plates is regulated by the levers *I*, pivoted to the brackets *K* at *i*, and by the connecting rods *L*, thereby adapting the "throat" to the thickness of the hide to be split.

Claim.—So hanging and arranging the lower roll, as described, by means of the levers *I*, connecting rods *L*, and plates *d*, or their equivalents, that it may be depressed when required, for the purpose of relieving and adjusting the hide, as set forth.

No 16,205.—FREDERICK BERRY.—*Improved Machine for Stamping Leather Combined with a Rolling Machine.*—Patented December 9, 1856.

Motion being imparted to the machine, the leather is placed upon table *T* and passed between the rollers *R* and *R*¹, which are operated by cogged wheels *B* and *B*¹. When the side of leather has passed from under the roller *r* and that roller has fallen upon the table, the end of the stamp lever *L*, by means of its connexion through lever *l* and *F*, is carried so as to be acted upon by one of the studs *a*, and the side of leather being guided upon the stamping bed *D*, an impression is received on the descent of the stamp. On the insertion of another side of leather between the rollers, the stamp is thrown out of gear, as represented in fig. 2.

Claim.—The roller *r*, which brings the stamp lever *L* into action with the studs *a*, when it falls off the leather on to the table, as the leather passes through the rolling machine, substantially as specified.

No. 14,698.—GEORGE W. PRUYNE.—*Improvement in Machines for Raising and Creasing Leather Straps, &c.*—Patented April 15, 1856.

On the rear end of the two forks *F*¹ *F*¹ of the lever *F* are supported the journals of the lower roll *G*, whose grooves are in reverse to those of the upper roll *C*, as seen in fig. 2. The guides *b b b* correspond in width with the distance between the flanges *c* on one roll and the corresponding recesses *d* on the other. The guides are covered, so that the strap, in passing through its guide, shall not skew or twist.

The inventor says: I am aware that grooved rolls for creasing leather have been used; these, therefore, I do not claim. But I *claim*, in combination with the grooved rollers, one of which is yielding, the guides *b*, through which the creased part of the strap is drawn, and so that said guides shall serve to direct the finished strap as it passes through between the rolls.

No. 15,499.—FRANCIS A. WHITE.—*Improvement in Methods of Stuffing Leather.*—Patented August 5, 1856.

This improvement consists in applying tallow or grease to the skin or leather while it is in a wet state, and in beating said tallow into the leather so as to expel and take the place of water, the water being

more or less driven out of the skin by means taken to introduce the grease.

The inventor says: I am aware that other oil has been combined with hides and skins in the process of tanning, as in the American patent of Keeler. But my mixture of tallow and oil could not be so used; because the tallow and oil, on being brought into contact with water at the temperature used, would separate from each other, and the consistence of the mass of oleaginous matter used by me is such that nothing less than the pounding operation of a fulling mill, or other equivalent machine, would be sufficient to fill equally the pores of the skin with such a mixture. While, therefore, I disclaim the use of any such rotating apparatus as used by Mr. Keeler aforesaid, or that used by Vauquelin for charging skins, &c., with oleaginous matter,

I *claim* the mode of stuffing leather, substantially as set forth, whereby I dispense with the usual time required in drying before stuffing, and render the neck and flank parts a superior quality of leather.

No. 14,821.—EUGENE L. NORTON.—*Improvement in Machines for Figuring and Polishing Morocco.*—Patented May 6, 1856.

The tool *J* has on its arbor a pulley *L*, around which the cord *o* passes, having its ends secured to the frame *C*. The reciprocation of the cross-head will therefore cause the cord *o* to rotate the tool. The bed *E* being mounted on springs, allows the tool to pass over leather of unequal thickness.

Claim.—The rotating tool for polishing or figuring leather when such tool has imparted to it a greater velocity than that due to rolling simply, in the manner and for the purpose specified.

No. 14,534.—SAMUEL GREEN.—*Improvement in Tools for Figuring Morocco.*—Patented March 25, 1856.

Wooden tools for figuring are liable to be flattened down or broken off. With a tool of agate, flint, or similar material, said defects are obviated.

Claim.—Making figuring tools *A* for leather of agate, glass, flint, or other similar silicious materials, substantially as described.

No. 15,462.—ALFRED SWINGLE, assignor to ELMER TOWNSEND.—*Improvement in Pegging Jacks.*—Patented July 29, 1856.

The last-holder *A* is sustained by a curved arm *a* extending from a straight slide *C*, into which two bolts *E* and *F* are fastened, whose dovetailed heads can be made to slide in the grooves *b* and *a*¹, crossing each other at right angles. By this arrangement the position of the last can be changed by moving the slide *C* when the two bolts slide in their respective grooves, and the last will describe an elliptical orbit. The last is secured by the screw-nut *G*, and, being supported by the two bolts *E* and *F*, is not liable to shake as would be the case were it made

to turn on one centre pin. If it is desired to raise or lower the last, then the two bolts E and F are adjusted in the vertical groove *b*.

The inventor says: I believe there is nothing new in sustaining a last by mechanism which will permit it to be revolved in two planes, and that this principle, though common both to my machine and that of Dewitt, was not the invention of the said Dewitt, nor is it claimed by him or by me.

I claim the arrangement and application of the trammel or grooved cross, its slide-bar and guide-pins, the last-holder and its sustaining arm, the same enabling advantages or new and useful effects to be attained, as specified.

No. 15,406.—ALFRED BAILEY.—*Improvement in Pegging Jacks*.—Patented July 29, 1856.

By lifting the last L, the spindle connected with the arm of the heel-piece is also lifted, and contracts the spring C sufficiently to give it force to hold the last firmly. The last can also be turned by turning the head-piece E down either way, so as to finish the edge of the shoe, by means of the bolt G.

Claim.—1st. The application of a spiral or other spring *c*, substantially as I apply it to hold the last L firmly in its place, and at the same time allow the head-pieces E and F to be put in any desired position without readjusting the last L or spring *c*.

2d. The arrangement by which the vertical head E may be turned vertically above the axis upon which it turns horizontally, in the manner and for the purpose substantially as described.

No. 15,055.—WILLIAM W. BATCHELDER.—*Improvement in Hand-Pegging Machines*.—Patented June 10, 1856.

The knife G contains two grooves; the lower groove is made to allow the peg-wood to slip through; the upper groove is cut for the screw *g* to play in, also for the purpose of allowing the lower end of the knife to drop a sufficient distance, so that when the peg-driver is thrown up to the top of the peg-receiver it will shut off communication between the trough and peg-receiver, thereby preventing the peg-wood from passing under the peg-driver. When the awl *e* is driven into the leather, the foot-piece H is thrown forward by means of the wedge *o*; when the plunger is thrown up, the point of the foot is set into the leather, thereby moving the machine along by the force of the spring I bearing upon the joint of the foot, as represented in fig. I.

Claim.—The attachment of the knife G to the plunger B, and the arrangement of the upper groove in regard to shutting off communication between the trough L and peg-receiver, substantially as described.

Also, the combination of the vibrating foot-piece H with the lower end of the machine, operated by means of the wedge *o* and spring I substantially as specified.

No. 15,575.—HENRY A. RAINS.—*Improvement in Cart-Saddles*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Uniting the tree-bars A and pads of a saddle, by providing said bars with grooves around their edges or with grooved rims, and the lining E of the pads with looped, corded, or perforated borders *p*, which are firmly but removably secured in the grooved edges of the tree-bars by wires, cords, or bands C passing through or around said loops or borders, and held by right hand and left hand screws *a*, or equivalent fastenings, substantially in the manner and for the purposes herein specified.

No. 15,681.—HENRY ADAMS.—*Ladies' Riding-Saddles*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—1st. The arranging of the near side horn *a* with the leaping horn *b*, attached directly to it on the side of the tree or saddle, near the front, and a short distance below the head of the same, substantially as and for the purpose set forth.

2d. Having the leaping horn attached loosely to the near side horn, so as to be capable of being reversed, and thus made to serve as a support or rest for the left leg while riding at a slow gait.

No. 15,392.—JOHN C. FR. SALOMON and GEORGE E. COOPER.—*Improvement in Riding-Saddles*.—Patented July 22, 1856.

The nature of this invention consists in providing the upper part of a saddle-tree with a metallic seat, fastened by two stationary swivel-pins *a a*; under the metallic riding seat is placed a spiral spring *b*, seated in a movable sliding chair *c*, to which are fastened two guiding rods *d d*. Under the sliding chair and its rods and on the upper side of each pad is placed a sliding guide *e*. The chair, with the spiral spring, can be moved in the guide rods *d* towards or from the pommel or cantel to suit the weight or convenience of the rider.

Claim.—The movable volute spring-seat chair *c*, with its guiding rods *d d* and the guides *e e*, in which the same is moved on the upper sides of the pads, in combination with the supporting rod *f* attached to the under side of the metallic riding seat, in the manner and for the purpose set forth.

No. 15,744.—PASCAL PLANT.—*Improvement in Riding-Saddles*.—Patented September 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: Disclaiming entirely the primary principle of applying spiral springs to saddles, and also disclaiming the use of enclosed compressed air-spring saddles, both principles of which have long since been well known and used.

I *claim* the distinguishing features of improvement, the sockets A B and vertical shanks F F, provided with immovable springs *g g*, arranged in the manner and for the purposes specified.

No. 16,032.—RICHARD TRUSSELL.—*Improvement in Stirrups for Riding-Saddles*.—Patented November 4, 1856.

If, by using this stirrup, the rider wishes to disengage himself from the horse, the foot piece B, on being relieved from the pressure of the foot, will assume the position represented in dotted lines, and by that means the stirrup causes the foot to be disengaged from it.

The inventor says: I do not claim the toe pieces, as I am aware that a toe piece has been used on a foot piece attached rigidly to the bow of the stirrup; but, in combination with the use of the toe piece or its equivalent, I *claim* the attachment of the foot piece B to the bow A of the stirrup by a shaft C, or other connexion of similar character, furnished with a spring *e*, to operate in the manner substantially as set forth.

No. 14,438.—SAMUEL BLACKWELL.—*Improved "Dumb Jockey," the "Cross" and Saddle tree being made of Gutta Percha*.—Patented March 18, 1856. England, March 9, 1853.

The object of this invention is to adapt the dumb jockey to the shoulders of horses of different sizes, and, further, to prevent the horse from injury in the case of its rolling or falling on his back during the operation of biting or breaking.

Claim.—Making the cross *a b* and the saddle tree *b'* of gutta-percha, and thus a new article of manufacture, one possessing advantages as specified.

No. 15,077.—JAMES IVES.—*Improved Mode of attaching Pads to Saddle-trees*.—Patented June 10, 1856.

In order to connect the pad C to the tree A it is only necessary to bring the slot *g*, cut in the bearing *e'*, opposite to the thin portion *d* of the journal *a*, and to move it to the position shown in dotted lines, fig. 4, bringing the circular holes *f f'* opposite to the journals, when the journals may be made to enter the holes *f f'*. The pad is now turned down (to the position shown in fig. 1) and thus prevented from getting loose from the tree.

The inventor says: I do not claim a hinged self-adjusting pad, as such a device was patented February 5, 1847, by Pope and Frasier; but I *claim* the peculiar construction of hinge-joint, herein described and shown, for connecting the pad C to the tree A.

No. 14,040.—JOSHUA TURNER, Jr., assignor to WARREN COVELL.—*Improvement in the Manufacture of Leather Shoe-Bindings*.—Patented January 1, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—The improved process above set forth in the manufacture of leather bindings, viz: Dividing a strip of leather into strips of equal width, joining or connecting them at their ends, so as to connect them into one long strip, coloring the same when so formed, and finally splitting it, so as to remove the fleshy surplus portions, and reduce the whole to one equal thickness.

No. 15,176.—ISAAC A. DUNHAM.—*Improvement in Shoemakers' Edge-Planes*.—Patented June 24, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim a moulding stock, formed with a throat, so as to receive a movable and adjustable moulding cutter; nor do I claim so making a cutter that its moulding surface and cutting edge shall be made in one piece of metal.

But I *claim* my improved tool, having part *a* of its moulding edge C stationary and formed with a cutting edge, and the other part *b* of said moulding edge made movable with respect to the first, and so that, while cutting with the tool, the moulding surfaces of both parts may rest in contact with the material which is to be cut, my tool enabling me also to polish the reduced surface while a shaving is being removed.

No. 14,799.—THOMAS D. BAILEY.—*Improvement in Pegging-Jacks or "Shoemakers' Head-Blocks"*.—Patented May 6, 1856.

By means of the arrangement of fastening the turn table A to the block B, a recoil is prevented, when a blow is struck upon the last G, and the spring will yield enough to allow the turn table to be revolved by hand, being stiff enough to prevent its turning by the action of hammering.

Claim.—1st. The method of fastening the turn table A to the block B, by means of the screw C and spring O.

2d. I do not claim the lever D, nor do I claim the use of the wedge L as a means of forcing the lever down, and securing it to its place, as such an arrangement is already known.

But I *claim* the peculiar construction of the wedge L, having a convenient handle M and pawl Q attached to it, which pawl plays into a ratchet N made in the turn table or bed plate A.

No. 16,280.—JESSE LADD.—*Improved Machine for Pointing Shoe-Pegs*.—Patented December 23, 1856.

A block of suitable form being placed upon the vibrating bed, composed of fingers A, and pressed down upon the ridges B, it is pushed forward under the feed roller D, which carries it forward to the cutting tool. This knife z, driven by pitman W of the driving wheel, cuts as it advances parallel angular grooves in the block, equidistant from each other, depending for that distance upon the ratchet wheel P or stroke of pawl R, and the operation proceeds until the block has been completely gone over. The block is then replaced upon the bed, and again advanced to the feed roller, so that the knife shall cut another series of parallel angular grooves at right angles with the former, and guided straight forward by the ridges B and C.

The inventor says: I do not claim the triangular knife, nor the guiding ridges B B and C C C, nor the feed-roller.

I *claim* the employment of the fluted or toothed feed-roller D, in combination with the vibrating bed, composed of the fingers A A, &c., operating in the manner and for the purpose set forth.

No. 16,013.—NATHANIEL HAYWARD.—*Improved Catch for India-Rubber Shoes*.—Patented November 4, 1856.

The spring c with the catch d presses when the shoe is put on against the heel of the under-shoe, and serves to retain the over-shoe in its place. The over-shoe can be readily taken off by simply pressing with one foot upon the lip e, which will release the catch d from the under-shoe.

Claim.—The use of a steel rubber, or other kind of spring catch of any proper shape, in the heel of an India-rubber over-shoe or clog, having a projection or lip extending out horizontally or through the quarter, as specified; whereby the over-shoe is prevented from slipping at the heel, and is susceptible of being disengaged from the under-boot or shoe, without using the hands, as set forth.

No. 15,896.—SAMUEL W. PINGREE.—*Improvement in the Order of Applying Tan-Liquor to Hides*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim. The object of using sumac and alum in this process of tanning is to soften the partly tanned skins or to retain them in a soft state, so that they may be pliable when the tanning process is completed. The alum toughens the hide.

The inventor says: I do not claim the separate use of any of the chemical materials mentioned for the process of tanning, as I am aware that all of them have been before employed; and particularly, I do not claim the neutralization of the alkali by the use of sulphuric acid, preparatory to the introduction of the hides into the tanning liquor.

But I *claim* the use of the catechu and the sumac and alum, with

reference to the application of the bark or strong tanning liquor, as stated, and so as to produce effects as set forth, and in the order as specified, when the hide is tanned with the hair on it.

No. 14,399.—R. GOULD.—*Improvement in Tanning*.—Patented March 11, 1856.

The nature of this improvement will be understood from the claim.

The inventor says: I do not claim the use of catechu in the process of tanning, as my invention for its use has long been known. I do not claim to have discovered any new property of catechu, or nitre, or of alum, in relation to their employment in tanning operations; but I do *claim* to have discovered that, in order to insure the proper exercise of the properties of these substances in tanning, they must be used in a certain manner, differing from the mode in which they have hitherto been known to be used. I claim to have discovered that, in order to use these substances effectively for tanning, they must be employed substantially according to the processes set forth in my application; and I claim to have discovered that, when these three substances, or their chemical equivalents, have been employed together, they have and must fail, as they are, to some extent, incompatible when so used. But I claim the use, in the process of the tanning of hides and skins for the making of leather, of the two solutions above described, used and applied each separately, or at different times, and in the order following, viz:

1st. By using a combined solution of catechu (or any other material its equivalent, as containing the tannic properties) and saltpetre, substantially in the mode of application, or any equivalent, as above described.

2d. By using a combined solution of catechu (or any other material its equivalent, as containing the tannic properties) and alum, substantially in the mode of application above described, or any other mode of application equivalent thereto.

No. 14,375.—ABRAHAM STEERS.—*Improvement in Tanning Apparatus*.—Patented March 4, 1856.

A¹ A² is a three-sided frame. The hide is doubled lengthwise and placed upon the frame A¹, so that the fold of the hide will be at the open side of the frame. Then the frame A² is placed on top of frame A¹, and the hide firmly clamped between the two frames by screwing them together, so that the frame will be water-tight on three sides of the hide. The frame is then removed into the position represented in the engraving, so that its two pivots G G will play in grooves in the uprights F F. The frame with the hide can then be changed to any position, and the liquor be admitted through tube H.

Claim.—The apparatus within described, or its equivalent, to charge the skins stretched on a frame with a thin stratum of tan liquor, constructed and operated substantially as described, and for the purposes essentially as specified.

No. 15,303.—SAMUEL W. PINGREE.—*Improvement in Tanning Hides*.—Patented July 8, 1856.

The nature of this invention will be understood by reference to the claim. The inner layer of the skin which is to be removed does not combine with the tannin, and by removing the same the tanning liquor will have free access to those layers of the skin which combine with the same.

Claim.—When the hide is to be tanned with the hair either on or off, as the case may be, removing or skiving off the inner layer thereof, or the same and a part or parts of the middle layer of it, preparatory to immersing such hide in the tanning liquor.

No. 15,157.—ISRAEL P. WILLIAMS, assignor to HENRY L. WILLIAMS.—*Improvement in Pre-tanning Compositions*.—Patented June 17, 1856.

The object of this invention is to swell the hide after the action of the bate so that the tannin can penetrate it, and at the same time, to prevent putrefaction by the action of a bath of carbonate of soda and nitre. The bath of acidulated water is employed to neutralize the alkali near the surface of the hide, in order that the alkali may not act on the tanning liquor when the latter is fresh, and so as to impart to the hide too dark a color, as the tanning liquor becomes acid by exposure to the atmosphere.

The inventor says: I do not claim the employment of either carbonate of soda or nitre in the tanning liquor, nor do I claim the employment of a hydrated solution of nitrate of potash and muriate of ammonia in the treatment of hides preparatory to their being immersed in the tan-vat.

But I *claim* subjecting the hides, after the "liming" and "drenching" of them, and preparatory to their being immersed in the tanning liquor, to the action of a bath of the carbonate of soda and nitre, and one of an acid solution or mixture as specified, the same being for the purpose as set forth.

No. 15,736.—GEORGE W. HATCH.—*Improvement in the Preparation of Hides for Tanning*.—Patented September 16, 1856.

This invention consists in exposing the wet hides to the influence of smoke before they are put into the tan-liquor; the process of tanning is shortened to a considerable degree by this method.

The inventor says: I do not claim the use of pyroligneous acid as such, but confine my *claim* to the use of smoke from wood or other equivalent combustibles, in the preparation of hides for rapid tanning, as set forth.

No. 15,844.—ELIAS A. ELIASON.—*Improvement in the Construction of Hide Frames in Tan Vats*.—Patented October 7, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventor says: I am well aware that hides have been immersed in quantities attached to frames, or wheels, or cords, in a horizontal position, and kept out of contact with each other; but in no instance have those several devices been connected to each other in such manner as to form a frame or false vat, by which the whole could be simultaneously immersed in or withdrawn from the liquor vat.

I *claim*, 1st, arranging a series of ranges of horizontal slats in a false vat or frame upon which the hides are placed, one upon every range, whereby the whole may be simultaneously raised out of the liquor vat, (without pumping off the liquor,) substantially as and for the purposes described.

2d. I claim the axial cross-ties D D, when connected with the frame C, in combination with the hooked rods F F and shaft e, whereby the frame or false vat may be revolved or reversed, for the purposes described.

No. 15,826.—STEPHEN F. SUMMERS.—*Improvement in Trunks*.—Patented September 30, 1856.

The principal feature of this improvement consists in the employment of metallic strips D, passing lengthwise along the inside of the trunk at a small distance, respectively, from each side, and firmly riveted to the bottom thereof through the brace linings. The object of these strips is, to afford a firm support for securing the casters G to the trunk, and thus dispense with the usual outside guard-strips on the bottom.

Claim.—The inside metallic strips D, arranged in combination with the casters, substantially in the manner and for the purpose set forth.

No. 16,125.—SAMUEL W. PHELPS.—*Improvement in Travelling Trunks*.—Patented November 25, 1856.

This trunk opens at the side by a pair of side doors *a b*, which are provided with a lock, whose bolt *c* engages in a suitable recess *d* in the horizontal partition *e*. The spaces above and below the partition *e* are subdivided by horizontal partitions *f g*, and three of the four compartments are fitted with drawers *h i j*, the remaining compartment *k* being left open for the stowage of shoes, soiled linen, etc. The square space *p* is intended for the protection of a hat or bonnet. The cover *m*, fitting loosely to drawer *j*, may be fastened down by strap *n* and buckle *o*.

Claim.—The arrangement, substantially as described, of drawers, partitions, and side lids or doors, for the combined purposes of security, orderly arrangement, and accessibility of all the contents in a travelling trunk, as set forth.

No. 14,879.—WILLIAM J. MCCracken.—*Improvement in Wardrobe Trunks*.—Patented May 13, 1856.

When the part *a* of the trunk is raised in a horizontal position, the lid F may be raised, the door *h h* opened, and articles placed within

the box E. The trunk is converted into a wardrobe by removing the hook *f* from the staple *g*, and then withdrawing the box E from the part *a*. The strips *l l* are then raised to a vertical position, the dovetails *m* being fitted in corresponding recesses in the ends of the box E. The strips *l l* project some distance above the box E; but, by shoving down the slide *j* and securing it by the bolts *g*, and turning down the parts *k k* of the doors *h*, the box E will be lengthened, and form a continuation of the part *a*.

Claim.—The construction and arrangement of the supporting strips *l l*, in the portion of the trunk *a* for uniting the sliding portion of the wardrobe E to the part *a* of the trunk.

XVII.—HOUSEHOLD FURNITURE, ETC.

No. 15,603.—CHARLES P. CARTER.—*Apple-Parers.*—Patented August 26, 1856.

The apple being placed upon the holder, the latter is advanced towards the paring-knife D by means of handle P. The paring-knife swivels freely upon an arm E rising from the horizontal rod F, that vibrates freely beneath the staples *a*, and is operated upon by a spring G pressing upon its bent end. As soon as the forward end of the apple has been operated upon by the paring-knife, it strikes against the corer L, which consists of a cylindrical cutter attached to disk H, which latter is also secured to a spiral ring I; and at the same time the slicing-knife *c* enters the fruit, and cuts it from the centre to the outer surface, dividing it into a spiral slice.

Claim.—The disk H with its corer L and slicing-knife *c*, operating in the manner and for the purpose substantially as set forth, viz: the purpose of the said disk being to regulate the motion of the apple, as described, by the pressure of the hand, without the necessity of any other screw; it being understood that I do not claim merely the use of a slicing-knife for slicing the apple into a spiral, as that is not new.

No. 15,625.—MARVIN SMITH.—*Apple-Parers.*—Patented August 26, 1856.

The apple being fixed upon the fork *c*, it is moved forward in the direction of the knife *m* by pressing upon the knob of spindle *h*, until the knife *m* has passed entirely over the apple, when the knife falls back to the position indicated by dotted lines *p*. The fork *c*, with the gears in mesh, is then moved upon the shaft *a* in the direction of and against the bearing B¹; the pins *g g* and crank F becoming disengaged, the pinion *o* is brought into gear with the wheel *f f*; and the spindle *h*

being turned once around upon its axis, the fork with the apple upon it will also be turned against the slicing-wheel E. The fork *c* having upon it the apple-core is then turned upon shaft *a* in the direction of and in contact with pawl H, whereby the core is removed.

The inventor says: I do not claim the combination in the same machine, as such, of knives of different kinds, and operating in different ways, for the purpose of paring and slicing apples; it having been done many years since.

But I *claim*, 1st, the construction of a machine for paring and slicing apples in such a manner that a vibratory or oscillating motion may be given to the fork carrying the apple, simultaneously with the axial or rotating motion of the same; whereby I am enabled to use a paring-knife that shall be automatic or self-acting in its operation, yet equally adapted to paring apples large or small.

2d. I claim the knife *m* and handle G, hinged and operating in such a manner that the adjustment of the cutting-edge of the knife to the entire surface of the apple shall be coincident with the vibratory or oscillating motion of the fork carrying the apple.

3d. I claim the pawl H, or its equivalent, hinged at such a point with respect to the oscillating centre of the fork *c*, that, as the said fork moved in the direction of the hinge of said pawl, the point of contact between the fork *c* and the pawl H shall recede from the oscillating centre of said fork *c*.

No. 15,683.—JOHN D. BROWNE.—*Apple-Parers.*—Patented September 9, 1856.

The apple to be pared being placed upon the fork E, the knife *p* is pressed against said apple by means of spring *q*, to which it is attached; motion being imparted to the gearing of the machine, the fork *e* is revolved, and the toothed sector *m* operates the pinion *b* and the guiding-bar E, through which the spring *q* passes, and the knife *p* is thus carried around one-half of the circumference of the apple. When the knife reaches the outer end of the apple, the guiding-loop bar E will be released from segment *m*, and then the teeth *n* on the outer edge of the wheel D will gear into the opposite teeth *o* of the bar E, and consequently return it with an increased speed to its original position.

Claim.—The returning or reversing action, as described and forth.

No. 15,224.—COOK DARLING.—*Improvement in Machines for Cutting and Coring Apples.*—Patented July 1, 1856.

The apple being placed on the platform *a* under the knives *h h*, the plates *f f* are moved down by means of handle Q and bar *o*, the curved slots *e e* and *d d* imparting a lateral motion to the plates *f f*, and the portions *h h* will divide the apple in two, while the curved portions J take out the core.

Claim.—The machine for dividing and coring apples at one opera-

tion, the knives having a lateral as well as a vertical motion in their descent, so as to separate the core by a cut wider in the centre than at the ends; the whole being arranged substantially in the manner and for the purposes herein set forth.

No. 14,775.—EPHRAIM L. PRATT.—*Improvement in Machines for Paring Apples*.—Patented April 29, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the lower end of the knife-shaft I to the stud projecting from the larger segment L by a flat steel or other spring S, for enabling the said knife-shaft to have a slight vibration through the twisting or torsion of said spring; for the purpose of adapting the edge of the knife to the inequalities of the surface of the apple during the process of paring, and enabling the elasticity of the spring S, produced by the twisting or torsion of the same, to be exerted towards bringing the edge of the knife, when thus moved, back to its proper relation to the surface of the apple.

No. 14,800.—JOHN D. BROWNE.—*Improvement in Machines for Paring Apples*.—Patented May 6, 1856.

As the wheel J rotates, one of the projections *l* will bear against the upper edge of the frame G, and the frame will consequently be turned, and also the knife *n*, which will pass from the back to the front end of the apple, travelling over one-half of its circumference, and paring the whole apple.

When the knife reaches the outer end of the apple, the projections *l* will reach the slot *m* in the frame, and will pass through it, and the frame and knife will be released from the impelling wheel J, to be thrown back to their original position by the spiral spring H.

The inventor says: Various devices have been used, such as scrolls, spirals, levers, springs, wheels, cords, &c., in connexion with the driving-wheel for carrying the knife over the fruit to be pared, and other devices for detaching the knife. I do not claim any of these.

But I *claim* the projections on the impelling wheel J and frame G, when the wheel J is hung on a centre within the circle of action of the projections, and sufficiently eccentric to the frame G for the escape of one projection over the other, as shown, and for the purpose specified.

No. 15,133.—HORATIO KEYES.—*Improvement in Machines for Paring Apples*.—Patented June 17, 1856.

The lip *e* will be moved in or out, as the prominences and cavities of the apple pass it, and the cutter R will be moved in a corresponding inverse manner as the cutter-head works on the pin *d*, and consequently the apple will be pared in a perfect manner.

The inventor says: I do not claim the machine herein described for

operating the cutter, for that has been previously used; but I *claim* attaching the cutter-head Q to the bar M by a pivot *d*, and having a lip or bearing piece *e* on the cutter-head, as herein described, for the purpose specified.

No. 15,148.—JOHN D. SEAGRAVE.—*Improvement in Machines for Paring Apples*.—Patented June 17, 1856.

The crank-wheel K being turned, F rotates and gives, in proper time, the segment-wheel M a half revolution, nearly carrying the knife-holder R over the article to be pared, the spring S allowing almost any size to be placed under the knife, and holding the knife, pressed on to its surface. To pare uneven surfaces, it is necessary for the knife-holder R to turn either way; and for this purpose the rod P is allowed to turn in D, and the spring S is attached to the eye F to return it to position again, making the spring S perform two actions: the one to hold or draw the rod P towards the centre of wheel M, the other to hold or return the knife to position.

Claim.—The attaching the spring S to the rod P, so as to hold or return the knife to nearly right angles to the line of motion of P, to or from the centre of M.

No. 16,104.—CHARLES P. CARTER, assignor to LEONARD HARRINGTON.—*Improvement in Machines for Paring Apples*.—Patented November 18, 1856.

The apple being placed upon the semi-circular knife W on the shaft B, the crank Z is turned, which causes the worm *t* to engage the upper end of standard G of the frame R F G, which brings the knife Q up to the apple to be pared, and said frame, with the paring knife, is moved through the entire length of the apple. When the apple is pared, the latch *g* is thrown back into the dotted position of fig. 3, and shaft B and knife W are raised into the position shown in dotted lines in fig. 1; whereby the standard G is disengaged from the worm *t*, and thrown back into its original position by the action of spring *o*. By then holding the crank Z with one hand, and turning the apple against the sharp edge *r* of knife W, the apple is cored and the operation finished.

Claim.—I *claim* the semi-cylindrical holder, constructed and operating in the manner substantially as described, for the purpose of holding and coring the apples, as set forth.

2d. The peculiar form and arrangement of the spring *o*, for the purpose of throwing back the carriage, and operating with an equable pressure during the whole of the progress of the knife.

No. 16,240.—HORATIO KEYES.—*Improvement in Machines for Paring Apples*.—Patented December 16, 1856.

As the wheel I is rotated, a rotary motion will be communicated to the fork G and also to the wheel K, and the knife-head P will conse-

quently pass around the fork G in a circle, the knife being made to bear against the apple on one side by means of the spring N; and as the knife passes around at the opposite side of the apple, it is kept thrown out from the apple in consequence of the lower end of the arm bearing against the cam O. When the knife-head P is thrown out by cam O, the head is allowed to pass underneath the shaft b.

Claim.—Giving the knife a circular movement entirely around the fork G and apple thereon, by means of the wheel K, with the arm M and knife-head P attached, and the cam O, arranged as shown, or in any equivalent way, to effect the purpose desired.

No. 16,080.—EPHRAIM L. PRATT, assignor to LEONARD HARRINGTON.—*Improvement in Machines for Paring Apples, Potatoes, &c.*—Patented November 11, 1856.

The object to be pared being forced upon suitable prongs, as represented at T, the crank G is turned, which causes the screw-shaft F to be moved in tube I by the action of rack R on the screws, and the object to be gradually moved past the knife N; the spiral-spring P keeps the gauge M which bears the cutting-knife N in contact with the object, and as the knife passes over its surface the operation of paring is performed; the depth of the cut being equal to the distance between the edge of the knife and the inclined surface of the gauge.

Claim.—1st. Moving the apple, potato, or other object, in a direct line past the knife, or the knife past the object, during the revolution of said apple, potato, or other object, by means of the screw-shaft and cogged-rack, or other device substantially the same; whereby the operation of paring is performed by the turning of the screw-shaft without any other movement of the knife than that occasioned by the curvature, size, and inequality of the surface or form of the article being pared, to which the said knife is accommodated by the action of the spring, as fully set forth.

2d. The peculiar form of the knife: that is to say, shaping the portion nearest the shaft of the form of a segment of a circle of a given radius, and the remaining portion furthest from the shaft of such curvature as will form a segment of a cycloid of a circle combined with the first portion, and correspond, or nearly so, with the spiral curve of the screw, when the end of the apple, potato, or other object is being pared, in such a manner as to enable its edge to assume at all points of contact with the potato, or other object, a convex curve the reverse of the convex part of said apple, potato, or other object with which it is in contact, and thereby enable its end and every inequality of its surface to be pared by thus accommodating the edge of the knife to these parts, substantially as set forth.

No. 16,067.—EPHRAIM L. PRATT.—*Improvement in Machines for Slicing Apples.*—Patented November 11, 1856.

The core of the apple being pressed upon the forks M, rotary motion is imparted to shaft C. The studs T on the inner face of the plate P,

moving over the curved edges of the heart-shaped bar N, cause said plate P to be moved on its jointed bars Q, so as to alternately bring the knife-guides U on its ends at every revolution over the curved top part of the upright bar O, and thus cause the knives V to descend and slice the apple parallel to its axis.

Claim.—Attaching the knives to a reciprocating piece P, by means of pins or axes on which they can so rotate, in combination with the straight rod or guide O, for the purpose of causing the knives to descend through the apple in lines parallel to its axis, as set forth.

No. 16,150.—E. Y. ROBBINS.—*Improvement in the Baby Walker and Jumper.*—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the upper extension of the broad-based caster-supported frame of the apparatus around and over the head of the child, coming in contact with articles of furniture, as he moves himself over the floor, and forming a support for the jumper (or child-sustaining canvass-covered hook), and also serving the purpose of suspending toys above the head of the child, and within his reach, to amuse him, and at the same time cause him to judiciously exercise his arms and chest, substantially as set forth.

No. 15,127.—R. GLEASON, jr.—*Improvement in Silver Plate Cake and Fruit Baskets.*—Patented June 17, 1856.

When the lids or covers are over the body A of the basket, their upper ends rest upon the edge of the plate D, as shown in dotted lines. When the lids are not wanted, they are raised in a vertical position, then turned vertically downward, and then turned upward underneath the body A, and secured by the catches G G.

Claim.—Attaching the two lids or covers E E to the box A of the basket by the swivel-joint hinges F F, the lids or covers corresponding in form to that of the body A, whereby the lids or covers may be placed over the body A, or turned downward and secured by the catches G G underneath the body.

No. 15,900.—CHARLES SCHRODER.—*Improvement in Spring Bed-Bottoms.*—Patented October 14, 1856.

The nature of this invention consists in the arrangement of spiral springs D lying parallel to each other, and horizontal under the bedstead bottom. Each row being made of a continuous wire, and the several rows being connected together by wires F passing through the centre of said springs, the whole being fastened to the frame, thereby forming an elastic bottom.

Claim.—The arrangement of springs lying horizontally, and connected together, in the manner and for the purpose specified.

No. 16,310.—ELKAN ADLER.—*Improvement in Spring Bed-Bottoms*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination of the metal caps *c*, connecting links or straps *d*, and springs *b* and *s*, in the manner and for the purpose set forth.

No. 14,574.—CALVIN A. RICHARDSON.—*Instrument for Stirring Straw and Husk Beds*.—Patented April 1, 1856.

The nature of this invention consists in a handle A, with two or more hooks B C.

Claim.—The mode of constructing said instrument, for the purpose of stirring filling in beds.

No. 15,249.—ANSEL MOON.—*Bedstead*.—Patented July 1, 1856.

The rails are secured to each other by a flange A of iron, which fits to the rising posts, and by dropping down said post until the centre of the flange strikes the screw B, thereby forming a perfect lock-joint.

Claim.—The application of this "lock-joint" (so called) to the manufacture of bedsteads.

No. 15,609.—ELIAS HOWE, jr.—*Improved Bedstead*.—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

The inventor says: I am aware that spring beds of various descriptions have heretofore been made, and I do not claim the use of springs for such a purpose; but I *claim* a spring bed constructed of a series of springs which overlies each other, all combined together and arranged in an inclined position upon a bed bottom, substantially as set forth.

No. 14,660.—WILLIAM HINMAN.—*Improvement in Bedstead Fastenings*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Giving an upward inclination to the upper surfaces of the tenons on the side boards *a* and on the head and foot boards *g*, and a corresponding shape to the mortises in the sections *d d* of the posts that receive said tenons; by which the action of the screw connexions between the upper and lower sections of the posts is enabled to form a close jointed and perfect union between the rails *b c*, the head and foot *g*, and the sectional posts *d f*.

No. 16,093.—SPENCER LEWIS.—*Improvement in Bedstead Fastenings*.—Patented November 18, 1856.

To fasten the rail to the post P the tenon *t* is inserted at the top of the mortise, as shown in fig. 1, and the pin B passed downward through channel *c* and the perforation in the mortise. Downward pressure on the rail carries the tenon into the position shown in figs. 2 and 3, the inclined pin B drawing the end of the rail close to the face of the post. As the rail slips downward, the guard G, turning on its attachment *a*, adjusts itself to the rail, bringing its upper end in contact with the stud *b* on the rail, and the fastening is completed.

Claim.—The inclined pin passing through the post and tenon, as described, in combination with the segmental guard G and stud *b*, operating substantially as specified.

No. 16,276.—SANDY HARRIS.—*Improvement in Bedstead Fastening*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination, substantially as described, of the dovetail with the staple or mortised projection E, which I have termed the "wedge-box," and its key acting upon an inclined face, in the manner set forth.

No. 15,076.—WILLIAM HUNTRESS.—*Improvement in Bedsteads*.—Patented June 10, 1856.

This invention consists in providing a bedstead, as clearly shown in the engraving, with a register windlass foot-rail C, and a lever for the purpose of fastening and straining a bottom of cords, pins, and slats, having a smooth, level surface.

The inventor says: I do not claim the cords, slats, windlass, or any of the parts when used in the manner in which they have before been used. But I *claim* the pins P P when placed in the under side near each end of the slats and interlaced with the cords, as above described.

No. 15,235.—SILAS HUDDLESTON.—*Improvement in Bedsteads*.—Patented July 1, 1856.

In order to bring the cord C to the proper tension, the tightener D (consisting of the two rings *a a* connected together by the cross-piece *b* *s* turned round by hand, and held in position by inserting the pin *h* in one of the holes *g g* in the end rail A.

Claim.—The arrangement herein described and shown, consisting of the device D *a a b d e c*, end rail A *c c g g g*, and stop pin *h*, for the purpose of tightening and retaining taut the cord *c* which forms the bottom of the bedstead.

No. 15,552.—JOHN H. BELTER.—*Bedsteads*.—Patented August 19, 1856.

The material of which this bedstead is made consists of layers of veneers, placed on each other at right angles, and glued together. These are then bent into the desired shape of the intended bedstead, and the latter may be composed of two or more separate pieces, which are fitted together by means of dowels F, fitting into corresponding recesses of the adjoining piece; both parts are independently supported by means of castors E. The bedstead is kept in its proper shape by means of the bottom C, the notches B¹ of which can be placed upon the oblique side of the projections B.

Claim.—A bedstead constructed of thin parts A A, supported independently without posts or joints, when the parts are composed of veneers, and arranged substantially as described and for the purposes set forth.

Also the wedge-shaped projections B B on the inside face of each part of the hollow notches B¹ B¹ on the edge of the internal frame C, when combined substantially as described and for the purposes specified.

No. 15,621.—JACOB J. SMITH and JONATHAN H. PUGH.—*Bedsteads*.—Patented August 26, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—1st. Supporting the four main posts B B of a bedstead by screwing or otherwise inserting them, so that they shall stand securely, without connexion with any rails upon the base A, being held together at its corners by means of the tenons on the said posts; all substantially in the manner set forth and described.

2d. We also claim adjusting the said platform, or its equivalent, to any required inclination, as described, by means of the left and right screw-shaft G, blocks F F, inclined planes e e, disk H, and plates K K, or their equivalents, as described.

No. 15,648.—CHARLES H. GOULD.—*Bedsteads*.—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—The within described spring bed-bottom, constructed essentially of the slats B, pivoted at the lower ends, the bar C, springs D, and band E, operating in the manner substantially as set forth.

No. 14,668.—MARSHALL LEFFERTS.—*Improvement in Metallic Bedsteads*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim angle-iron in itself; neither do I

claim Ω -shaped or corrugated metallic bars, as both these forms of metal are well known; but I am not aware that the bottom of a bedstead has ever before been formed of a combination of these metallic bars, together with the tie-rods, as set forth; thereby the bedstead bottom is made in the most convenient and durable form, combining strength and lightness, because the angle-iron receiving the ends of Ω -formed cross-bars makes a neat and durable attachment by simply uniting the flat part of the Ω -forms to the horizontal part of the angle-iron, (these two forms thus being better adapted to each other for this purpose than any other character of corrugated metal,) and the tie-straps connecting the cross-bars at the same time sustain the mattress and prevent the said cross-bars from twisting, as specified.

What I claim is the combination of the angle-iron side-rails a with the corrugated or Ω -formed cross-bars b and straps c and d, in the manner and for the purposes specified.

No. 15,658.—WILLIAM H. KIMBALL and ANDREW J. FRENCH, assignors to Themselves and AMOS K. NOYES.—*Spring Bedstead*.—Patented September 2, 1856.

By turning the crank-nut I on screw h of the rod H, the levers B and B¹ are made to turn on their fulcra e, the distance between the bars D and E will be shortened, and that between the bars E¹ and D¹ will be increased, and the tension of the springs F will be increased. This arrangement serves to restore mattresses to their proper position, should they sag the course of time.

Claim.—Arranging and combining together and with the frame or bedstead A the springs F F F and their connection-rods G G G in manner essentially as set forth, the rocker-bars D E, the levers B C B¹ C¹, bars D E, straining-screw rod H, and crank-nut I; the whole being made to operate substantially in the manner specified.

No. 15,209.—ALVAH FOOTE, assignor to Himself, IRA RUSSELL, A. B. R. SPRAGUE, and HENRY PHELPS.—*Improvement in Spring-Bottoms for Bedsteads*.—Patented June 24, 1856.

The spring-bed can readily be restored to its normal position, in the case of sagging, by setting the straining-screws C C, which latter also serve to regulate the springs F.

The inventor says: I am fully aware that a combination consisting of a suspension spring, a thrust spring, and a curved arch spring placed between them, while the two former springs are arranged so that one shall be directly over the other, is not new, and that the same is applied to a bedstead that was patented by Ira Russel on the 16th day of September, 1851. Therefore I do not claim such; but I claim—

Combining with the bedstead and its system of bands D D E E and springs F F the extension devices or bars B B and screws C C, whereby advantages, as above stated, are attained.

No. 14,514.—HENRY R. PLIMPTON and JAMES L. PLIMPTON.—*Improvement in Wardrobe Bedsteads Combined with other Furniture.*—Patented March 25, 1856.

The bedstead, toilet-table, writing-desk, &c., are placed together in secretary form, as seen in figure 1. If we wish to change them to a bedstead, toilet-table, &c. the front of the secretary is pushed back until the springs *i i* catch at the bottom and hold the bedstead and portions of the secretary combined in an upright position. The toilet-table or wash-stand is then to be drawn from beneath the writing leaf and its back turned up. The bedstead being turned down, the side-panels *K K* are to be unfolded and the cornice *J* turned over in front, as seen in figure 3. The catches *i i* are then disengaged by pulling the key *r*; the bedstead and portions of the secretary combined are then to be turned down until the cornice *J* strikes the floor. The cord *S* that confines the head and foot boards upon the bedding is next to be removed from the knob *T*, and the head and foot boards turned up to their places. The pillows being placed, and the wash, toilet, and chamber articles being taken from the apartment *N* and set in their respective places, the whole is ready for use.

The inventors say: We do not confine our invention to the particular form or forms of any one or more of the parts as herein set forth, as many variations may be made therefrom without deviating from the principle or main features of our invention: for instance, the portion *J* may be used only as a support for the foot of the bedstead, and the cap or cornice to the secretary may be made separate, so as to take off and form a top to the toilet-table when placed thereon. Or, in some instances, the toilet-table may be wholly dispensed with, and some other article substituted in its place.

We do not claim as our invention any particular manner of constructing the base or portions *A B C*, &c., upon which the bedstead and portions of the secretary combined are supported and made to turn.

Neither do we claim the spiral springs for sustaining the bedding, or the pieces *i i*, or any of the catches or fastenings herein described.

Neither do we claim simply the devices of a bedstead made to turn up or fold up into the semblance of a secretary, wardrobe, or other like articles of furniture, as that may be and has been done in various ways, without interfering with our invention.

But we *claim* constructing a bedstead, with suitable parts attached thereto, in such a manner that when not in use as a bedstead it may be folded up and turned upright, and when in that position, by placing therewith a toilet-table or wash-stand, or any other article of similar appearance, the whole apparently will form a secretary, book-case, wardrobe, cupboard, or any other piece of furniture, as herein set forth.

No. 14,593.—JASON BARTON.—*Improvement in Pressure Bells.*—Patented April 8, 1856.

The bell swings on the horizontal pivot *a*, which is secured to the

stand *B*. The spring *d* acts upon the upper part of the tongue *f*, in order to keep the hammer *E*, together with the rod *b* and knob *c*, in a raised position.

Claim.—So suspending the hammer by a point near the top of the bell, but out of the centre thereof, that the said hammer shall swing from a point near the edge of the bell into the top part of the interior of the bell, and *vice versa*; thus allowing it a downward velocity and a very long movement, and at the same time allowing it to strike the bell near the edge, and at right angles, or nearly so, to its surface.

No. 15,573.—ADONIJAH RANDEL.—*Improved Bristle-Separator.*—Patented August 19, 1856.

The bristles are placed underneath the board *J*, the rollers *M* serving as weights to the board *J* and to keep its lower edge upon the bristles. A vibrating motion is communicated to the board *J* from the pulley *G*, and the lower edge of the board acts upon the bristles; and as it works back and forth, the butts of the bristles will be separated from the points, and the butts will be passed foremost through or between the rollers *L M* at each side of the board *J*.

Claim.—The vibrating board *J* and discharging-rollers *L L M M*, arranged and operating as shown, for the purposes specified.

No. 14,883.—THOMAS H. POWERS.—*Improvement in Brooms and Brushes.*—Patented May 13, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: The mode of securing the broom by means of the flattened cone and *T* follower *I* do not claim, such device in itself not being new.

But I *claim* the frame composed of links and rods *e f*, which surrounds the broom and holds it in connexion with the cone.

No. 15,702.—THOMAS MITCHELL.—*Improved Machine for Manufacturing the Wooden Part of Brushes.*—Patented September 9, 1856.

The nature of this invention consists in combining with a common circular saw *A* a cutter-wheel *E*, composed of a set of chisels, moving with said saw, for the purpose of cutting curved outlines, said apparatus being particularly adapted for cutting the wooden part of brushes.

Claim.—The combination of a circular saw with a cutting apparatus, formed as described, for the purpose of applying circular saws to the cutting of the curved figures, substantially as set forth.

Also, the combination of the apparatus first claimed with a crown-saw attached to an arbor common to both, forming a tool for the advantageous manufacture of brush-handles, or other analogous work, substantially as set forth.

No. 16,126.—AURELIUS M. PURNELL.—*Improved Apparatus for Exhausting Air from and Hermetically Sealing Cans and Vessels.*—Patented November 25, 1856.

This invention consists in connecting an exhauster A with a jar K, by means of a pipe B and a compound-stopper D E, provided with a flange F and tube G, the latter fitting into tube C of pipe B. The exhauster A being partially filled with water, the entire apparatus is placed alternately in warm and cold water, by which a vacuum is alternately created in the exhauster, thus drawing the air from jar K.

Claim.—The apparatus, constructed and operated as and for the purposes described.

No. 14,439.—CHARLES BRANWHITE.—*Improvement in Hermetically Sealing Preserve Cans.*—Patented March 18, 1856.

That part of the flange of collar *a* which is in contact with the tin is bevelled inward, so that its outer edge only takes bearing. The rim of cap *b* projects outwards and downwards, taking a bearing upon the centre of the rubber gasket C. The lower margin of this rim is narrow, or brought nearly to an edge, to secure considerable indentation in the gasket, insuring thereby a more perfect joint than where the whole surface is covered.

Claim.—Confining the top of the can E between bearing surfaces by means of the collar *a* and screw *b*, as described, thereby dispensing with solder or cement in forming a joint.

I also claim the peculiar form given to the internal and external bearing surfaces of this attachment for closing a can, when formed, combined, and used as set forth.

No. 15,088.—CHAS. E. RUSSELL.—*Improvement in Hermetically Sealing Preserve Cans.*—Patented June 10, 1856.

The nature of this invention consists in a common tin can A, with a mouth-piece B containing a groove G, for receiving a ring of wire E, which holds a raised tin cap C, pressing upon a small projecting ledge, by means of an under lining of felt.

Claim.—The combination of the spring-ring E and groove G, or its equivalent, in the manner described, and for the purposes specified.

No. 14,245.—R. W. LEWIS.—*Improvement in Sealing Preserve Cans.*—Patented February 12, 1856.

The object of this improvement is to prevent the rubber used for packing from tearing or wrinkling, while the cap is being screwed down upon the can, and also preserve the contents of the can from contact with the rubber, by which they acquire an unpleasant flavor.

D is a thin plate of tin, to which a smaller plate E is fastened by a central rivet, after the rubber packing has been placed between these

plates. This latter plate is made so as to enter and fill the throat F of the can, and protects its contents from the rubber which extends beyond the periphery of this plate, so as to bear upon circular edge G. The ribs H in the mouth of the can enter the notches I in plate D, and prevent it from turning while the cap is being screwed down.

Claim.—1st. The plate E, as a means of protecting the can's contents from the rubber packing.

2d. The combination of the projecting ribs H with the cap A, constructed, combined, and operating substantially in the manner and for the purpose specified.

No. 15,478.—S. R. C. DENISON.—*Improvement in Carpet Fastenings.*—Patented August 5, 1856.

The cam C is attached, by means of a screw, to the base-board B of the room, securing the carpet to the floor by means of its rounded edge. If the cams on each side of the room are fastened in parallel positions, and if the cams in two corners are raised from the carpet, the carpet can easily be removed by simply pulling it in the proper direction, when the cams on one side will be loosened from the carpet.

The inventor says: I claim my method of fastening carpets by means of the metallic cams attached to the base-board, which cams not only hold the carpet firmly in its place, but afford facilities for its instantaneous removal in case of fire or other emergency, said cams being constructed and operating substantially as described.

It being understood that I do not claim the use of buttons for fastening carpets, they having been before used in other ways, as in the fastening of Wm. Loughborough, patented June 5, 1855, but claim only the manner in which they are applied, as specified.

No. 16,036.—EPHRAIM S. PRATT, assignor to J. S. C. THURSBY.—*Fabric for Underlaying Carpets.*—Patented November 4, 1856.

This invention consists in laying stout paper or paper-board, made cellular by perforating it all over, between the floor and carpet; the dust, which, by sweeping the carpet, will be driven through said carpet, will settle in the cells of said paper, leaving the carpet much cleaner than if placed on the bare floor.

Claim.—The described cellular paper or paper-board, for the purpose of underlaying carpets on floors.

No. 15,611.—JUDSON KNIGHT.—*Improved Ball-Caster for Trunks and Furniture.*—Patented August 26, 1856.

The nature of this invention will be understood from the claim and engravings.

The inventor says: I do not claim the separate parts of the caster as my invention.

But I *claim* the combination of the points *a a'* and the ball *b*, working in an open socket *c*, in the manner and for the purpose substantially as described.

No. 15,946.—EDWARD GLEASON.—*Improvement in Bottle Casters*.—Patented October 21, 1856.

By turning the rod *I* by means of the handle *J*, the doors *D* will be turned in consequence of the wheel *H* and pinion *G*, and the bottles *F* may consequently be turned outwards and be upon the outer side of the body *C* ready for use, or be turned within the body *C* when not intended to be used, when they are protected from dust. When the doors *D* are either opened or closed to their fullest extent, the body *C* will rotate, as the pinions *G* will not turn, and the plate *B* and body *C* are then connected with the shaft *I*.

The inventor says: I do not claim any of the devices separately considered, nor yet of itself a caster provided with doors to enclose the bottles, and opened to expose them by the turning of the centre handle or rod of the castor.

But I *claim*, 1st, the arrangement of the bottles *F*, centrally or thereabouts, on or over the pivots of the niched or semi-cylindrical doors *D*, when the latter are arranged for operation in relation to the body of the caster by the central rod or handle as described.

2d. So gearing and connecting the revolving body *C* of the caster with its separately turning doors *D*, and arranging the same with its stationary base *A*, that, upon continuing to turn the central rod *I* after the doors have been opened or closed in the same direction which was required to open and close them, the whole body of the caster is made freely to turn on its base *A*, with the doors in the condition they were set by said turning of the central rod *I* or handles, as set forth.

No. 15,902.—PHILOS B. TYLER.—*Improvement in Finishing Caster-Wheels for Furniture*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: It will be obvious to all mechanics that stamping between dies the two surfaces of a piece of metal is not new, and I lay no claim to such an operation, or to corrugating the disk of a wheel, which is old; but the smoothing of the surface of a caster wheel or roller on the plate or disk connecting the hub and rim, and condensing the metal in the operation instead of removing it, has never before been done to my knowledge. Its advantages are obvious: it prevents spoiling any of the castings by imperfect manipulation; it greatly strengthens the disk *a*, hardening it and making it stiffer; and insures an equal thickness in all its parts, or a proportional thickness, as desired. The disk can be smoothly finished and corrugated as

easily as if it were a plain surface, and the expedition and cheapness with which the operation is performed greatly reduce the labor and cost of the manufacture of the article.

I do not claim the process of stamping or swaging, as they are well known devices, and are used for various purposes, such as making railroad wheels of wrought metal, and other articles.

But I *claim* finishing caster-rollers, and like articles made of cast metal, by stamping them in dies, substantially in the manner and for the purposes described; whereby, in finishing, the disk is hardened, and its thickness determined with exactness, insuring the maximum amount of strength with the smallest weight of metal.

No. 15,405.—JAMES FERNALD.—*Improvement in Chairs*.—Patented July 22, 1856.

The back-rest *D* is attached to the chair by being secured to a spring *C* by means of a screw *E*; by loosening this screw, the back-rest *D* can be turned to assume the position marked in dotted lines, or any other position.

Claim.—Oval back-rest *D*, or its equivalent, when made to rotate in manner and for the purpose essentially as described.

No. 15,021.—LYSANDER SPOONER.—*Improvement in Elastic Bottoms for Chairs and other Articles*.—Patented June 3, 1856.

The sacking *D* is spread loosely over the coils *B B*. The slackness of the sacking permits the body to sink down until the weight is sustained by the elastic bands *B*.

Claim.—In the construction of an elastic rest or support, the employment of a series of elastic coils *B B*.

No. 14,507.—BENJAMIN M. LEWIS.—*Improvement in Fan Rocking-Chairs*.—Patented March 25, 1856.

The arbor *S* passes through the plates *D D*, and carries on each end the fan-bearer *B*, with the fans *F F*. *T T* are two round plates fastened to *S*, each of them sustaining a click *C*. The pinion *P* and ratchet-wheel *R* are fastened together, and turn loosely on *S* when turning from the click *C*. *G* is the axis of the pendulum *O W K*. Arm *O* engages the pinion *P* above, and arm *K* below. The two arms *O* and *K* of the vibrating pendulum engage alternately the ratchets *C*, and drive the fans.

Claim.—A pendulum or self-acting driver, so applied to any rocking-chair or cradle, or other rocking article of furniture, as that it will act by its inertia to drive the fans.

No. 14,506.—KONRAD KIEFER.—*Improvement in Fan Rocking-Chairs*.—Patented March 25, 1856.

When the chair is rocked backwards, the plate *E*, owing to the form of the flange *O*, comes to the floor without shock, and moves in its slots

$e^1 e^1$, resuming its former position, as the chair is rocked forward, by means of spring l . A rotary reciprocating motion is thus given to the fan-shafts C C and D through the pins c , wheels d , and pinions c .

Claim.—1st. The fans G, when made adjustable, and when arranged and operated substantially as herein set forth, for the purpose specified.

2d. The employment of a fan I beneath the seat, constructed and arranged substantially as described and for the purposes specified.

No. 14,890.—WILLIAM THOMAS.—*Improvement in Chairs for Ships' Cabins.*—Patented May 13, 1856.

By this arrangement, the base A may be moved in any direction, and the chair D will remain stationary; and the chair being attached to the bar C a considerable distance above its centre of gravity, it will not conform to the motions of the vessel.

The inventor says: I do not claim suspending the chair to a base or frame, so that it will remain stationary while the base or frame is moved or rocked, irrespective of the peculiar manner of attaching or suspending the same.

But I *claim* suspending or attaching the chair D to the curved bar C, which is connected to the base A by means of the arms F F G and curved bar E.

No. 15,931.—C. A. MILLS.—*Improvement in Head-Rests for Chairs.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The semi-revolvable and vertically adjustable supporting rod C, said adjustment being effected by means of the spring a , with its fork f working into the notches of said support, or its equivalent.

No. 14,872.—DANIEL S. JAMES.—*Improvement in Invalid-Chairs.*—Patented May 13, 1856.

The nature of this invention consists in combining with a chair, loosely jointed at $e^1 e^2 e^3$, a curved brace f , running from the joints of the rockers and front of the chair, and constituting a secondary back-piece, for giving stiffness to the chair when in position for rocking, (fig. 1,) and also acting as a brace when the chair is converted into a couch (fig. 2).

Claim.—The construction of invalid-chairs of a loosely jointed frame, in combination with a brace f , operating substantially as and for the purposes specified.

No. 15,673.—C. L. TAILLANT.—*Invalid-Chairs.*—Patented September 2, 1856.

The back J can be raised or lowered by operating the racks K pivoted to said back at L by means of the adjusting-buttons N and sup-

porting rod P, the back J being kept from falling by means of a stop catching the teeth k of the rack K.

Claim.—The combination of the chair and adjustable drop or extension back with the rack K and adjusting or supporting rod P, for the purposes substantially as set forth.

No. 14,877.—ZEBULON LYFORD.—*Improvement in Portable Chairs.*—Patented May 13, 1856.

The unfolding of the parts A A causes the band F to draw or swing out each of the legs D; while folding it together causes each other part to fold into its position, the catch L holding it together firmly.

Claim.—My self-operating folding portable chair, or its mechanical equivalent, constructed, arranged, and operated essentially in the manner and for the purposes set forth.

No. 16,006.—MARTIN EBERHARD.—*Improvement in Rocking-Chairs.*—Patented November 4, 1856.

This invention relates, first, to an improved adjustable foot-rest G, which can be raised and lowered to any desired position by the foot, and which is combined with the seat of the chair in such a manner that the weight of the occupant will retain it in any given position; secondly, to the mode of keeping the chair in a rocking motion by a slight pressure of the heel against the foot-rest G; and by the arrangement as described in the second claim; and, thirdly, to the mode of giving the chair an inclined position, by turning crank U, which will operate the parts named in the third claim.

The inventor says: I do not confine myself to the exact form of the frame or working parts.

But I *claim*, 1st. The lever I, the link L, and lever K, in combination with the seat F and adjustable foot-rest G, the whole operating substantially in the manner and for the purpose set forth.

2d. The treadle M, its arm N, and link O, in combination with the frame P and foot-rest G, operating substantially as described and for the purpose specified.

3d. The crank-shaft V, the lever S, and link T, in combination with the cross-piece C and frame P, substantially in the manner and for the purpose set forth.

No. 14,262.—WILLIAM H. TOWERS.—*Improvement in Clothes Clamps.*—Patented February 12, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—Forming slits D at the upper portion of the clothes clamp, as represented and described, in such a manner as to give an increased degree of elasticity to the upper portion of the jaws C, between which

the clothes are clamped, and enable said jaws to be opened sufficiently to admit the clothes and line between the grooves A in the same, and to detach them therefrom without scraping the clothes with the sides of the lower slit, by pressing the prongs formed by the upper slit together, as herein set forth.

No. 16,065.—SAMUEL MORRILL.—*Improvement in Clothes Dryers*.—Patented November 11, 1856.

When the clothes are to be secured on the reel, the bar E is raised up by hand in nearly a horizontal position, and the arm C is turned on bolt *a*, and the reel D is brought into nearly a vertical position; and while in this position, the reel is prevented from turning in one direction by the pawl H, which catches into the ratchet G. The clothes are then secured to the cords on the reel, and the reel is turned back in a horizontal position.

Claim.—Arranging the ratchet on the side of the reel, in combination with the pawl H and lever C, in such a manner that the pawl and ratchet are brought into play when the reel is tilted, but thrown out of play when in its horizontal position, substantially as described and for the purpose set forth.

No. 14,110.—EPHRAIM PARKER.—*Machine for Making Clothes Pins*.—Patented January 15, 1856.

The pieces of wood being of proper length are placed in spout J, and are taken up one by one between the points *b* and *c* of the revolving mandrel D E. For this purpose the points *c* are attached to springs and made to recede just before they arrive at the pieces of wood preparatory to clamping and taking it up. As the mandrel revolves, the cams *d*, in combination with a spring *e*, cause the cutter *f* to reciprocate upon the guide-rod K, parallel with the revolving pieces of wood and with the axis A of the lathe. The pieces, besides revolving around axis A, revolve also around their own axes, by means of pulleys 3, 4, 5, etc., fast to the points *b*. The pieces are formed into cylinders by the action of the cutter *f*. When arrived near the bottom of the machine, the pieces drop upon spout *g* and between clamps *v w*, (see piece *u*, represented by dotted lines,) which latter, as the wheel *h* revolves, present each piece to the circular saw *i*, which cuts the slot and thus finishes the pin.

Claim.—Attaching to a common lathe a cutter, working parallel with the mandrel, in connexion with a spout, the same motion operating both the cutter and spout.

Also, in connexion with the above, a wheel and saw, the whole being a self-acting machine, taking square pieces of timber from the spout, and converting them into cylinders and clothes pins at a single operation.

Also, the combination as above described, or any other combination, substantially equivalent thereto.

No. 14,466.—GEORGE W. PARKER.—*Improved Machine for Making Clothes Pins*.—Patented March 18, 1856.

The feed-board is placed so that the holes E E, as the wheel B rotates, come into the right position for receiving the pieces of wood, which are pushed in by the punch H as they are moved forward by the tail-block F. The revolving wheel carries the pieces between the spurs of the lathe K and of the tail-block. The tail-block F moves forward, and the mandrel G forces the pieces against the spur of the lathe. As the tail-block moves, the piece is turned by the stationary cutter P and finished by the moving cutter P¹. The piece is then carried back and is left in the same hole from which it was taken. The pieces are then carried between the hole in the carriage J and the punch I, and thus forced into the carriage J, which carries them forward to be sawed or bored.

Claim.—1st. The use of holes E in a wheel B, or tubes secured to a wheel, and into which the pieces of wood are fed, and are thus retained in and carried forward to the proper position to be acted on by the lathe K, saw O, or bit.

2d. I claim a sliding or vibrating lathe K and tail-block F, whereby the pieces of wood to be turned are carried forward to the action of the cutters or chisels.

3d. I claim the cutters or chisels P P¹, in combination with the lathe and holes.

4th. I claim, in combination with the holes, a saw or bit, and a sliding or vibrating carriage J or holder, or its equivalent, to carry the pieces from the holes to the saw or bit.

No. 15,543.—ROBERT P. BRADLEY, assignor to JOEL WISNER.—*Machine for Wringing Clothes*.—Patented August 12, 1856.

The canvass F is spread open so that the edges of it will rest upon the stakes M. After a convenient quantity of clothes are put into the canvass, it is disengaged from the stakes M, gathered at both its ends, and fastened between the disks H and cups K and L at its respective ends. The cup L, with its disk, is kept stationary, while the cup K and its disk are turned by means of a crank N, and thus the clothes are wrung. The bearings of the cups and disks are mounted upon elastic supports or springs C, which compensate for the shortening of the cloth in the act of wringing.

Claim.—The construction and arrangement of the springs *c c*, so as to compensate for shortening in the act of wringing and at the same time form posts at the sides for bearings.

No. 14,334.—JACOB M. WEBB.—*Improvement in Coffee-Pots*.—Patented February 26, 1856.

This improvement consists in constructing a hollow cover B for a coffee-pot, so that a continual stream of cold water passes through fun-

nel *c b* into it near the bottom, and the same quantity of heated water passes out from the upper part thereof into receiver *D*, which also serves to protect said cover and top of the coffee-pot from the surrounding heat. Thus all the aroma which would otherwise escape with the steam is preserved.

The inventor says: I do not claim a cover containing cold water for condensing the steam generated in the coffee-pot, nor generally passing a stream of cold water along a condensing surface, as such are well known.

But what I *claim* is, the combination of the funnel receiver *C*, with its pipe *b* descending nearly to the bottom of the hollow cover *B*, with said hollow cover, and with a capillary spout or orifice *d* leading from the top thereof, substantially as described; whereby a slow but continual and self-regulating flow of cold water is conducted along the condensing surface in the manner set forth.

No. 14,748.—CHARLES B. WAITE and JOSEPH W. SENER.—*Improvement in Coffee-Pots*.—Patented April 22, 1856.

The boiler *A* being filled with water and coffee, the vessel is placed on the fire; the steam arising from the boiler passes through tube *h* into the water in the condenser, (the condenser being filled to the level *i i*), which absorbs all the aroma of the coffee. The condenser is then filled up with cold water until the siphon *g* is covered, when it draws off the entire contents of the condenser into the boiler.

The inventors say: We do not claim a condensing coffee boiler; but we *claim* the arrangement whereby the steam from the boiler *A* is discharged into the water in the condenser *E*, which absorbs the aroma, in combination with the siphon *g* for returning the contents of the condenser into the boiler.

No. 15,835.—HENRY WALSH, assignor to Himself and M. N. ESPY.—*Improvement in Machines for Separating Green Corn from the Cob*.—Patented September 30, 1856.

The ear of corn *H* is held firmly by the operator in one hand, whilst with the other applied to crank *D* he screws the pointed end of the screw-shaft *b* into the centre of the butt-end of the cob, until the annular edge of the ferrule *b* enters the same to its full depth, as represented in fig. 2; thus encircling and preventing the end of the cob from splitting by the pressure of the entering screw, and together firmly holding the ear of corn, which, by rotating shaft *B*, has its cob gradually forced between the blocks *G* and *G*¹, and the grains of corn are removed therefrom by the cutter *F*. The operator then presses on the lever *E*, thus releasing the shaft *B*, which can now be drawn back for the insertion of another cob.

Claim.—In machines for removing green corn from the cob: 1st, the screw-shaft *B* and spring-lever *E*, arranged and operating together as described, when the same are used in combination with the sta-

tionary block *G*¹ and the self-adjusting spring-block *G* and its cutter *F*; the said blocks holding the cob between them as it is rotated, and at the same time gradually and regularly moved forward by the progressive rotary action of the screw, and so that the said cutter *F* shall also at the same time operate against the lower ends of the grains of corn in succession, and remove them from the cob in a whole or perfect state, or without crushing or otherwise injuring them, substantially as set forth.

2d. The combination of the ferrule *b*¹ with the pointed screw-end of the shaft *B*¹, the same being constructed, combined, and operating substantially and for the purpose set forth and described.

No. 14,855.—WILLIAM B. COATES.—*Machine for Cutting Green Corn from the Cobs*.—Patented May 13, 1856.

The thick end of a cob of corn *P* being stuck on the prongs *e*, and its point being directed towards the opening between the elastic cutters *G* and *G*¹, the spindle *F* is turned, causing the spring-catch *i* to be released from the notch *h*, allowing the spiral spring *M* to force the spindle and with it the cob *P* towards the points of the cutters, and, as the kernels are cut off by the latter, forcing the husk through the circular space intervening between the cutters into the hole in the standard *D*, from which it may be easily withdrawn after all the corn has been cut off.

Claim.—The spindle *F*, with any convenient number of prongs *e*, in combination with the yielding cutters *G* and *G*¹, the whole being arranged and constructed substantially in the manner and for the purpose herein set forth.

No. 14,259.—BENJAMIN TAYLOR.—*Instrument for Grating Green Corn*.—Patented February 12, 1856.

The object of this instrument is to reduce green corn to a pulp, to be used for articles of diet. The spikes *f* upon the flat piece of wood *E* are to enable the operator to pierce the cob of corn *Z*, and then to rub it backwards and forwards against the spikes *d* and scraper *C*, the former of which tear and open the kernels, and the latter remove the pulp, which drops through the hole *G*.

Claim.—The flat or concave piece of wood or metal *A*, with its opening scraper *C*, and one or more rows of spikes *d*; the whole being arranged and constructed substantially in the manner and for the purpose set forth.

No. 14,889.—FRANCIS C. TREADWELL, JR.—*Improvement in Machines for Preparing Dough for Moulding Crackers*.—Patented May 13, 1856.

The dough, which is fed into the grooved rollers *B B*², passes from them in cylindrical strips down through the throat-piece, and is sheared

off, by the rotating blades, into pieces of the proper size for moulding by hand.

Claim.—The use of the cutters D D, in combination with the throat C, for the purpose of making a shear-cut, when used in combination with the grooved rollers B B².

No. 14,123.—LEWIS WHITE.—*Improvement in Curtain Fixtures.*—Patented January 15, 1856.

The nature of this improvement will be understood from the position of the lever *c* and cord *e*, represented in the engraving by dotted lines.

B is the axis of the curtain roller.

Claim.—The lever pawl *c*, in combination with the ratchet *b* and cord *e*, so constructed and arranged that, by pulling the cord (which operates the roller to wind the curtain) in different directions or different angles, it will vibrate the lever pawl so as to hold or release the ratchet, substantially as described.

No. 15,258.—JAMES STEPHENS.—*Improvement in Curtain Fixtures.*—Patented July 1, 1856.

When the shade is drawn down, the spring G will be wound up and retained by the pawl H; when it is desired to raise the shade, the inner end of the pawl H, by pulling cord O, is raised free from the ratchet, and the spring G will then rotate the roller C and wind up the shade.

The inventor says: I do not claim simply the application of a coil spring to the shade roller for the purpose of winding up the shade, for they have been applied in various ways. But I *claim* attaching the coil spring to a swinging pendant A, and connecting the same to the arbor B, to which the shade roller C is attached by the pinion E and toothed wheel F, the arbor having a ratchet D upon it, in which ratchet a pawl H, attached to the pendant, catches; the above parts being arranged substantially as shown for the purpose specified.

No. 15,615.—PURCHES MILES.—*Curtain Fixtures.*—Patented August 26, 1856.

The stationary cord G is wound around the spool I of a movable slide D, said spool being prevented from revolving by the pressure of the springs F against its sides; by pressing on the levers E, the springs F are disengaged from the spool I, and the slide D can be moved up or down on the cord G. The end of the cord H, which coils over spool *c*, being fastened to the slide, the curtain can be raised or lowered by operating the slide D, as described.

Claim.—The levers E E, actuated by the coiled springs F F, in the manner and for the purpose substantially as set forth and described.

No. 15,676.—FERDINAND WIETERICH and KONRAD HAGEN.—*Improvement in Curtain Fixtures.*—Patented September 2, 1856.

One end of the window-shade roller is provided with a square pin, and fitted into the hole of the shaft N of the pinion C. When the curtain is pulled down, the extra weight of power applied to pull the curtain down overcomes the power of the spring *m*, and pulls at the same time the slide E downwards; by which motion the lever G will likewise be moved downwards, so as to press the cam F away from the periphery of the pinion C, thereby allowing said pinion to turn and unwind the window-shade. By this action the pinion C acts upon the spur-wheel B, turning the same, and thereby winds up the scroll-spring D. If the curtain is in any position let loose, the spring *m* will act upon the slide E and lever G, which latter will relieve the cam F so as to be acted upon by spring *n*, when the friction produced by said cam against the periphery of the pinion C will hold the same and the window-shade in the exact position it was left.

The inventors say: We do not claim the application of a scroll-spring, wound up by the running down of the curtain, and then drawing up the same by its recoils, as we are aware the same has been done before.

But we *claim* supporting one end of the shaft N in a movable slide E, connected with the lever G, which is made to act upon the cam F, as described.

No. 15,254.—SOCRATES M. RIDGAWAY.—*Improvement in Machines for Making and Kneading Dough.*—Patented July 1, 1856.

This invention consists in the combination of a revolving fluted roller *x* with a kneading-trough, the bottom of which is so shaped as to cause the materials placed within it to slide under the moving roller, by the operation of which the process of mixing and kneading is effected.

Claim.—The combination of the fluted roller with a kneading-trough, shaped and combined so as to operate as herein before substantially described.

No. 16,267.—RALPH COLLIER, assignor to ALFRED H. REIP and RALPH COLLIER.—*Improvement in Rotary Egg-Beaters.*—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Vertically revolving stirring-blades C, made of metallic wire, arranged as herein described, and when attached to a central shaft operated in the manner set forth.

No. 14,275.—SHERBURNE C. BLODGETT.—*Improvement in Forks.*—Patented February 19, 1856.

By this fork many articles of food can be more conveniently eaten than with the spoon.

Claim.—The construction of forks with a metallic net, or sheets, between a part of the prongs, as above described.

No. 16,058.—G. W. HYATT.—*Improvement in Forks for Handling Heated Plates.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: Disclaiming all other forms or modes of constructing forks, I *claim* the clamp or spring F, for the purpose of supporting the tines, and also to allow them to be adjusted to suit articles of different diameters.

No. 15,083.—JOSEPH PARISSETTE.—*Improvement in Ice-Cream Freezers.*—Patented June 10, 1856.

The drop-catch *c* strikes against and becomes locked with the cross-bar *e*, revolving the cream-holder when the said arm is moved in the direction indicated by the arrows. *d* is a lifting catch, which prevents the revolution of the cream-holder when it is desired to revolve the movable arm E, by which motion the frozen cream is scraped off the inner sides of the cream-holder G, and forced to the bottom of the same by means of the spiral scraper D, thereby causing the unfrozen cream to rise to the top, which, in turn, will be mixed and equally frozen.

Claim.—The spiral scraper D, in combination with the drop-catches *c* and *d*, for the purpose of regulating the movement of the can and scraper, in the relation to each other as herein set forth, when arranged substantially in the manner described.

No. 15,550.—JOHN L. BRABYN.—*Improvement in Furniture Polish.*—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claim.

Claim.—I claim the combination of muriatic and acetic acid with the usual ingredients of furniture polish, in the proportions and manner substantially as specified, for the purpose of producing a polish capable of resisting the action of hot or cold water.

No. 15,325.—GEORGE BLANCHARD.—*Improvement in Nutmeg-Graters.*—Patented July 15, 1856.

The grater B is made to slide in the hollow handle A of a cork-screw D, by shaking said handle, without dropping out. The box C contains a nutmeg E, pressed to the grater by spring F, as represented in the illustration.

Claim.—The application and arrangement of the self-sliding grater B, in connexion with or inside of the hollow cork-screw handle or tube A; so that when the whole structure is shaken with one hand, the nutmeg is grated by the sliding grater B.

No. 15,799.—WM. BENNETT.—*Improvement in Gridirons.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim either the gridiron or cover; but I *claim* the pins or elevators attached to the bars or seats of the gridiron, as set forth, used in connexion with the ventilating cover, constructed and arranged substantially as described.

No. 15,982.—JOSEPH C. MOULTON.—*Improvement in Suspension Hook and Insect Insulator.*—Patented October 28, 1856.

In using this contrivance, the screw-rod A is inserted in the ceiling, and the article to be insulated is fastened to the hook C. The cup B being filled with water, insects, such as ants, will be prevented from reaching the article fastened to hook C, which is thus protected.

The inventor says: I am aware it is not new to surround a tree or the foot of a bed-post, or a meat safe, with a trough or dish for holding a fluid, and therefore I do not claim such.

My invention combines with the insulating cup a screw and a hook, or the equivalent thereof, for the purpose of attaching one article to another, or of so suspending or isolating it as to protect it from insects, as described.

I *claim* a new or improved article of manufacture, composed of a screw-rod, cup, and a hook, the whole being arranged and applied together substantially as specified.

No. 15,562.—WILLIAM W. HOPKINS.—*Improvement in Knife-Cleaners.*—Patented August 19, 1856.

The knives to be cleaned are placed flatwise on the bolster D, the blades being between the corks *f* and *f*¹, which are moved by hand back and forth on the ways *b*, the upper board C being pressed down by hand as the corks are moved. A wire *j* passes transversely through the plates or boards *a* to serve as a stop. The bolster D being elastic, blades of different thicknesses may be scoured.

Claim.—The reciprocating scourers *e f f g* and elastic bolster D, arranged as shown and described for the purpose set forth.

No. 14,788.—A. C. KETCHUM, assignor to EDWARD B. OLCOTT.—*Improvement in Machines for Cleaning Knives.*—Patented April 29, 1856.

The board E is fitted between the projection D and the inner ledge or projection *a*, a suitable quantity of powder being placed on the bed-piece A. The board E is moved back and forth, and strips *e*, yielding as they pass over the blades, clean and polish them.

Claim.—Subjecting the knife-blades B, while secured upon the bed-piece A, to the requisite friction or rubbing, by means of the strips *e* attached to the underside of the board E.

No. 15,266.—ALBERT L. LINCOLN, assignor to Himself and CHARLES M. FOSS.—*Macaroni Server*.—Patented July 1, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—As a new article of manufacture, and as of my invention, the above described “macaroni server,” as made with its teeth or prongs *a a a* and *c*, arranged with respect to its blade substantially as specified.

No. 14,901.—GUSTAVUS V. BRECHT.—*Improvement in Machines for Cutting Meat*.—Patented May 20, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim to be the original inventor of a meat-cutter, or a machine for cutting meat.

But I *claim* the roller *r*, as constructed of a series of circular plates having teeth or hooks on their peripheries, when said plates are put on a twisted square shaft, thus making rows of teeth of the edges of the several plates, and, by the twist of the shaft, giving them a spiral form.

No. 15,248.—OREN MOSES.—*Improved Machine for Mincing Meat*.—Patented July 1, 1856.

The cutting-box B, supplied with meat, is elevated into the position represented in figure 1, and there retained by the catch I on the lever H; a reciprocating motion is then imparted to B by means of crank-shaft K, pinion *b*, and rack-bar *a*. As often as may be deemed necessary, the cutting-box must be allowed to descend, and its position be changed by turning it by means of handle *i*, and then be elevated again for the purpose of causing the action of the cutting-disks to be at different angles to their former movements.

Claim.—The combination of the cutting-box A with the cutting cylinder and with the other parts of the machine, in such a manner that the position of said box can be readily lowered, partially revolved, and then elevated again, for the purpose of causing the reciprocating movements of said box to so act upon the disks of the cutting-cylinder as to make them cut in transverse directions within said cutting-box, substantially as set forth.

Also, the combination of the comb L and its shaft *e* with the shaft of the cutting-cylinder, in such a manner as to cause the teeth of said comb to act between the cutting-disks on the rising side of the cutting-cylinder, substantially as set forth.

No. 15,452.—JOHN WRIGHT.—*Improvement in Apparatus for Smoking Meats*.—Patented July 29, 1856.

The nature of this invention consists in providing, outside of the building used for smoking, a furnace A with grate B and fire-bolt C, so formed as to cause all the smoke generated to pass into the house; and in building flues D F G with smoke stoppers and spreaders, for the purpose of causing the smoke to smoke the meat evenly, to prevent dust from falling upon the meat, and to prevent damage by fire.

Claim.—The application to furnaces of smoke-houses of a back plate of iron or other incombustible material forming an air-chamber which will increase the draught of the furnaces and prevent any smoke from being wasted or lost; and also the application of inclined flues made of brick, iron, earthenware, or any other incombustible material, together with the smoke-spreaders, as described, for the purpose of smoking meats, &c., the furnaces being upon the outside of the building.

No. 15,352.—HIRAM THOMPSON and RICHARD Q. TUSON.—*Improvement in Mop-Heads*.

The mop yarns or cloths are confined to the mop-head *c* by forcing inward the binder *f*, and turning the cam-lever *h* into the position shown in figure 2; the outward action of the spring *d* against the toothed surface of the cam will render it impossible to move the binder *f* without throwing outwards the said lever.

Claim.—Firmly securing the binder *f* in any desired position by the joint action of the cam-lever *h* and the spring *d*, when the former is combined with the hinder ring, and the latter is combined with the mop handle.

No. 16,137.—FREDERIC ALLEN.—*Improvement in Mop-Heads*.—Patented December 2, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim a clamp, formed of two bars hinged together at one end of each, and provided at their opposite ends with a screw for forcing one of them towards the other.

I *claim* my spring-clamp mop-head as made of a bar of spring steel, as stated, bent and formed with an eye and a hook at its opposite ends, as explained, and having a link applied thereto, so as to operate therewith as specified.

No. 15,592.—LEVI J. HENRY, assignor to BENJAMIN J. HART.—*Mosquito Canopy*.—Patented August 19, 1856.

The rods 8 and 9 which support the canopy are fitted into corresponding tubes 6 and 7 of the cap *f*; the latter is supported by the sliding-rods 3, 4, and 5, which are formed similar to a telescope tube, so as to be shortened or lengthened at pleasure. The rods 3, 4, and 5,

are supported by a shaft *e*, which is attached to the clamp *b c*. The clamp is fastened to the bedstead either in a horizontal or vertical position, and the canopy frame will in either case stand vertically, as the rod 3 can be attached to the screw 1 as well as to the screw 2.

Claim.—The construction of the clamp *b c* with the rod *e* and screw-studs 1 and 2, by which the canopy frame may always be made to stand vertically, whether the clamp itself stands vertically or horizontally, as specified.

Also, the cap *f* fitted to receive the bars 8 and 9 9, for sustaining the canopy or covering, when combined with the sliding-tubes 3, 4, and 5, for regulating the height of said canopy, and also receiving the bars 8 and 9 9 when packed away for transportation, substantially as specified.

No. 16,226.—WILLIAM BEACH.—*Improvement in Bake-Pans.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: Disclaiming the ordinary lapping of thin metal pan corners, as altogether distinct from my invention—

I *claim* the construction of metallic bake-pans with rounded corners, formed as described, by notching, cutting, lapping, and riveting, substantially as set forth.

No. 15,828.—DAVID B. TIFFANY.—*Improvement in Putting Pillows and Bolsters into their Cases.*—Patented September 30, 1856.

In using this instrument the pillow is inserted between the tongs *H*, leaving the outer end projecting beyond the ends *C D*; the slip is then drawn over the pillow, and the instrument withdrawn from beneath the slip.

Claim.—The instrument having the peculiar construction, substantially as described, for the purpose of inserting the pillows and bolsters into their cases.

No. 15,128.—HENRY W. GOODRICH.—*Improvement in Molasses Pitchers.*—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim applying to the outside of a pitcher or vessel a cup or reservoir to catch the drippings from its nose or spout.

But I *claim* arranging the drip receiver *d*¹, the pipe thereof *f*, and the discharging end of the pipe, with respect to the nose *b* and neck *e* of a pitcher, in order that when the pitcher is being tipped for the purpose of pouring from its nose, none of its liquid contents may pass into the mouth of the discharge pipe; the drip receiver and its pipe subsequently serving to catch the drippings from the nose, and convey the same back into the pitcher.

No. 15,231.—FRANKLIN D. HALL.—*Improvement in Refrigerating Pitchers.*—Patented July 1, 1856.

This improvement consists in the use and arrangement of the tube or conduit pipe *t t*¹ attached to the inside of the double-walled pitcher, by means of which the liquid is drawn from the bottom of the vessel through continuous double casings.

The inventor says: I am aware that double walls and casings containing intermediate strata of air have long been used in pitchers and other articles of household economy as a means of intercepting and retaining heat; I am also aware that hinged covers to protect the mouth or spout of vessels from which fluids are to be poured, as pitchers, molasses cups, and such like articles, have long been in use. These contrivances I therefore entirely disclaim.

But I *claim* the arrangement of the tube or conduit pipe, and the spout with which it is connected, in the manner and for the purposes herein before described.

No. 14,974.—WILLIAM J. STEVENSON.—*Improvement in Self-Sealing Preserve Vessels.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the sealing of vessels by a packing ring and a cap which is held down by atmospheric pressure.

But, in combination with the mouth *a* of the vessel constructed with a shoulder *b* at some distance from its entrance, and the packing ring *c* resting on the said shoulder, I *claim* the cap *e*, made with its bearing part smaller than the exterior of the ring, and with raised guide pieces *d d d*, which keep it in place in the mouth, so as to cause it to get an equal width of bearing all round the ring, but do not prevent the necessary imbedding of the edge of the bearing part of the cap in the packing.

No. 15,132.—SAMUEL HICKOK.—*Improvement in Refrigerators.*—Patented June 17, 1856.

The inventor says: I do not claim an inner and outer box, case, or frame, nor the combination of these; neither do I claim filling the space between the inside frame and outside box or case with any fibrous or pulverized bad conductor of heat; neither do I claim making the inside frame convex or concave. But I *claim* covering the inside box, case, or metallic frame *a a*, with woollen flannel *g g* or other cloth, in such a manner that the water, as it drips from the melting ice *E*, will drip on to and saturate the cloth, and from the cloth will be conducted out of the case, thereby producing a stratum of cold water held in the cloth over the entire surface of the inner metallic frame, and surrounding the articles to be kept cool.

No. 15,545.—THADDEUS FAIRBANKS, assignor to JOHN C. SCHOOLEY.
Improvement in Refrigerators.—Patented August 12, 1856.

The air, which is in immediate contact with the ice *h* in the receptacle *C*, will settle towards the bottom of the ice-holder *C*, will pass through the passage *E*, and fall towards the bottom of the inner box *A*, within which are placed the articles to be kept cool. The cold air, in passing downwards, will displace the warm air, which will rise towards the top of box *A*, and deposit its moisture upon the ice *h*, instead of upon the articles to be kept cool.

Claim.—So combining an ice receptacle with the interior of a refrigerator as that a continuous circulation of air shall be kept up through the ice in said receptacle, and through the interior of the refrigerator, and so that the circulating air shall deposit its moisture on the ice every time it passes through it, and be dried and cooled, and passed through the interior of the refrigerator, substantially as set forth.

No. 16,320.—CHARLES WINSHIP.—*Improvement in Refrigerators.*—Patented December 23, 1856.

The external air enters the ice-box through the apertures *C*, and is cooled therein by the ice; then passes through passages *b* into the provision chamber *D*; then escapes through passages *c*, where it enters the outer case; and being warmed there by the higher temperature of this outer case, it rises and escapes through passages *d*.

Claim.—The method described of causing the fresh, cold, moist air to perform the combined double function, first, of ventilating and refrigerating the interior of the provision chamber, and then of protecting the exterior of said chamber, as set forth.

No. 15,450.—BENJAMIN F. WHELOCK.—*Improvement in Sad-Iron Heaters.*—Patented July 29, 1856.

C C represent the cover of the flat-iron heater in two halves, supported by the horizontal rods *d*, which rest in the ears *e*. The outer edges of the cover are made heavier than the inner edges, for the purpose of opening the same, and of raising the table *f* upon which the flat-iron rests while heating, and which is suspended from the under side of the cover by means of the chains *g*. In the cover *C* is a rectangular opening, for the purpose of permitting the handles of the sad-irons to protrude while heating.

The inventor says: I do not claim the particular construction and adaptation of the heater to the use of the ordinary flat or sad-irons.

But I *claim* the use or application of the chains *g g*, in combination with the table *f* and beds *c c*, made to balance on the ears *e e e*, in the manner substantially as described for the purposes specified.

No. 14,219.—JOHN ALLENDER.—*Improvement in Scissors.*—Patented February 12, 1856.

C is a fulcrum pin, provided with an arm *D* and turning in the hub *F*, which latter is provided with an arm *G*. The ends of the screws *E* and *H* fit into cavities in the respective blades *A* and *B*. By tightening the nuts *I I*, the blades may be made to press more or less upon each other.

Claim.—Making or providing arms to the fulcrum to vibrate with and act upon each blade, some distance from the fulcrum, to hold and keep their cutting edges in contact with each other, substantially as described.

No. 14,672.—B. F. MCCREARY.—*Double-Acting Catch for Reversible Backs of Settees.*—Patented April 15, 1856.

In reversing the back, the bar *B* comes in contact with the inclined side of one of the catches *E E'* and slides gradually over it, thereby turning the plate *C* a little. As soon as the bar escapes by this catch, the weighted arm *D* causes the latter to fall in front of the arm, whereby the back is prevented from returning or moving.

Claim.—The turning catch-plate *C E E'*, made to tilt either way by a weighted arm *D*, and having two catches so applied as to form a catch for the back on one side only of the seat in one of the tilted positions of the catch-plate, and on the other side only of the seat in the other tilted position of the catch plate, substantially in the manner and for the purpose herein set forth.

No. 15,143.—OSCAR F. MORRILL.—*Improvement in Smoothing-Irons.*—Patented June 17, 1856.

By applying a flame to the end of the wick *p p*, the spout *i i* will be heated, and the spirit in the wick of the same thereby converted into gas, which will pass down through the tube *m* and its orifice *n* with considerable force. This gas will be ignited by coming in contact with the flame of the wick *p p*, producing a long jet of flame that forces itself through the aperture *t* in the partition *r r* and extends through the entire length of the iron, impinging directly upon the bottom of the heating chamber *s s*. The unconsumed gases and vapors pass upwards and out through a flue *u u*.

Claim.—Attaching to the iron *a a a* a vessel or receptacle *f f* for containing alcohol or other spirit, constructed with a spout or chamber *i i*, into which the spirit is conducted by a wick *l l* and heated by a flame properly applied thereto; the said spout or chamber having attached to it, and communicating with it, a small tube *m* through an orifice *n*, of which the gas or vapors thus generated is forced in a jet and ignited by coming in contact with the flame employed for generating the gas; by which arrangement a jet of flame is made to impinge upon the hollow chamber of the iron.

No. 15,165.—LEANDER W. BOYNTON.—*Improvement in Smoothing-Irons*.—Patented June 24, 1856.

In order to heat the iron, the main or lower part of the same is placed inverted over one of the spaces E E in the plate J, the latter being placed over the fire. The heated air, &c., will pass through the spaces E E against the upper portion of this part of the iron, and out through the holes $a^1 a$, &c., thus heating the iron from the side opposite the face, so that the face will receive the heat from within.

Claim.—Forming the lower part A of the iron with side walls projecting above the upper surface thereof, for the double purpose of securing the upper portion B to the lower portion, and directing the draught in heating the upper surface of the said lower portion; it being understood, however, that I do not claim, in itself, the making the iron in two portions, with the handle attached to the upper portion, as that is not new, but only the mode of construction, as above claimed.

No. 15,723.—JOHN TAGGART, assignor to Himself and VERNON BROWN.—*Improvement in Furnace Smoothing-Irons*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Arranging the bellows between the handle and furnace or body of the flat-iron as circumstances may require.

I also claim making the bellows tube or conductor H in two separate pieces $m n$, and attaching them respectively to the cover and body of the furnace so as to operate together when the cover is down, and to be separated when the cover is raised, substantially in manner and for the purpose as specified.

No. 14,796.—G. W. BISHUP.—*Improvement in Self-Heating Smoothing-Irons*.—Patented May 6, 1856.

The fire is made within the chamber A; and as the bottom a is moved back and forth over the cloth, the air is forced down the tubes $b b$, and feeds the fire. The smoke and gas escape through the holes $c c^1$.

Claim.—The tubes or pipes $b b$, placed one at the front and the other at the back of the fire-chamber or box A, and the openings or holes c at the sides of said chamber or box.

I further claim the hollow projection B attached to the fire-chamber or box A, and communicating with said chamber or box by an aperture d , and having a tube C connected with it, which communicates with the external air at one side of the fire-chamber or box A, substantially as and for the purpose set forth.

No. 15,801.—WILLIAM D. CUMMINGS.—*Improvement in Self-Heating Smoothing-Irons*.—Patented September 30, 1856.

The nature of this invention consists in providing the rear end of a self-heating smoothing-iron with a trough g , provided with a registered

top $i j k$, and which trough serves to receive the ashes. By closing the register and tipping the iron back, the ashes fall into the receiver, which is then withdrawn, emptied, and replaced.

Claim.—The trough g extending rearward from the bottom of the fire space, in the described combination, with the ash receiver h , open at the side next the said space, and provided with a registered top $i j k$, for the purposes of cleanly separation and removal of the ashes, &c., as explained.

No. 16,254.—WENDELL WRIGHT.—*Mode of Securing Springs in Upholstery*.—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Securing the spring A to its seats B B, by having annular grooves a made in the seats, one in each, and having the greater portion of the coils c at the ends of springs made or bent in horizontal form and somewhat larger in diameter than the grooves a , so that they will have a requisite bearing on the seats, and be retained by their elasticity within the grooves, as described.

No. 15,943.—CHARLES BAUM.—*Improvement in Combined Table and Bedsteads*.—Patented October 21, 1856.

When this apparatus is to be used as a table, the board G rests on the top of the uprights A and A^1 and connecting-bars E, as represented in figure 1. When required to be used as a reclining bed with raised head-rest, the board G is turned down so that its edge shall come in contact with the projections q on the uprights A, as shown in fig. 2. To convert the apparatus into an ordinary bedstead, the board G is turned down still further until its edge comes in contact with the projections r on the posts H, as represented in fig. 3.

The inventor says: I am aware that combined seats and tables have been heretofore known and used, such as the sofa table of W. L. Bass, patented May 16, 1854; I therefore do not make an exclusive claim to the combining of table and bedstead together, for the use of artisans.

I claim the frame-work composed of the upright posts A A^1 , longitudinal-bars C C^1 , transverse-bars D D^1 , upper longitudinal-bars E and E, in combination with the board G, rods H H, and frame K, the whole being arranged and constructed substantially in the manner set forth.

No. 15,675.—ABDELAH WATSON.—*Self-Waiting Table*.—Patented September 2, 1856.

The waiter D, loaded with dishes to be served up, is placed upon the wires C at one end of the table, and an attendant turns the winch H. When any one of the guests wishes to take anything from the waiter, he slides up the cross-plate d in the notch g , of which the cord E and

rods *b* operate upon the waiter; thus by sliding up the plate *d* the waiter is arrested and remains stationary as long as the guest desires. As soon as he has helped himself, he slides down the plate *d* to the cord *E*, and the waiter moves on as before.

Claim.—The waiters *D D*, wire-racks *C C*, and driving-cord *E*, combined, arranged, and operating substantially as set forth.

No. 14,093.—ED. A. CURLEY.—*Improvement in Extension Tables.*—Patented January 15, 1856.

When the loose extension boards *G G I* are folded upon top of one another, they can be depressed (see figure 2) sufficiently to allow the last board, which is attached to the extension legs, to be brought over them, and the whole to be confined and covered by the table-top *C*.

Claim.—Having the top *C* of the main or stationary portion *A* of the table made loose, and arranged upon or suspended by springs *D D*², and to move up and down by guides or ways *c c*, substantially as and for the purpose set forth.

No. 15,407.—C. D. BARNITZ.—*Improvement in Portable Folding Tables.*—Patented July 29, 1856.

The folding table *A* is supported by the movable braces *B*, which support the table, as represented in figure 1, and brace the legs firmly. By turning said braces, the legs *D* and *E* can be turned into a horizontal position, and will fit closely against the under surface of the table, as represented at figure 2.

Claim.—The movable braces and supports *B*, which, when in a horizontal position, brace firmly the legs in an upright position, and also give support to the lids *A*; and when turned into a vertical position, permit the legs to close in against the under surface of the table.

No. 15,840.—GEORGE W. CHILDS.—*Improvement in Vegetable-Cutters.*—Patented October 7, 1856.

This cutter consists of a revolving disk *G*, to which a series of plane knives are attached, which cut the vegetables into broad thin slices. The knives *h* are placed across the under side of the knife apertures, in order to further divide the slices; the knives *h* are hinged at one end, so as to yield when the slices are forced through by the action of the feeding apparatus.

Claim.—The vibrating cross-knives *h h*, operating in the manner set forth.

No. 14,297.—MASA BRANCH SOUTHWICK.—*Improvement in Machines for Preparing Vegetables for Preservation.*—Patented February 19, 1856; Patented September 15, 1853, England.

Claim.—The improved mode above described of separating the skins or peels of potatoes and other vegetables from the pulp and skins

together against the denticulated or serrated edge or edges of pieces of metal or other material, whether such pieces *D* be aquiline-shaped or otherwise, provided the skins are caught by the teeth, and are thereby separated and taken from the pulp, whether the teeth be shaped like saw-teeth or otherwise, and whether the working table *A* be of circular form and revolving, or be made of any other shape, and caused to vibrate and move from side to side to produce the effect of the circular trough or table above described.

No. 16,078.—JACOB GEISS and JACOB BROSIUS.—*Improvement in Machines for Cutting Vegetables.*—Patented November 11, 1856.

The vegetables to be cut are placed within the hopper *D*, and pass down between the plate *E* and cone *C*. Motion is given to the shaft *B*, and the vegetables are cut by the cutters *g*, the sliced portions passing within the cone *C*, and falling out of its larger end, the ribbed plate *E* preventing the vegetables from receding from the knives. The vegetables may be cut finer or coarser by shifting the position of the cone *C* upon the shaft, so as to bring the slots *d* nearer to or from the knives *g*.

Claim.—The cone *C* provided with slots *d d*, and secured upon the shaft *B*, as shown, in combination with the knives *g* attached to the arms *e e* and disk *f*, arranged as shown and described, for the purpose specified; it being understood that I do not claim the use of a hollow revolving cone armed with knives for slicing vegetables, as that is not new, but only the mode of construction specified for effecting the adjustment for the thickness of the slices.

No. 14,111.—IRA S. PARKER.—*Improvement in Wash-Boards.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engraving.

Claim.—Constructing the wash-board of a series of cylindrical beaded bars *A*, the ends of which are secured to boards *B C*; the beads *a* of the bars being side by side in horizontal rows, so as to leave spaces *c* between them, substantially as shown and described.

No. 14,638.—ROYAL HATCH, assignor to HENRY C. HATCH.—*Improvement in Wash-Boards.*—Patented April 8, 1856.

The nature of this invention will be understood from the claim and the engravings.

The inventor says: I do not claim the beaded rounds, irrespective of the manner in which they are arranged or fitted together, for they have been previously used; but I *claim* the beaded rounds *E*, when secured in the frame of the board, viz: by having tenons on the ends of the rounds fitted in the grooved rails *B B*, and the beads *c* of every alternate round fitted in the cavities or hollows *d* of the intermediate rounds, as herein shown, and for the purpose specified.

No. 14,869.—J. B. HOLMES.—*Improved Machinery for Manufacturing Wash-Boards*.—Patented May 13, 1856.

The cams 3 3 in their motion force down the plate 2, and cause the incising cutter 7 to cut and force its edge into the leg or side of the wash-board 21. The cams 3 3 relieve the plate, and the spring 4 draws the plate 2 up. Should the spring 4 not be sufficiently strong to draw the cutter out of the leg, the cam 6 revolves against the upper part of the ring 5, and draws it out. The gauge-pieces 22 22 serve to adjust the ends of the legs, so that the incision will be made the proper distance from the ends of the leg.

Claim.—The arrangement of the cams 3 3 and 6, spring 4, and ring 5, for operating incising knife or cutter 7.

I also claim the arrangement of the guide-piece 12 and gauge-pieces 22 22, for purposes mentioned.

No. 15,353.—H. H. TORREY.—*Washing Machine*.—Patented July 15, 1856.

The clothes to be washed are placed in the tub A, the frame C and disk E being previously removed. The frame C is then placed upon the shaft B, the disk E resting upon the clothes. The disk E is then turned by hand with a rotating reciprocating motion, and the pegs *d*¹ carry the clothes back and forth through the suds and over the rubbers *b*, which effectually cleans the dirt therefrom.

The inventor says: I do not claim the tub A and disk E, separately or in themselves considered; but I *claim* the rotating reciprocating disk E, placed within the tub A, and upon an arbor or shaft B, when said disk is provided with pins or pegs (*d*) on its under surface, and the bottom of the tub with radial rubbers (*b*).

No. 15,503.—DANIEL N. ALLARD.—*Washing Machine*.—Patented August 12, 1856.

By depressing the lever G, the cylinder H, together with the ratchet-wheel L on shaft *h*, is made to revolve as the pawls *d* on the cylinder H operate on the ratchet L. The shaft *h* transmits a rapid revolving motion by means of gearing to the cylinder F, to whose circumference a number of cords are attached in a spiral form, each cord having fastened to its end a round solid body of wood, which, as the cylinder F revolves rapidly, strikes against the articles to be washed upon the endless apron D. When the lever G is depressed to its lowest point, then the weight N causes the cylinder H to revolve in a reversed direction; and the same revolves now loosely upon shaft *h*, as the pawl *d* does not operate upon the ratchet L in this direction.

Claim.—In combination with an endless-apron D, for conveying the clothes to be washed, the series of rotating pounding balls *b b*, the whole being operated substantially in the manner and for the purpose set forth.

No. 15,580.—JOHN S. SHEPLER.—*Washing Machine*.—Patented August 19, 1856.

The metallic rubbers *a* are formed of sections of any odd number of ribs, and are so arranged that the two ends of the rib are parallel with the revolving rubber; but the ribs are made to form an inclined plane from the first until the third or centre one, thus forming a succession of inclined planes over which the clothes are forced, alternately ascending and descending at every section of the metallic rubber, when the plate B is rotated over the plate A.

Claim.—I do not claim the half-cone rubbers, nor do I claim concave rubbers; but I *claim* the forming of ribs in sections parallel to the rubbers, and gradually forming a double inclined plane out of any odd number of ribs, thus causing a wedge-shaped opening between the ribs of equal opening, when vertical to each other, to admit the clothes, as the machine rotates back and forth, without the abrupt contact caused where the ribs are of equal height, as set forth.

No. 14,391.—EDWIN B. CLEMENT and SILAS G. WILLIE.—*Improvement in Washing Machines*.—Patented March 11, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The saw-teeth-shaped rubbers D D, made and operating substantially as described.

No. 14,818.—JAMES T. KING.—*Improvement in Washing Machines*.—Patented May 6, 1856.

The cylinder being half filled with hot water, clothing, &c., steam is let in through the pipe O, the escape steam-pipe opened, and the machine set in motion.

In about ten minutes time, the steam is shut off again, the escape steam-pipe L is closed, the valves D are opened, and the dirty suds are let out into the tube T, and out of the same through the pipe *p* into the sewer.

The valves or cocks in the pipe K are now opened, warm water let in, and then through the pipe I cold water, until it runs out clear through the valves D. The machine is then stopped, with the door C downwards, and opposite the door C¹, when the clothing can be taken out, both washed and rinsed.

Claim.—The construction of a rotary cylinder A, in connexion with internal and external pipes, arranged in such a manner that, through said pipes, steam can always be let into the lower part of the cylinder and escape at the top, while the cylinder is in motion or stationary; and that by the same arrangement hot water, cold water, or steam can be let into the cylinder at the top, and escape at the bottom, while said cylinder is in motion or stationary.

No. 15,033.—**SOLON BISHOP.**—*Improvement in Washing Machines.*—
Patented June 3, 1856.

The yoke G resting on the shoulder of spindle *d*, a reciprocating motion is given the disk by the handle H, in which movement the yoke G gives steadiness to it at all heights of the disk.

Claim.—The use of the yoke G, in combination with the spindle B and uprights E E, for giving steadiness to the disk D.

No. 15,034.—**JOHN T. BEVER.**—*Improvement in Washing Machines.*—
Patented June 3, 1856.

By raising the stem E, the arm G will be drawn from the spring H by cord *h*; while in depressing it, the spring, in its contraction, draws the arm, and with it the rubber F, towards it, thus producing a partial rotary movement, combined with the reciprocating movement obtained by the lever D.

Claim.—The lever D, stem E, and rubber F, when used in combination with the arm G¹, cord *h*, and spring H, for producing a vertical and partial rotary movement of said rubber F.

No. 15,043.—**JOHN MCCHESENEY.**—*Improvement in Washing Machines.*—
Patented June 3, 1856.

The pulley *f* turns freely upon the shaft D, and is held in any desired position by ratchet *i* and pawl *l*, for the purpose of adjusting the rubber B vertically.

As the disk rubber is revolved, the cords *d d* will cause the rubber to move longitudinally along the shaft D, so that the rubber will have a compound vertical and horizontal movement.

The inventor says: I am aware that in the patent granted to Joel Haines for a washing machine, February 5, 1850, the disk is made with a hinged segment, (to admit the clothes beneath the same,) being so arranged as to rise and fall vertically as it is turned horizontally over the clothes, by turning the vertical rock-shaft to the right and left. This feature I do not claim, my invention consisting only in an improvement upon the machine of said Joel Haines.

But I *claim* the adjustable suspension of the rubber disk B by cords *d*, ratchet *i*, and pawl *l*, in combination with the rotary radial, fluted frustums of cones *m*, in the rubbing face of said disk.

No. 15,199.—**V. R. STEWART.**—*Improvement in Washing Machines.*—
Patented June 24, 1856.

The crank of the driving-shaft C being turned, the cylinder B will be rotated, and the board M will be moved up and down, and pressed against the clothes by springs N N, the clothes being subjected to the necessary friction and rubbing between the board M and cylinder B.

Claim.—The combination of the corrugated or fluted cylinder B and reciprocating board M.

No. 15,684.—**ISRAEL F. BROWN.**—*Improvement in Washing Machines.*—
Patented September 9, 1856.

As the cylinder B rotates, the clothes C are thrown back and forth longitudinally with the cylinder as they rotate, and are consequently subjected to the necessary friction to cleanse them from dirt.

Claim.—The slotted cylinder B, constructed as shown, and having a diagonal or oblique corrugated board *a*¹ at each end, the cylinder being partially immersed within the box A, substantially as described.

No. 15,711.—**RILEY SMITH.**—*Improvement in Washing Machines.*—
Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

The inventor says: I would state that I am aware a hand rubbing-board has been used in the same machine with a rubbing-board operated by a lever; this I do not claim. But I *claim* connecting the hand-rubber L and lever-rubber R by a pivoted brace K, which serves the double purpose of a guide in operating the lever-rubber, and a brace for raising up and holding in a convenient position the hand-rubber, the whole being arranged for the purpose and in the manner set forth.

No. 15,895.—**JACOB PURKEY.**—*Improvement in Washing Machines.*—
Patented October 14, 1856.

The clothes to be washed are placed in the box A between the rubber C and the rollers J, the clothes being at each side of the rubber, and the box supplied with the requisite quantity of suds. The ends of the bar F are then worked up and down, and a reciprocating motion is communicated to the rubber C, and chains I, and rollers J, and the clothes are subjected to the necessary rubbing to cleanse them thoroughly from dirt.

Claim.—The reciprocating corrugated or fluted board or rubber C, in combination with the rollers J; the rollers being attached to the chains I I, the board, or rubber, and rollers being arranged and operating as shown and described, for the purpose specified.

No. 15,958.—**CHARLES N. TYLER**, assignor to **HENRY PARDIN.**—*Improvement in Washing Machines.*—Patented October 21, 1856.

The first feature of this invention will be understood by reference to the claim and engraving.

The object of the arrangement referred to in the second claim is adjusting the pressure of the washing disk B upon the clothes, whereby they may be subjected to a greater or less degree of rubbing, and by which the disk can also be so adjusted as to wash as large or small quantity of clothes as may be desired.

Claim.—1st. Suspending the shaft C to the cross-beam E in such manner as to be free to turn on its axis for the purpose of oscillating the disk to wash the clothes, and at the same time be capable of vibrating back and forth as the lever is raised or lowered for the purpose of throwing the disk into or out of the tub, substantially as described.

2d. The sliding disk B, in combination with the slotted shaft C and adjustable spring H, the whole being arranged and operated substantially as and for the purposes described.

No. 15,949.—JAMES M. KERN.—*Improvement in Washing Machines.*—Patented October 21, 1856.

The nature of this invention consists in constructing presser P hollow and slotted in front, and in covering the face thereof with a porous cloth c; the cavity a being designed as a receptacle for soft soap, to be gradually discharged on the clothes through the slots b and cloth c by the reciprocation of the presser during the washing operation.

Claim.—I make no claim to the reciprocating presser as such; but I claim the hollow slotted-faced presser in combination with the cloth covering thereof, arranged and operating substantially as described.

No. 15,945.—ALBERT A. DAILEY.—*Improvement in Washing Machines.*—Patented October 21, 1856.

The clothes are placed on the top of the cylinder B, and are carried in between the cylinders I and B; the action of the two cylinders forces them between the concaves E D and the cylinder B, and, as the machine continues to operate, they are carried by its action around to the top of the cylinder B and may be removed without stopping the machine.

Claim.—The combination of the fluted cylinder B and concave E with the fluted cylinder I, substantially in the manner and for the purposes set forth.

No. 15,981.—JOSIAH MUMFORD and JOHN W. WILSON.—*Improvement in Washing Machines.*—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventors say: We are aware devices for washing one portion of a garment more than another portion have been used; this we do not claim, independent of our special means of accomplishing this object. But we claim, in combination with a rotating tub having radial ribs on its bottom, a stationary rubbing-board, also provided with radial ribs and radial slots between them, through which any particular portion of the soiled clothes may be protruded to be washed without washing the entire piece, which lies on top of said rubbing-board, as set forth.

No. 15,989.—MOSES D. WELLS.—*Improvement in Washing Machines.*—Patented October 28, 1856.

In washing with this machine, the articles of clothing are placed upon the rack R, as shown at C¹, the upright c holding the article while both ends flow off the rack. The wings W having been adjusted with respect to distance from the rack, the operator, by means of connecting-bar m, produces any required pressure on the clothes as the rack is reciprocated by power applied to crank K.

Claim.—The reciprocating clothes-rack, guided as described, in combination with the wings, arranged and operating substantially as and for the purposes set forth.

No. 16,068.—IRA REYNOLDS.—*Improvement in Washing Machines.*—Patented November 11, 1856.

Motion being imparted to the machine by means of shafts e, the disks m revolve in opposite directions: The disks are secured to the shafts in such relation that, through the loose or reciprocating pulleys i, the plungers b are alternately drawn backward to their extreme inward position, and when liberated by the sliding catches s acting against the brakes k, the action of the springs p force them to their extreme outward position with sufficient forces to press the water from the clothes.

Claim.—The arrangement and combination in washing machines of the reciprocating pulleys I, springs p, and plungers b, constructed and operating substantially in the manner set forth.

No. 16,190.—ISAAC S. ROLAND.—*Improvement in Washing Machines.*—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the use of loose balls, nor of a reel, in washing machines.

I claim the arrangement of the article to be washed around the periphery of a revolving reel, in combination with the application of loose balls, or blocks, both inside and outside thereof, substantially in the manner and for the purpose set forth.

No. 14,498.—JOHN S. GALLAHER, JR.—*Improvement in Water Coolers and Filters.*—Patented March 25, 1856.

The nature of this invention will be understood from the claims and engravings.

The inventor says: I disclaim the originating or inventing of the principle of cooling water by the application solely of a saturated cloth.

But I claim, 1st, the application of combined chemical refrigerative agents, salt, charcoal, and gypsum, and a mechanical evaporating or air chamber e e e, formed with a convex, inverted, conical, sloping, or

tapering cover or top, and a corresponding bottom part, combined in use with a saturated cloth, and through all of which means the ascending diffuse vapor is condensed, accumulated, and returned into its original volume, purified and cooled at one and the same time, simultaneously, in the manner described.

2d. In combination with the condensing medium *eee* and chemical refrigerative agents, as described, the purifying or filtering devices *ccc*, *ddd*, *dx dx dx*, *fff*, *JJJ*, *WW*, with the capillary agents and porous disks; through all of which chemical action and mechanical devices is produced a compact, individual or unity cooling and filtering apparatus, substantially as set forth and for the purpose specified.

No. 14,162.—DANIEL LLOYD.—*Improved Apparatus for Stencilling Window-Shades*.—Patented January 29, 1856.

D is one of a set of stencils prepared as follows: Upon a sheet of paper that portion of the pattern is drawn which is to be of one color, (see *xxx* in the figure,) and portions of it are cut out as shown by full lines 1. Upon each end of the stencil is placed a small piece of tin *e* perforated with a small hole, and fastened to the paper by a piece of paper of greater extent *d* being glued over it. The frame B C containing the shade *aaaa* is placed upon bench A, with one of its sides against the stops *bb*; the stencil D is then placed upon the shade so as to bring the pattern in the centre of the shade, and metal pins are driven through the perforations at *e*, and into the bench. The stencil is then removed from the pins, and another paper of the same size is placed thereon, similarly provided with perforated plates *e*. The first stencil is then placed on the pins *e* and brushed over with color until its openings are thus stenciled upon the second one; they are then both removed, and the blanks left upon the second stencil which are required to finish that portion of the pattern are cut out (see dotted lines in the figure). Then the set of stencils is ready for producing upon the shade the continuous pattern *x* represented by full and dotted lines.

Claim.—1st. Producing patterns on window-shades, in which long or continuous lines form a prominent feature, by means of pairs of stencils of the full size of the design, prepared in the manner herein set forth.

2d. The mode of registering the stencils by use of the movable pins *c*, in combination with the fixed stops *b*, or their equivalent, for the purpose of readily adapting the stencils to shades of various widths, as herein specified.

No. 14,217.—CHARLES H. BERGMANN.—*Improvement in Writing Desks*.—Patented February 5, 1856.

The desk B is provided with a triangular box N, which fits into the box M of the table, and is pivoted to it at O O. By this means the desk can be elevated or set at various inclinations, and the box M still be kept closed on all sides, so as to exclude dust, etc.

Claim.—Constructing the upper box of a writing-desk with adjustable or expanding sides, in the manner substantially as specified.

XVIII.—ARTS POLITE, FINE, ETC.

No. 15,511.—ANTHONY FAAS.—*Improvement in Accordeons*.—Patented August 12, 1856.

The air enters the instrument to act upon the reeds thereof through perforations in the board *d*; immediately beneath the board *d* a thin sliding board *e* is placed, whose apertures exactly correspond with those in the board *d*; by means of the handle *f* the operator is enabled to slide the board *e* into any position that he may desire, for the purpose of varying the strength of tones by regulating the quantity of air admitted to the reeds.

The second improvement consists in the employment of double keys *bc* to shut the apertures of the base reeds, the smaller keys *c* covering holes through the larger keys *b*, by which arrangement an entire octave of base notes is produced.

Claim.—The sliding and perforated board *e*, when the said board is combined with the perforated board *d* in such a manner as to produce the effects substantially as set forth.

I also claim the double keys *bc*, constructed and operating in the manner and for the purpose specified.

No. 15,401.—CHARLES MORITZ ZIMMERMANN.—*Improvement in the Valves of Accordeons*.—Patented July 22, 1856.

When the works of the instrument are in the position shown in figure 1, the player, by passing down the ends of the keys, causes the roller *p* of the pieces P to raise the valves of the openings of the compartments S, producing two sets of notes with five keys, as is the case in common accordeons. If it is required, however, to produce, by actuating the same set of keys, a set of ten notes, different from the former, then the stop 3 is pressed down, depressing the lever 2 and partially turning the spindle X, and causing the levers Y to pull the cylindrical bar L with the pieces P to the position shown in figure 2, when the roller *p* acts upon the valves of the compartments R, enabling the player to produce a set of ten notes one octave higher than those which were previously given out. Should the player desire to produce a double set of notes at the same time by actuating the same keys as before, then the stop *s* is depressed, catching on the projection of lever 2 by means of lever 4, and causing the levers Y to draw the bar L and piece P to the position shown in figure 3, so that the rollers *n* may act on the arms *q* of both valves which cover the openings in both sets of compartments R S.

Claim.—The arrangement of the valves of accordeons in connexion with sliding rollers, acted upon by the keys and regulated by stops, substantially in the manner set forth; for the purpose of producing from the actuating of one key a variety of different tones by the simple pressure of the stops.

No. 14,069.—CHRISTOPHER D. SCROPYAN.—*Method of Preventing Bank-Notes, &c., from being Counterfeited.*—Patented January 8, 1856.

The nature of this invention consists in using oil-colored paper for bank notes, &c., and printing them with indigo ink more fugitive than the color of the paper itself.

Claim.—The application of oil-colored paper, together with a fugitive ink, to the manufacture of bank-notes and drafts, which will prevent the counterfeiting of the said bank-notes and drafts by photographic process, by transferring on lithographic stone, or by anastatic printing, as herein described; using for that purpose the aforesaid combined action of the oil-colored paper and the fugitive ink—i. e., the combination of the oil-colored paper and the fugitive ink—which produces the desired result, and not the oil-colored paper alone without the fugitive ink, nor the fugitive ink without the oil-colored paper, but the protecting power resulting out of the combination of the oil-colored paper and the fugitive ink, or any other substantially the same, and which will produce the intended effect.

No. 15,486.—PETER HANNAY.—*Improved Blanks for Bank-Notes, Bills, &c.*—Patented August 5, 1856.

The nature of this invention consists in first producing a photographic picture on chemically prepared paper, and then printing upon this paper, over the picture, by copper-plate or otherwise, the form of the note.

Claim.—The combination of the arts of photography and printing or writing, or both, in the manner substantially as and for the purposes set forth.

No. 16,207.—R. L. HAWES.—*Machine for Paging Books, &c.*—Patented December 9, 1856.

By depressing the treadle F, the type-wheel R attached to lever E of the fulcrum b is forced downward upon the platen, and the impression is made by one of the types D. As the type-wheel is forced down, the pin m on arm I strikes against pawl H; by this arrangement, the pawl L causes the type-wheel to revolve. The inking of the types is done by ribbon S passing around the rollers T and U. The ribbon S is fed to the types in order to bring a fresh surface to each type by the feed motion of pawl d, which is operated by lever n striking at each upward motion of levers E and W against rod Z.

Claim.—The general construction and arrangement of the machine, that is to say, pivoting the lever E, which carries the numbering wheels, to the frame-work, and operating the wheels by means of the dog P, the arm h, and pin m, in the manner substantially as set forth.

2d. In combination with the method described of giving the impression, by means of the revolving ribbon S, I claim giving to each type an independent bed, or platen, and supporting the platens i upon springs, in the manner and for the purpose set forth.

No. 15,282.—JOHN E. COFFIN.—*Improved Machine for Rounding and Backing Books.*—Patented July 8, 1856.

The books U are placed on the feed-board B, the backs being uppermost. The follower P being down, the innermost book is pressed against it, and the follower P is then raised by the cam X, and forced upward between the two jaws C D, the back of the book being forced into the groove h, (fig. 2,) and made to correspond with its form. The cam J then actuates the toggle E, and the sliding-jaw D is pressed towards the jaw C; the book being clamped firmly between the two jaws. The cam N then actuates the levers S and R, and the bed Q is moved along on the ways ff, and the hammers V are operated by the cams jj on the shaft K, said hammers acting upon the back of the book, perfecting the work.

Claim.—The follower P, clamp formed by the stationary-jaw C, and sliding-jaw D, and sliding-bed Q, with hammers V V attached.

No. 15,212.—JOHN H. PHILLIPS, assignor to LEIGH R. HOLMEAD.—*Shield to Protect Breastpins.*—Patented June 24, 1856.

The lips a a are perforated for the admission of the pin; the lips being inserted through their respective slits in the linen.

Claim.—The employment of a shield or plate with one or more lips or lugs, for the purposes above specified.

No. 14,202.—SAMUEL PECK.—*Improved Fastening for the Hinges of Daguerreotype Cases.*—Patented February 5, 1856.

This improvement refers to daguerreotype cases manufactured of plastic materials. The metal straps c c are set into the die D behind the hinge blanks b, and then the plastic material is spread over it. When hardened and removed from the die, it contains the straps, which serve to strengthen the brittle substance of the case, and to form a strong support for the hinge.

Claim.—The combination of metal straps or supports with the material of the case when the same is plastic, so as to strengthen the case and form a secure fastening for the hinges, substantially as herein set forth.

No. 14,122.—JOSEPH H. TOMPKINS.—*Improved Box for Coating Daguerreotype Plates.*—Patented January 15, 1856.

The nature of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim the box containing the jar, as that has long been in use.

But I claim the construction and use, in combination with the common coating-box, of the jar J J, with the porous diaphragm D and the orifice C, in connexion with the lute E and flask F, together with

the compress K K L and its application, for the purpose of impregnating the lime or any other substance for retaining chemical vapors in the coating-box with the vapor of bromine, and for the further purpose of continuously furnishing the chambers of the coating-box with a more regular, uniform, and consistent supply of the vapor of bromine, or any other sensitizing chemical, substantially in the manner herein set forth.

No. 16,141.—WILLIAM FILMER and EDWARD BOOKHOUT.—*Mode of Backing Electrottype Plates*.—Patented December 2, 1856.

The plate C is placed within the box B, and is firmly pressed down and secured upon the strips *d e* by the screws *g*; and the electrottype shell E, which does not come in contact with plate C, is retained in proper position by the springs *h*, upon which the plate C bears. The melted metal of which the backs are formed is then poured into the space between plate C and bottom *b* of the hopper, the metal running to the lower end of the hopper, and closing around the sides and over the back of the shell.

Claim.—1st. The box or hopper B placed in an inclined position, and the plate C placed within the box or hopper, the bottom *b* of the box or hopper being provided with legs *d d e*, and arranged as shown.

2d. The spiral springs W interposed between the shell E and plate C, as described.

No. 15,185.—ROBERT T. KNIGHT.—*Improved Envelope*.—Patented June 24, 1856.

The nature of this invention consists in making the ends of the envelope *a a* long enough to lap over each other, so that the clasp may pass through the four sides of the envelope at one time, as at C.

Claim.—The lapping of the ends of envelopes when they are to be secured by metallic eyelets.

No. 15,475.—WILLIAM B. COATES.—*Envelope*.—Patented August 5, 1856.

This invention consists in manufacturing envelopes with a second or extra turn-down *e*, having adhesive material *h* above and below, in addition to the ordinary turn-down *d*, with its adhesive material. The turn-down *e* is folded within the envelope, and fastened to the blank sheet of the letter, for the purpose of preventing the letter from being abstracted.

The inventor says: Although, as an extra secure means of fastening envelopes, I have shown the same as furnished with double wafers attached together by means of strings, I do not desire to confine myself to their use, as the adhesive materials, independent of the connected wafers, afford an efficient security.

But I *claim* the construction of envelopes with an extra turn-down *e*, said turn-down being furnished with adhesive substance, and being arranged substantially in the manner and for the purpose set forth.

No. 14,614.—ROBERT T. KNIGHT.—*Improvement in the Construction of Envelopes*.—Patented April 8, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—The lapping and interlacing of the ends A A and the full width, the back being the full width and length, turning over the enclosed letter, so that when the clasps are in, it is impossible to open it without detection.

Also, the application of the metal clasps to the envelope or letter, or both together, making it one and the same parcel; for the better security of the contents, and also to fix the date of mailing the enclosed letter, which is highly important in many legal and public documents.

No. 14,643.—WILLIAM H. LOW.—*Machine for Making Envelopes*.—Patented April 8, 1856.

Motion is given to the shafts E *e e'*, and the pin *c'* is carried into the notch in the end of the rod *c*, which forces the knife over the blocks *j j j j*, shearing out the blank from the intervening web of paper; after which the sliding-head C is carried back by springs *p p'*. As the blank is cut out, it is gummed on the edge of one of its flaps by means of a gummer placed inside of the knife. The motion of the head C also moves forward the upper gummer *k'* by means of the levers K *k k' k'*, thereby applying the gum to the paper intended for the sealing flap far enough in advance of its being cut to admit of its being dried by means of a current of heated air forced upon it by the air-pump M, receiver L, &c.

The blank is then forced against the face of the perforated follower D by the creasing-block V, and held there by the pressure of the atmosphere, while the blank is drawn back through the hole in the plate B by means of the grooved cam *d* and the crank *d'*, whereby the flaps receive a preliminary fold; the follower is drawn back until it passes into the opening of the folding-plate U, where it remains at rest during about a quarter revolution of the crank. The wiper I strikes now the end of the lever *i*, thereby moving the sliding-bar T, and causing the fingers of the sliders *r r'* to fold down the end flaps; when the sliding-bar has made one half its movement, the slot upon its side strikes the pin of the lever *t'*, moving forward the slide *r'* and its finger, making the gummed flaps adhere to the two end ones. Finally, the slide *r'* is moved forward, completing the folding of the flaps. The projections X fold down the fingers as the slide works up in contact with the sides of the head of the follower D.

The inventor says: I do not confine myself to the peculiar manner herein described of giving motion to the sliding-bar T, as it may be

effected with equal facility by other mechanical devices; nor do I confine myself to placing the adjustable blocks *j j j j* inside of the knife, as they may be made equally effective on the outside of it by making the cutting-edge on the outside of the knife.

I am aware that atmospheric pressure has been previously employed in envelope machinery, simply for the purpose of feeding the blanks to the folding apparatus. I therefore do not claim its use for that purpose.

But I *claim*, 1st. The cutting out of the blank by a shearing cut, for the purpose of making a smooth cut.

2d. The position of the knife, to economize the waste of paper.

3d. Drawing the blank through the hole in the face-plate B, thereby giving to the flaps a preliminary fold.

4th. Holding the blank by means of atmospheric pressure while the folders are operating.

5th. The adjustable blocks *j j j j*.

6th. Drying the gum for the sealing-flap by means of a current of heated air.

7th. Feeding the paper to the knife by means of the feeding rollers O O.

8th. The cam movement, in combination with the hollow slide D, and for the purposes set forth.

9th. The mode of folding the finger R, substantially as described and for the purposes set forth.

No. 14,625.—WILLIAM W. COTTON.—*Machine for Making Envelopes*.—Patented April 8, 1856.

Motion being imparted to the driving-shaft B, it is transmitted by connecting-rod E to rock-shaft G. The blank is placed upon the bed Q, and the feeding plates T and T¹ attached to slide S receive a reciprocating motion by vibrating lever U and connexion V. The ears *a* of feeding plate T carry the blank over the guides *b* and rods *d* up to the stops *c*, whence, by the second motion of said plates, the feeding plate T¹ carries the blank over the aperture O, where it is supported by rods *d*; at this moment the blades *o*, which have been supplied with paste by rollers *n*, which revolve in the paste-box Y, are caused to drop down to the edges of the front flap of the blank, and to supply the same with paste; this movement is caused by the arrangement of cam S on shaft B, roller *t*, rod *u*, counteracting spring and lever *v*, shaft *n*, lever *x*, and cord *y*. The follower N now descends, pressing the centre part of the blank through the aperture O, down to block P, where the flaps are folded down by means of the folding plates 1 2 3 4, which are operated in succession by means of levers D¹, connexions E¹, and sliding cam plates C¹, (figure 5.) The pins H¹ and J¹ of levers F¹ and G¹ slide in the grooves *a*² and *a*¹ of cam plates C¹, and said levers are operated by the curvature of these slots, and the folding plates being attached to said levers by wires *d*¹ are thus turned on their hinges. The envelope being finished, the levers U and 14 are now thrown into

the position marked in dotted lines in figure 3; the block P is suddenly jerked into a similar inclined position; the finished envelope is thrown on the slide 17, and discharged from the machine.

Claim.—1st. Operating the feeding, gumming, partial and complete folding, pasting, and delivering devices from two shafts, so united that the rotary motion of one shall give a rocking motion to the other.

I also claim the feeding up of the blanks by the two feeding-plates, each one carrying it up a portion of the distance, and delivering it against the stops or guides, from whence it is carried through the machine and completed.

I also claim the combined operation of the paste-box and pasters, the former operated from the rock-shaft, and the latter from the revolving one through the intervention of devices.

I also claim, in combination with the block P, the folders 1 2 3 4; the hinged joints of which are covered, and the swell of the hinges facing each other.

I also claim, in combination with the folders 1 2 3 4, the sliding cam plates C¹, with their several connexions, for operating said folders.

No. 15,532.—JEROME B. SHAW.—*Method of Lettering and Ornamenting Glass*.—Patented August 12, 1856.—Antedated April 24, 1856.

Patterns of tin foil, whose outlines correspond to those of the design, are fastened to the glass coated with the white of eggs; the whole is then painted in the desired color, and when this is dried, the patterns are removed, leaving the design clear and the ground colored. The whole surface is then varnished and covered with crumpled or corrugated tin foil, to give to the design the appearance of pearl.

The inventor says: I have been informed that, in the invention of each of the parts of the foregoing process, I have been anticipated by others, except in the use of metallic foil patterns of the shape of the design, cemented to the glass while the ground is being painted, and that paper patterns have been used to paste upon cloth while painting the ground of transparent designs thereon. I therefore make no claim to any of these things in the invention of which I may have been anticipated.

But I *claim*, in the described process of ornamenting glass, the employment of patterns of metallic foil, and cementing the same to and removing them from the glass, as set forth, whereby I am enabled to produce ornamental designs on glass at a greatly reduced cost.

No. 14,378.—WILLIAM B. TILTON.—*Improvement in Guitars*.—Patented March 4, 1856.

This invention consists in reducing the bridge *a* down to a minimum size, simply for the purpose of pressure, and then connecting it, by means of a plate *b* that does not touch the sound-board, with the rim at the end *c*.

The inventor says: I am aware that tail-pieces have been old and

well known appliances on string instruments, and I do not lay claim to such a device.

But I *claim* the combination of the bridge and rim of a guitar, or other stringed instrument, by a tail-piece being firmly attached to both, substantially in the manner and for the purposes set forth, by which much of the strain is taken from the bridge-tree, and its size greatly reduced, as above specified, by which the tone of the instrument is improved.

No. 15,451.—R. GLEASON, Jr.—*Improved Inkstand*.—Patented March 18, 1856.

D is a hollow image of India-rubber attached to the inkstand by an air-tight joint over an opening C in its top. If the image be subjected to pressure, the air will force the ink into the cap B. *f* is a metal cap secured to the image D and to the top of the inkstand; *i* is a hole in the centre of this cap, over which is secured the block of India-rubber, *g*; this block has a hole *h*, the portion *l* being perforated with a narrow slit *m*, which closes of itself air-tight, but which may be opened by pressure at the points *y y*.

Claim.—The use of the hollow elastic body, operating in the manner set forth, in combination with the peculiar valve employed for the purpose of retaining the ink within the cup, as set forth.

No. 15,527.—L. R. SATTERLEE.—*Mode of Attaching Inkstands to Desks*.—Patented August 12, 1856.

The base plate B is firmly attached to the desk by means of the screws S S; the glass ink-holder D stands in the base plate, and is secured from dust and injury by the cup C, which can be screwed on to the base plate.

Claim.—Attaching inkstands to desks or tables by means of the base plate B, cup C, and screws S S, substantially as described.

No. 15,969.—JOHN B. COPPINGER.—*Method of Fastening Jewelry*.—Patented October 28, 1856.

As represented in the engraving, the two levers A and B, which are hinged together at *a*, are provided with hooked pins *p* and *p*¹, the lever A being fastened to the stuff by entering the pin *p*; then, by closing the clasp B, the hooked pin *p*¹ enters the cloth in such a manner that the two pins *p* and *p*¹ penetrate the cloth in opposite directions, by which the article is perfectly secured to the cloth.

Claim.—The method of fastening jewelry, &c., substantially as set forth.

No. 14,306.—RICHARD CROSS.—*Combined Knife and Pencil Case*.—Patented February 26, 1856.

The spring of the blade is arranged within slot *u* in the shank of the knife for the purpose of protecting the spring on its opposite sides from

being impeded in its operation by dust or dirt, which may readily be scraped from the socket of the knife-blade by the knife-shank during its movements. The catch *r* is attached to said spring, and slides in the slot *n*.

The inventor says: I do not claim a handle formed with the chambers or recesses for receiving several instruments, which respectively slide into and out of said recesses or chambers; but I do *claim* my improved mode of constructing such a handle, viz: of two separate tubes so formed and applied, that when one is extended through the other it shall not only serve to support it on two of its opposite sides so as to prevent them from being crushed inwards, but form, with the remainder of the enclosing tube, and between it and the latter, one or more chambers for the reception of instruments, as specified.

I also claim arranging the spring of the knife-blade in a slot made through the shank of the blade, as described, the same being in manner and for the purpose as set forth.

No. 15,283.—EDWIN CRAWLEY.—*Tool for Index Lettering*.—Patented July 8, 1856.

The types *j* are secured between two plates *f* and *m* (figs. 2 and 4); the plate *f* is provided at one side with a spiral flange *g*, to which flange the type stem *k* (fig. 3) is attached by means of its notches *l*. The plate *m* is provided at one side with radial grooves to receive the type stems *k*; the hub *h* of plate *f*, passing through the aperture 3 of plate *m*, can be secured to the latter by means of a screw and nut. The inking rollers *x* receive the ink by means of an inking belt running over roller *z*. The entire inking apparatus is made adjustable by means of the set-screw *q* passing through the standard *o*.

Claim.—1st. The arrangement of a circular revolving head, having around its periphery a series of types adjustable radially so as to print an index of greater or less "display" by a single rapid continuous movement, using for such purpose the described pair of disks, of which one has radial grooves, holding a set of types, notched transversely to receive the spiral flange on the other disk, in combination with the securing and tightening nuts upon the arbor and pivot, as described, or devices substantially equivalent.

2d. I claim in this connexion the inking apparatus, having two or more inking rollers, and the described distributing mechanism in a vibrating head, attached and supported to a sliding bar.

No. 15,019.—JOSIAH A. ROLLINS.—*Improvement in Melodeons*.—Patented June 3, 1856.

The object of this invention is so to arrange within the instrument four sets of reeds, and to combine two sets of valves, to be played by one set of keys, as to keep all the reeds on one tube-board, and to make the construction simpler than when the reeds are arranged in two banks, and to avoid making the depth or width of the case of the four-

reed instrument any greater than that of an instrument of the common kind having only one set of valves.

Claim.—1st. The extension of the wind-receiver B towards the back and front of the case, by forming cavities *a a* between the frame C and the tube-board D, thereby obtaining room under the tube-board for the operation of two sets of valves E and E¹, one behind the other, to operate on four sets of reeds without increasing the usual size of the case.

2d. The arrangement of two sets of valves E and E¹ to bring their movable ends together, and the fitting of the two ends together, so that, by the depression of the valves of one set to open them, the corresponding valves of the other set are depressed and opened, thereby effecting the opening of the two sets of valves by a single set of push-down pins, and keys of ordinary construction.

3d. Supporting the front set of valves at their hinges by a strip K of wood or other material.

No. 15,014.—WILLIAM N. MANNING.—*Improvement in Melodeons.*—Patented June 3, 1856.

The tone and action are improved by the reeds H and G being placed in the reed-box S, which answers for a sounding-box. The valves M being on the outside of the wind-chest, not only prevents them from being forced open by the wind, but closes them tighter and makes the action quicker.

Claim.—The reed-box S, (fig. 1,) with the perpendicular valves M.

No. 15,218.—JEREMIAH CARHART.—*Improvement in Melodeons.*—Patented July 1, 1856.

When the coupler *f* is depressed in playing, it depresses the corresponding lever G, thereby opening the rear valve B¹ corresponding with its own valve B, thus allowing both sets of valves to be operated by the set of keys E; but notches *g* are made in the levers G for the couplers to fall into as the keys E are depressed, when it is desired to use the two sets of keys independently. The couplers are caused to fall into the notches, when desired, by means of a bar F and arms *i i*; so that when the upper keys are depressed, the levers G will not be acted upon.

Claim.—1st. The coupler *f* arranged in the cavity of the key.

2d. The double springs *m*, constructed to act each on a valve of each set, so that, by turning it, the two valves may be liberated and capable of removal.

No. 16,094.—LAFAYETTE LOUIS.—*Improvement in Melodeons.*—Patented November 18, 1856.

The long valve *c* is placed over the treble reeds, and the valve *d* over the bass reeds. In order to produce a tremolo, a vibratory motion is

given to both valves, whereby the force of the air passing downwards through the reeds is varied. The second part of this invention will be understood by reference to the second claim.

Claim.—The use of a long valve or valves placed over the reeds and under the swell, and vibrated in such a manner, by any proper arrangement of mechanical devices, as to break and vary the force of the air passing through the reeds, thereby producing a sound similar to the tremolo in the human voice.

2d. Actuating the tremolo valves so as to impart to them a vibratory movement, by means of the fan-wheel *g* and crank *h*, or their equivalents, made to revolve by a current of air passing through the box *ff* to the bellows, as described.

No. 16,296.—GIDEON O. SPENCE.—*Improvement in Melodeons.*—Patented December 23, 1856.

By operating the pedals L, connected together by racks *m*, the bottom E of the receiver A is operated by the arrangement of a cord J passing over pulley K and fastened to said bottom E, and the action of the springs I can thus be counteracted; the current of air passing between the reeds into the exhausted receiver A on operating the keys G, can thus be regulated for the purpose specified in the claim.

Claim.—The application of the third pedal to the receiver of melodeons, for facilitating the production of the crescendo and diminuendo, in the manner and for the purpose fully set forth.

No. 15,316.—RILEY BURDITT, assignor to JACOB ESTEY and HATSEL P. GREEN.—*Improved Base-Damper for Melodeons, &c.*—Patented July 8, 1856.

E represents the base-damper hinged to the socket-board B and fitting to the seat *d*, within or below the seat of the swell C, in such a manner as to close the sockets of the lower octaves or base reeds. This damper is connected at one end to a spring *e*, which is weaker than the combined springs *a*, which close the swell with a small elbow lever F, which works on a fulcrum pin *f*, and is to have an attachment of a similar character to an organ stop, by pushing in or pulling out which the lever F may be placed in the position shown in fig. 1, or that shown in fig. 2.

Claim.—The base-damper E, applied under or within the swell, in combination with the lever F and spring *e*, so that it may, at the pleasure of the player, be caused to open with the swell, or remain closed while the swell is open.

No. 15,061.—JEREMIAH CARHART.—*Improved Machine for Manufacturing Reed-Boards for Melodeons.*—Patented June 10, 1856.

The reed-board B¹ is placed between the bars *h* and the jaws *k*, which latter are forced against the board by turning the cams *m*. The

face of the board is thus always brought at right angles with the cutter H, however taper the board may be. Motion is given to the driving-shaft P, and a reciprocating motion is communicated to the frame D. The frame E is fed a certain distance laterally by means of the pawl 3, which acts against the rack 5; the bar U and pawl 3 being actuated in consequence of the lower and bevelled end of bar U bearing against the roller 4.

Claim.—1st. The means whereby the reciprocating motion with variable stroke is communicated to the frame D, viz: The segment R, which gears into the rack *n* on the frame D, and into the pinion *s* on the shaft M, the pulleys N N¹ on the shaft M, and the shaft Q in the frame L, actuated by the bar S, and the bars *z z*¹ on the frame E, by which the pulleys N N¹ are alternately connected and disconnected with the shaft M.

2d. The dogs F F.

3d. Giving the lateral feed-motion to the frame E by means of the rack 5 and pawl 3, when said pawl is actuated by the bars T U and roller 4.

No. 14,501.—HALVOR HALVORSON, assignor to FRANKLIN R. SLOCUM and ROBERT WATKINSON.—*Improved Miniature Case.*—Patented March 25, 1856.

It is very difficult to glue the frame *g* to a surrounding frame of metal. The frame *h* obviates this difficulty, as glue or cement will readily adhere to its inner edge. Figure 1 represents a part of the top view of the case.

Claim.—The combination of the metallic dished bearing plate *c*, the leather or embossed covering *d*, and the two frames *a b*, the whole constituting one portion or half of the case, as specified.

And in combination with the metallic confining frame and the velvet-covered glass-holder and frame *g*, I claim the frame *h*, made of paste-board, or other equivalent, and applied for the purpose as specified.

No. 16,009.—HIRAM GROVES.—*Improvement in Automatic Musical Instruments.*—Patented November 4, 1856.

This invention consists in making the tunes of a barrel organ adjustable; the projections S on the segmental tune-plates act like ordinary pegs, while the notches act like blanks, which, when placed in due order and under the proper levers, will, by turning the cylinder, make the proper pipes speak at their right times.

Claim.—1st. Constructing the barrel of automatic musical instruments of a prismatic form, and by leaving spaces between the bars or rails covering it, substantially as described.

2d. Notching the rails or bars of an organ barrel, and securing in the said rails a wire, in the manner specified and for the purpose set orth.

3d. Constructing the tunes of automatic musical instruments of metallic segmental plates, in the manner and for the purpose described.

No. 14,955.—EMMONS HAMLIN, assignor to Himself and HENRY MASON.—*Improvement in Reed Musical Instruments.*—Patented May 27, 1856.

The wind-chest C communicates with the expanding chest G through valve H. When this valve is closed, the wind-chest is entirely non-elastic, and the notes feel every pulsation of the bellows A. When H is open, the chest is rendered elastic, and the notes are not affected by the action of the bellows. The opening of H is effected by the pressure upon rod I.

The coupler is composed of a tongue R, which is hinged at *g* to the block S, and is interposed when it becomes necessary to couple the two sets of reeds together between the key E and the lever O; by which means, as the key is depressed, the lever O is forced down, and the valve L of the notes *b b*¹ is opened. When the coupler is drawn back, the tongue R slides down the inclined plane *y* upon the lever O, which is then not affected by the descent of the key E.

Claim.—The combination of a rigid or non-elastic wind-chest C with the ordinary expanding wind-chest G.

2d. The peculiar construction and arrangement of the coupler, consisting essentially of the tongue R, interposed between the lever O and the key.

No. 15,921.—J. C. BRIGGS.—*Reed for Musical Instruments.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The reed, constructed, substantially as described, of a ring or frame A, with a vibrator B, consisting of a disk or plate suspended by a central stem from a spring, to vibrate within the said ring or frame, in right lines perpendicular to the plane of the disk, thereby enabling a column of air of uniform thickness in all parts to be admitted through the reed, and enabling a uniform vibration to be produced all around the reed.

No. 14,970.—PHILETUS PHILLIPS.—*Musical Notation.*—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The use of a line of a distinct character 1 2 3 4 5 6 7, on which to write each elementary note, and the transposing of such lines to effect and denote the different transpositions of the scale.

No. 15,937.—ABBEY S. SMITH.—*Scale for Instrumental Music.*—Patented October 21, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the use of letters to denote musical sounds.

But I *claim* an improvement of the established letter organization of the instrumental music scale, by originating and giving tangible form and shape to a character to be called and to denote sharp key A, and another flat key A, and another sharp key B, another flat key B, another sharp key C, and another flat key C; and the same of flat and sharp keys D, E, F, and G, for which characters I claim different specific forms or shapes of each of the seven adopted musical letters, and different from the adopted shape of the adopted letters; all of which I arrange with other musical characters upon the staff, so that all retain their value, capacity, and position, in perfect conformity to the organic law thereof; and the different keys, in their definite capacity, are in form brought to sight to be read at a glance of the eye, by teacher and learner, as described and set forth, or in any way substantially the same.

No. 14,935.—THOMAS WARD.—*Improved Music-Rack*.—Patented May 20, 1856.

The music is placed with its lower edge on the bar G, and the springs *ee* fit over the upper part of the book when opened. The bar G¹, being attached to the arms *ff*, is allowed to adjust itself to accommodate the thickness of the book where it is secured by the adjustable bar D and set-screws *b¹*, and springs *ee* will yield or give for the same purpose. The book may be moved either to the right or left by operating the bar D. When the right-hand leaf is to be turned, the plate *j* is released from the catch *l* by hand, and the spring *k* will throw plate *j*, together with the leaf, over to the opposite side of the book.

Claim.—The jointed or adjustable bar G and the bar F, provided with the blade L, and attached to the sliding-bars E E by the sliding springs *ee*; the bar G having a plate J attached to it provided with a spring *k*; the above parts being fitted in a frame B which is allowed to fold or be turned in a vertical or horizontal position.

No. 14,992.—THOMAS SANDS, assignor to Himself and JOHN P. LINDSAY.—*Improvement in Parlor Organs*.—Patented May 27, 1856.

As the key H is depressed, the jacks L are vibrated round their pivots *d*, and the valves M, connected thereto by the wires *f*, are opened. The wind-chest F, together with all the parts necessary to give motion to the valves, may thus be placed immediately back of the key-board.

When the coupler bars N are drawn back, as seen in figures 1 and 3, the lower portion of the wires *g* rests upon the bottom of the slots in the stickers K; and as the latter are raised by the depression of the keys, the bars N are vibrated, and the octave of the note struck is also sounded. When the coupler bars are thrown forward, the stickers in rising do not touch the wires *g*, and the octave is not sounded.

Claim.—Arranging the pipes horizontally in compact tiers C E, one

above the other, when each succeeding tier is placed at a greater distance from the wind-chest F than the one below it, for the accommodation of the mouths of the pipes, all the pipes except those of the lower tier C being connected with the wind-chest by means of the conductors G, as set forth.

2d. The peculiar combination and arrangement of the action herein described with the short keys H; that is to say, the combination of the keys H, levers I, the stickers K, and the jacks L, operating in the manner and for the purpose substantially as herein described.

3d. The coupler-rods N with their bent wires *g*, in combination with the stickers K and the auxiliary stickers *p*, for the purpose of coupling the notes with their octaves.

4th. The method of holding the metallic pipes in place by means of the bar P, the rod *m*, and the spring Q, operating in the manner herein described.

No. 15,066.—DANIEL CUSHING.—*Machine for Rubbing and Polishing Painted Cloth*.—Patented June 10, 1856.

The cloth, received from a shell, is slipped on the shaft roller G; it then passes under the spring roller M, kept moist by water dropping from the trough N. It then passes over the rollers L L L and under the rubbers P P, and is received on the large drum F, by whose surface the cloth is drawn slowly over the machine; from the large drum F, it is wound on a receiving roller O; as the cloth passes the rollers L L L, it is subjected to the action of the rubbers P P, by which the cloth is rubbed.

Claim.—The mechanism constructed and operating substantially in the manner described, for the purpose of rubbing painted or enamelled cloth.

No. 15,065.—DANIEL CUSHING.—*Machine for Coating Cloth with Paint*.—Patented June 10, 1856.

The nature of this invention will be understood from the claims and the engraving.

Claim.—The arrangement of the several rollers and belts, as shown, wherein I make use of the friction of the cloth on the roller A for the purpose of giving the necessary tension and movement of said cloth when in combination with the means of spreading the paint composition as in the manner shown, and the delivery of the cloth when coated.

Also, the arrangement of the hanging frame G, constructed substantially in the manner described, for the purpose of receiving the cloth for dying, thereby rendering the painting and hanging it a single mechanical operation.

No. 14,260.—THOMAS THOMPSON.—*Improved Machine for Folding Paper, &c.*—Patented February 12, 1856.

The paper, cloth, or other material, passes over the guide-roller J and over the guide-block E, or rather through the small space between

the block E and the folding-doors G G¹ (one of which G is represented shut, the other G¹ open) on to the rollers K K¹, which double the paper together as it passes between them.

Claim.—The forming block, in combination with the rollers K K¹, so constructed and arranged as to draw the material to be folded over said block, and fold it, substantially as described.

No. 15,232.—JOHN L. HARVEY and C. A. MILLS.—*Improved Paper Clip*.—Patented July 1, 1856.

The outer cylinder *f* is made to slide over the inner cylinder by means of screw *b*, thus enabling the clip A to be raised or lowered to accommodate a larger or smaller quantity of paper.

Claim.—The attachment of the clip A and spring C to the outer cylinder *f*, by which the clip can be raised or lowered, so as to accommodate a larger or smaller quantity of paper, the effect of the spring upon the clip being the same in any position.

No. 16,256.—CHARLES MOORE, assignor to WILLIAM G. SHELDON, LORENZO B. CHANDLER, and CHARLES MOORE.—*Machine for Cutting and Folding Paper*.—Patented December 16, 1856.

The sheet to be folded is placed upon the prongs *f* of the frisket R, which, at the time, is in a horizontal position; it is then suddenly thrown on the machine, by the arrangement of revolving-cam M, lever N, connexion Q, rack P, and pinion O, (fig. 1,) and at the same time cut in two, by means of knife T² on bed A, and knife T on frisket R. The blades *v*, attached to levers *e*, are now moved over the sheet until they arrive under the edge of the primary folders X, which latter then, together with the secondary frisket *f*², throw over the part of the sheet lying upon it, by the arrangement of cam *e*, lever *l*, and rack *b*³, which operates shaft Z and crank-pin Y; but, by the peculiar shape of cam *c*, their motion is arrested for an instant, when the folds are nearly completed, in order to allow the blades *v* to withdraw, which being done, completes the folds. The blades *v*² now move over the folded sheets, being actuated by lever *e*², and hold them tightly on bed *c*; and the secondary cutters T³, operated by cam *c*², springs *a*, levers *l*, racks *b*, gears *j*, and pinions *i*, descend down upon cutters T⁴, and cut the sheets. The next instant the secondary folding-plates X², operated by shafts *z*⁴ and racks *b*⁵, carry over each part of the quartered sheets lying upon them, but stopping an instant in their progress to allow the egress of the blades *v*², then completing the folds, crimping the same tightly, while at the same time the blades *n* come over upon the folded sheets, pressing the same against the folders X³, which, being operated by shaft *z*⁵, complete the process of folding. The cam *c*³ now releases lever *l*, and spring *a*⁴ carries over the sheet and throws it entirely from the machine, as soon as pawl *p*² strikes the projecting part of bed C, and releases the take-off *m*, which instantly flies back before the reception of the next sheet.

Claim.—1st. The use of a frisket with a blade or cutter attached thereto, in combination with a stationary cutter or blade, for the purpose of cutting a sheet of paper in two parts by one and the same operation.

2d. The crimping-blades V V² *n*, operating in the manner substantially as specified, and for the purposes set forth.

3d. In combination with the crimping-blades, the use of folders, either with or without the auxiliary frisket, when constructed and operated substantially in the manner set forth.

4th. The use of auxiliary friskets, when operated by projecting-pins, or by any other competent mechanism, in conjunction with the folder, to carry over such parts of the sheet to be folded as will not, when operated upon by the folding-blade, sustain and carry over their own weight.

5th. The combined contrivance of the take-off and the crimping-blade of the last fold, or the combination of the take-off with any other blade designed to co-operate therewith, for the purpose of clasping the folded sheet or sheets, and of carrying them off, and of discharging them from the machine.

6th. The arrangement of the spring and pawl, or their equivalents, operating the take-off, in the manner specified.

7th. The use of sliding or movable beds C C, with hanging-sides D D, as a means of arranging the cutting, crimping, and folding mechanism, and all the cams, levers, springs, racks, &c., which operate the same, so that the machine may be expanded or contracted, without disarranging the parts on which the proper motions depend.

8th. The punching points, or pins, in connexion with the corresponding holes of the crimping-blade *n*.

No. 14,697.—JOHN NORTH.—*Machine for Folding Paper*.—Patented April 15, 1856.

The sheet being placed on the table *b*, and the crank K turned, the sheet is seized by the fingers *d d* and carried under the folding-nippers. The fingers are raised and dropped at the time of seizing the sheet, by means of a pin *e* fastened to the finger-board, (see fig. 5,) a wrist-pin *f*, and the trip-dog *g*, which turns upon a pivot *h*. The dog is provided with a slot *i*, into which the pin *e* enters as the carriage advances, thereby raising the fingers. When the knife *k* is brought under the folding-nipper *m*, the carriage stops, and the middle margin of the sheet is over the edge of the knife.

The nipper is then brought down upon the knife to hold the paper. The nipper, in moving away, carries the folded sheet with it to be folded a second time by the knife *k*¹ and nipper *m*¹. The nipper is kept from rising beyond the required position by the check-piece *p* and a stop-piece *t*. The second fold being completed, the sheet is carried back to be subjected to a third folding by nipper *m*² and knife *k*². When the sheet is folded, it is dropped upon the delivery-table *b*¹. The machine, as represented here, is so arranged that one-half of the sheet is folded

up and the other half down, the part for folding from below being similar in construction to that already described. The sheet is cut in halves by the rolling-cutter c^1 upon the straight edge d^1 , and while one-half is carried through and folded, the other goes through a similar course.

The extremities of the bed on which the cut is made are provided with inclined planes, one of which is shown at h^1 , (fig. 4.) As the cutting-rollers ascend these inclined planes they are alternately raised and depressed, and the end of the rocking-bar f is forced to pass over the projection of the escapement g , so that it is above the projection when that end of the bar is up, and below when it is down.

Claim.—1st. Folding paper by means of stationary straight-edge, or knife k , and folding-nippers m .

2d. The manner of relieving the sheet from the nipper.

3d. The adjustable check p , and the mode of releasing its hold by the advance of the nippers.

4th. The rotating trip-dog g , for raising and depressing the fingers.

5th. Attaching the knives to the reciprocating carriage.

6th. Operating the reciprocating carriage by means of the crank K , the slotted connecting-rod M , the lever N , and the link P , whereby I attain accuracy and ease of movement.

7th. The cutting-rollers hung on a bar, vibrated and checked.

8th. The arrangement of the T-levers with the double concentric rock-shafts for operating the nippers by one cam.

No. 15,842.—CYRUS CHAMBERS.—*Machine for Folding Paper.*—Patented October 7, 1856.

The paper, when ready to be folded, is placed on the table Y ; and when the blade E and pins $I I^1$ are up, as represented in fig. 1, a single sheet is placed or registered on the pins $I I^1$, which remain stationary until the blade E descends. When the fine points P on the blade E touch the paper, the pins $I I^1$ drop below the rollers $A A^1$, and the paper is seized by them and drawn through doubled. The tapes T turn and slide it on the bars Q until it strikes the stops S , which hold it in that position until acted on again by the second blade F , which forces it through the rollers $B B^1$ in like manner making the second fold; when, by the second series of tapes, bars, and stops, it is presented for the action of the third blade G , which forces it through the rollers $C C^1$, thus making the third fold; when it is presented, by aid of the third series of tapes, bars, and stops, for the fourth blade H , which forces it through the rollers $D D^1$ in like manner; and thus folded the fourth time, it drops on the fly U , which lays it down on the belt $2 2$.

Claim.—1st. Causing a folding machine to make the crease for the fold in paper, or other substances, so that any number of sheets fed successively to the said machine may be folded to correspond to the printing or other impressions made thereon by means of the points or register pins $I I$, or other equivalents, and the holes by which the sheet was registered upon the press, or the holes or marks made in the sheet

for any other purpose; the said pins being adapted to the said holes or marks, and the sheet or substance to be folded placed upon the said pins by using the said holes or marks for that purpose.

2d. The manner of adjusting the register pins $I I$, and their peculiar movement, as described, for the purposes specified.

3d. Supplying the straight edge or blade, or its equivalent, (which forces the paper into recesses or between converging surfaces, or their equivalents,) with fine points, as and for the purpose specified.

4th. The bars $Q Q^1$ and the stops S , independent of and in combination with each other, as well as the bars $Q Q^1$ or the stops S , separately or combined, as described, in combination with the endless belts $T T$.

5th. Arranging the rollers $B B^1$ which make the second fold below the rollers $A A^1$ which make the first fold, and the rollers $C C$ which make the third fold below $B B$, and in like manner any number of rollers; so that the substance to be folded may be forced downwards between each pair, thereby enabling a single series of endless belts, or their equivalents, to conduct it from one pair of rollers and present it for the action of the next.

6th. The fly U in combination with the endless belts $2 2$, and the mode of making the support of the said fly adjustable; also the manner of moving the said endless belt, substantially as described.

7th. I am well aware that endless belts have long been used for conducting paper in folding and other machines; therefore I do not claim them as my invention.

But I claim arranging a single series of endless belts, substantially as described, so that paper or other substances may be conducted by them horizontally from a pair of rollers when passing downwards between them.

8th. Gearing the rollers in such manner as to decrease the speed of the periphery of each successive pair, in the proportion and for the purpose specified.

9th. Controlling the first blade or plate of folding machines by a treadle, or other means, for the purpose specified.

No. 16,266.—CHAUNCEY O. CROSBY.—*Improvement in Machinery for Folding Paper.*—Patented December 23, 1856.

A sheet being fed between the rollers C and D , and in front of the fingers e , motion is imparted to shaft c^1 , cam c ; coming in contact with a projection on rack-bar j ; raises said rack-bar so as to turn pinion g , and causes the fingers e and blade d to deposit the sheet on the bed of the machine, when the blade d will force the bight of the paper between the gripping-bars h and h^1 , which are now forced together, while the fingers e return to their vertical position. Cam G , lever j , wheel H , and pinion k , will bring over fingers l and blade m for the first fold of the paper. The gripping-bar h now releases the paper, and blade m forces the bight of the double paper between the gripping-bars p and p^1 , and fingers l return to their former position. Cam L , lever M , lever

*k*¹, wheel N, and pinion *r*, now carry over the fingers *s* and blade *t* to the position shown in fig. 2, to fold the paper the second time, the blade *t* forcing the paper between the gripping-bars *w w*¹, the spring R throwing back the fingers *s* to their former position. Cam S, lever T, and rack and pinion *x*, now throw over plate U to fold the paper again by pressing it on platform V, when the bars *w w*¹ will release it, and smooth out the bend, as in former cases.

Claim.—The combination of the blades with the gripping bars, when constructed, arranged, and made to operate substantially as described.

2d. The blades in combination with the fingers, when combined and made to operate substantially as described.

3d. The cutting away a portion of the face of one of each pair of the gripping-bars, and also of the edge of each of the blades, as shown, so that they may gripe the paper without binding the blades, when constructed and used substantially as described.

No. 15,228.—ARASMUS FRENCH and CHARLES FROST.—*Improved Method of Making Boxes of Paper Pulp*.—Patented July 1, 1856.

The nature of this improvement will be understood from the claims and the engravings.

The inventors say: We do not claim as our invention the making of boxes and other articles from pulp, with a perforated mould and by means of a vacuum; but we *claim*, 1st, the method of disengaging the article when formed from the mould, by forcing air upon it, by bringing down the piston Q, or other equivalent means.

2d. We claim the use of the movable block F, and the movable shelf with a cavity in it, as represented in fig. 5, both block and cavity corresponding in shape to the boxes or article made, and being used to receive them and preserve their shape when they are blown from the mould.

3d. The circular groove *a a* in the rim *x x*, (see figs. 2 and 3,) and such a construction of the plate to which the mould is attached as would be equivalent to it; the object of this groove being to receive the water which enters the cylinder through the perforated mould when the pulp is deposited thereon, so that it may be drawn off by the stop-cock *b*; whereas this water, if permitted to remain and accumulate, would, by the pressure of the air upon it, be forced through the sides of the articles formed when they are blown from the mould. We claim no other parts of the machine as our invention.

No. 14,303.—HENRY J. BRUNNER.—*Improved Machine for Edging Wall Paper*.—Patented February 26, 1856.

The roll of paper, indicated by broken lines, is centred upon the points *d*, and the stands N are adjusted to the width to be cut by turning handle S, and thus moving the carriage C, together with the stands, the proper distance sideways. The front end of the paper is secured to shaft T by sliding clamps *e f*, and as it unwinds from the roll and is

wound up upon said shaft T, a strip *s* will be cut from the paper, by means of circular knives *m n*. When the whole of the paper has been wound around shaft T, one of the bearings D of this shaft can be pressed outwards against spring *g*, so as to free the end of shaft T, and allow the roll of paper to be withdrawn from the shaft.

The inventor says: I do not claim revolving shears upon feeding rollers; but I do *claim* the bearing pivots *d d*, supporting arms N N, movable blocks L L, sliding carriage C, and adjusting device S P *b*, arranged and combined in the manner and for the purposes herein set forth.

I also claim the sliding clamps *f f*, constructed and operating substantially as herein set forth.

I also claim the combined arrangement of the rolling and unrolling devices, so that they may be quickly shifted from one side of the machine to the other, for the purposes specified.

No. 14,760.—EDWARD BAPTIS.—*Pen and Pencil Case*.—Patented April 29, 1856.

The spiral grooves of the tubes *c g* are cut in reverse directions, and the projection *d* on the band *b* (to which band the pen-holder C is attached) is at one end of the spiral grooved tube *c* when the projection *h* on the pencil slide K is at the opposite end of the spiral grooved tube *g*.

The inventor says: I am aware that pen-holders and pencil-slides have been operated separately by spiral grooved tubes, and I therefore do not claim a single spiral grooved tube; but I *claim* the two spiral grooved tubes *c g*, when arranged so that the pen-holder C and pencil-slide K will be shoved alternately in and out of the case, and moved simultaneously in opposite directions.

No. 15,660.—JOHN H. KNAPP.—*Pen and Pencil Case*.—Patented September 2, 1856.

By turning either the plate *d* or case A, the pencil-slide G may be moved in and out from the case A as the pin *b* works in the spiral groove of case H; and by operating the sliding-band E, the pen-slide D may be moved in and out at the opposite end of the case.

The inventor says: I do not claim the manner of operating the pencil-slide, viz: by the spirally slotted tube H and the straight slotted tube F, for that has been previously used, and the pen-slide D is also well known and in common use.

But I *claim* placing the pen-slide D over or upon the tube B, which encloses the slotted tubes F H, the above parts being arranged as shown, so that the pencil-slide is shoved out at the opposite end, and the working parts rendered so compact that an extremely portable and extensive case is obtained, as described.

No. 14,276.—HENRY A. BROWN and JAMES WILEY.—*Improved Fountain Pen*.—Patented February 19, 1856.

When the pen is not in use, the pen is drawn out, as represented in figure 2, so that the slide-valve B is down on its seat, thereby preventing the ink in the ferrule F from communicating with the pen. When in use, the pen is shoved inwards, as represented in fig. 3.

Claim.—The making the pen A with a solid half-circular head B, and arranging it to slide in the pen-holder, (having a face-plate E and e^2 , as set forth,) so as to operate as a slide-valve or cut-off to the flow of ink, when operated substantially as hereinbefore set forth, and in form and manner and for the purposes described.

No. 14,425.—A. F. WARREN and C. M. H. WARREN.—*Fountain Pen*.—Patented March 11, 1856.

The piston D is so arranged with its rod C that it may be readily detached from it; so that, when the piston is drawn upward and the fountain filled, the piston-rod may be forced down within the fountain, and thereby allow the cap B to be fitted on the end of the fountain, the piston serving as a stopper. The implement is thereby rendered portable. To the rear side of the pen E is attached a plate G, which forms a reservoir f between pen and plate, which reservoir is kept supplied with ink by the wire g .

The inventors say: We do not claim the plate G separately; for they have been previously used, although applied to the pen in a way different to that herein shown. Neither do we claim a piston for filling the fountain with ink; for they have also been used for the same purpose.

But we *claim*, 1st, having the piston D and rod C arranged, as shown, or in any equivalent way, so that the piston D may be detached from the rod C when the tube or fountain is filled with ink, for the purpose specified.

2d. We claim attaching the pen E directly to the lower end of the tube A by the band F, and conducting the ink from the tube A to the back or convex side of the pen by the wire g , which is attached to the pen and passes through the apertures e and d , as described.

3d. We claim the plate G attached to the back or convex side of the pen E, in combination with the wire g , arranged as described, for the purpose of insuring a regular and even supply of ink to the pen.

No. 15,417.—AUSTIN G. DAY.—*Improved Fountain Pen*.—Patented July 29, 1856.

This pen can be used in the following manner: The tube or holder C is filled with ink and screwed on to the chamber E at D; the feeding-tube R is then shoved upwards by means of the knob z ; this opens the air-vent y , and brings the aperture T above the valve-seat and within the ink chamber. The sliding-tube R now fills with ink, which escapes into the pen L through the opening U at its lower end.

Claim.—The sliding feed-tube, having an aperture near its upper end, whence the ink flows when the pen is in use, the aperture being closed and the ink excluded from the feeding-tube by drawing it downwards into the lower end of the ink chamber.

I also claim the combination of the air hole or vent with the sliding feeding-tube, the enlarged end of which closes the vent-hole when the feeding-tube is drawn down, to stop the flow of ink to the pen.

No. 15,622.—NELSON B. SLAYTON.—*Fountain Pen*.—Patented August 26, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—The fountain-pencil, consisting of a tube tapering to a point, and slit from said point some distance up two or more sides, said tube being connected with an ink-reservoir, which is closed, except at its connexion with said tube, and from which the ink is caused to flow through the said tube and down the slits thereof, and issue from the point thereof, when the said point is moved in contact with a surface of suitable character to receive an inscription in ink, substantially as described.

I also claim regulating the degree of fineness of the writing or marks produced, by means of a screw-thread a and cone b on the exterior of the tube, and a nut d carrying a conical cup d^1 , fitted to the said screw-thread and cone, and acting in opposition to the elasticity of the nibs g of the tube, substantially as described.

No. 16,299.—A. F. WARREN.—*Fountain Pen*.—Patented December 23, 1856.

The ink in the tube A passes between the ribs of the stopper D, down the plates b and c , which hold the pen E. The cylinder A may be filled with ink by drawing the pen within it, and holding its lower end upward, and pouring the ink into it. The pen may then be shoved outward, until the lower end of plug D is flush with the lower end of the cylinder, and the implement is ready for use.

Claim.—Attaching the pen-holder to the sliding-tube B, by means of the rod C, substantially as shown, so that the pen may be drawn within and shoved out from the cylinder or ink-reservoir, as described.

Also, constructing the pen-holder of the two plates b c and plug D, substantially as described and set forth.

No. 15,657.—CHARLES KETCHAM.—*Improved Fountain Ruling-Pen*.—Patented September 2, 1856.

This pen is composed of two hollow semi-cones A, which are fitted and held together by means of a set-screw, which also serves to open and close said pen, for the purpose of producing heavy and fine lines. The tongue C, which can be made to slide on the holder B, serves to

clear the passage for the ink when obstructed, and assists in holding the fluid up in the pen by its attraction.

Claim.—A fountain ruling-pen, substantially as specified.

No. 15,490.—T. KENTON LYON.—*Improved Pen-Holder.*—Patented August 5, 1856.

This improvement consists in the use of a conical-shaped piece B, one end of which is made to fit tightly to the holder, the other being so enlarged as to form an annular space around its lower end, the object of which is to prevent the ink from touching the fingers.

The inventor says: I disclaim lips and all improvement in pens, also guards of any kind not forming a deep annular space around the pen, as described. I distinctly disclaim any improvement on or application of improvement to pen and pencil cases of any kind.

I *claim*, on the common straight pen-holder, the guard B attached to or made part of the holder, forming a deep annular space around the pen, or that part of the holder where the pen joins it, for the purpose set forth.

No. 14,286.—FRANCIS JOS. KLEIN.—*Flexible Pen-Holder.*—Patented February 19, 1856.

The upper section *a* is formed with a mortise, into which the rear portion of *b* fits, and into which it is pressed by a spring *d*.

Claim.—A pen-holder constructed in two distinct and separate pieces or sections, so that the lower section *b* shall be a lever, having the metallic rivet *c* as a fulcrum.

Also, the peculiar formation of the chamber in section *a*, and of the arm of the lever; by means of which formation and adaptedness each to the other the holder is rendered more symmetrically compact, and a movement of the aforesaid lever is permitted only in one direction, and for a limited distance, and a motion in any other direction is absolutely prevented.

No. 15,223.—ALPHONSO CRAYTEY.—*Improved Metallic Pen.*—Patented July 1, 1856.

The nature of this invention consists in combining with the pen A a pen-protector C and ink-distributor D, by means of a slide B fitting upon the pen previous to its being fitted to the pen-holder. The tongue D draws by its capillary action the accumulating ink from the points of the pen and pen-point protector, so as to prevent any tendency to blot in writing.

The inventor says: In neither of the points does the effects of a spring appear, nor are they used or designed to act as springs or stiffeners for the point of the pen. I therefore disclaim any such use of them, and limit myself to the invention of protecting the point of

the pen from getting broken or damaged when being let fall upon its point.

But I *claim* the pen-point protector C and ink-distributor, in combination with metallic pens, substantially as herein before set forth.

No. 14,203.—MYER PHINEAS.—*Improved Metallic Pens.*—Patented February 5, 1856.

The plate *a* serves to form a reservoir for ink, and also forms a spring to regulate the action of the nibs. Figure 2 shows the blank with the plate *a* before it has been bent into its proper position, represented in figure 1.

Claim.—The spring *a* when placed upon the upper side of the pen, and so constructed and arranged as to serve the two-fold purpose herein described.

No. 15,992.—JOHN WILCOX.—*Improvement in Metallic Pens.*—Patented October 28, 1856.

The double-pointed pen *a* is held at its middle by the flanges *e* of the plate *f*, which plate is attached to the slide-piece *m* by means of a rivet *r*, so as to turn upon the slide-piece when desired. The slide-piece *m* is movable within the ordinary slide *n* of the holders H, and the point of the pen not to be used is inserted in the opening of slide *n*.

Claim.—The double-pointed pen, in combination with the flanged swivel-plate *f* and slide-piece *m*, constructed, arranged, and operating substantially as and for the purposes set forth.

No. 16,242.—WILLIAM LEWIS and WILLIAM H. LEWIS.—*Improvement in Photographic Baths.*—Patented December 16, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

The inventors say: We do not claim a hinged leg or support to the bath, but we are not aware that the hinged leg and button have ever before been combined together for the purposes specified.

Neither do we claim a glass bath in itself, as baths have heretofore been made of plates of glass cemented together; and also circular vessels have been made use of, and elongated baths of gutta-percha have been used, formed with one curved side. But we are not aware that solid glass baths have ever before been formed in a flattened or elongated shape, with the sides and bottom in a curved shape, as and for the purposes specified.

We claim retaining the nitrate of silver bath in the desired inclined position by the combined operation of the leg *c* and button *e*, for the purposes and as specified.

We also claim the solid glass pot *f*, when formed with the curved sides and bottom, for the purpose of protecting the plate from injury by contact with the bath or any sediment, in the manner specified.

No. 15,854.—WM. LEWIS and WM. H. LEWIS, assignors to MALONZO J. DRUMMOND.—*Plate-Holder for Photographic Cameras*.—Patented October 7, 1856.

The nature of this invention consists in the use of glass corners *h* in the frame *f*, which receives the corners of the glass, or other plate, to prevent the chemicals, which adhere to said glass, from coming in contact with any material that will cause discoloration; and also in the introduction of a receptacle *d* in the bottom of the frame, to catch any drippings from said plate.

Claim.—Forming the glass or vitrified corners *h* with a flanch or rim in one solid piece, the said flanch or rim taking the edges of the photographic glass or other plate, substantially as and for the purpose specified, and irrespective of the manner in which the said vitrified corners are attached to the frame.

Also, the receptacle *d* below the glass or other plate, to catch any drippings from said plate, substantially as specified.

No. 14,679.—JOEL H. TATUM.—*Preparation of Oil-Ground to Receive Photographic Impressions*.—Patented April 15, 1856.

The inventor says: I disclaim everything heretofore known or practised in the production of photographic pictures on paper, or any un-oiled surface; but I *claim* the mode of preparing and rendering oil-prepared surfaces impressible or sensitive to the photographic art by the temporary destruction or chemical change of the oil on the immediate surface, by the use of the spirits of wine and alkaline solution; and then the fixing the impression by the use of hyper-sulph. soda and diluted acid, by which last application the alkalis are neutralized and the oil restored, with the impression permanent upon the surface.

No. 15,809.—DANIEL J. KELLOGG.—*Photographic Instrument*.—Patented September 30, 1856.

The nature of this invention consists in clamping the prepared canvas to a cast-iron ring, of the shape of the picture to be made; so as to form a water-tight basin, into which the iodized collodion can be poured to adapt it for the reception of a photographic impression.

Claim.—My method of converting the canvass itself into a basin, by means of the metal ring, (figs. 1 and 2,) as described.

No. 15,924.—V. M. GRISWOLD.—*Bituminous Ground for Photographic Pictures*.—Patented October 21, 1856.

This bitumen is prepared in the following manner: Asphaltum varnish is diluted to a proper consistency with spirits of turpentine, and to it are added eight ounces of turpentine, one half ounce of bromine, and one ounce of iodine; when thoroughly united, this is bromine-iodized

turpentine, which, added to half a gallon bath of the prepared bitumen, forms what the inventor calls bromine iodized-bitumen.

Claim.—For taking photographic pictures on paper or other substance, prepared by the described or other equivalent process substantially the same, and producing the desired effect.

No. 15,336.—VICTOR M. GRISWOLD.—*Improved Collodion for Photographic Pictures*.—Patented July 15, 1856.

This invention consists in adding to collodion the clear solution resulting from the whites of eggs and an equal bulk of pure water, which, when used for photographic purposes, will bring out the minor details more sharply and perfectly than the ordinary collodion.

Claim.—The addition of albumen to collodion.

No. 15,341.—GILES LANGDELL and MARCUS A. ROOT.—*Mode of Tinting Photographic Pictures*.—Patented July 15, 1856.

The nature of this invention consists in applying both mineral and vegetable coloring matters in solution to the daguerreotype, or any other photographic impression, either introducing the said coloring matters into the collodion, or pouring them upon the plate after the impression is fixed.

Claim.—The application of coloring substances or matter to photographic impressions or pictures upon glass or metal, or other material.

No. 14,946.—ALBERT BISBEE and Y. DAY.—*Improvement in Photographic Pictures on Glass*.—Patented May 27, 1856.

Inside of the camera, and at about one-tenth of the focal distance of the lens from the glass, is placed a board having an aperture of any desired pattern intended for the edges. This board shades the edges of the glass, thereby leaving them transparent. The picture, being taken, is then varnished with transparent white varnish, and backed with Japan varnish. The mat-back is then secured in its place with the preserver.

Claim.—Making the border of the picture transparent, and placing the mat-back of the picture, as described, and for the purpose set forth.

No. 15,497.—D. B. SPOONER and H. B. SPOONER.—*Mode of Coloring Photographic Pictures on Glass*.—Patented August 5, 1856.

When the photographic picture is washed and dried, that portion of the picture which is not designed to take the color is covered with gum, which must be insoluble in the coloring solution. The picture is then colored, and the colors are only deposited in those places which are free from gum. When the picture is colored, the gum is washed off by means of water, which does not dissolve the color.

The inventors say: We do not claim the coloring of a picture all over with a single tint.

But we *claim* the application of gum-arabic, or other equivalent material, as set forth, for the purposes described, and no other.

No. 14,300.—HAMILTON L. SMITH, assignor to WILLIAM NEFF and PETER NEFF, Jr.—*Photographic Pictures on Japanned Surfaces*.—Patented February 19, 1856.

Claim.—The obtaining of positive impressions upon a japanned surface, previously prepared upon an iron or other metallic or mineral sheet or plate, by means of collodion and a solution of a salt of silver and a camera.

No. 14,184.—LEVI CHAPMAN.—*Improved Photographic Plate Vise*.—Patented February 5, 1856.

The nature and object of this improvement will be understood from the claim and engravings.

The inventor says: I do not claim fitting a jaw with a limited motion, combined with a sliding-jaw retained by a ratchet or pins, as metallic vises have heretofore been constructed on this plan.

What I *claim* is, the arrangement of the jaw *d* with the piece 3 between the slides 4 4, and beneath the cross-piece *e* acted on by the cam-piece *f*, or its equivalent, when combined with the jaw *c*, changeable in the grooves 2 2, in the sides *b b* of the trough, in the manner and for the purposes specified.

No. 14,509.—N. MURPHEY LOWE.—*Improved Piano-Forte Action*.—Patented March 25, 1856.

A is the key; B the hammer; C the check; D the back-rail; G the under hammer; *g* is a spring which rests upon the back of the jack E. The spring is steadied by a guide-rod *f*. No friction is produced by this arrangement, while neither the release of the fly nor the blow of the hammer can be felt by the performer.

Claim.—The peculiar manner in which I have arranged the spiral spring *g* upon the rod *f*, as applied between the hammer and the key, for the purposes herein set forth.

No. 14,998.—JOSEPH BECKER.—*Improved Piano-Forte Action*.—Patented June 3, 1856.

The finger-levers *G*² raise the cross-levers *F*²; these raise or act on *K*², which raise the jack *B*⁴; this operates on both the damper-lifter *A*⁵ and the jack *X*, which acts on the hammer-block *X*³, and causes the hammer *X*⁶ to strike the strings *j j* and the damper *A*⁷, to prevent the vibration of sound; the lever-wire *A*⁴, to which the strap *X*⁴ is con-

nected, draws back the hammer *X*⁶, by the block *X*², ready to act when required.

Claim.—The double broken action, as shown, (fig. 1,) namely, as follows: *G*² and *G*³ *H*² *F*² *J*² *K*² *J*³ *J*³ *N*¹ *Z* *Z* *B*⁴ *A*⁴ *X* *B*³ *Q* *X*⁴ *X*⁵ *X*³ *X*²; the said part or parts being combined and acting together, completing the whole arrangement of the double broken arrangements.

No. 14,948.—WILLIAM CLARK.—*Improvement in Attachments for Piano Legs*.—Patented May 27, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I do not claim metallic connexions, attached together by a key passing through mortises in the tongue and jaws, as these themselves have before been used; but I *claim* securing the metallic connexions C and D, for attaching legs B to pianos or other articles, into the respective parts of the leg and bed A by means of diagonal dowels *a* and *b* taking recesses in the sides of said metallic connexions.

No. 14,383.—DANIEL F. HAASZ.—*Improvement in the Construction of Grand Pianos*.—Patented March 4, 1856.

This invention consists in so combining the action of grand pianos with the movable or key-frame E, that the whole may, when required, be made to radiate downwards on pins attached to the front of the key-frame and fitting into slots on the sides of the piano case, from which slots the pins may be raised and detached at pleasure; an arrangement by which the whole key-frame and action from the body of the piano can be removed with facility, and at the same time a deep and solid pin-block can be used, which not only dispenses with the multiplicity of iron bars, so injurious to the tone of grand pianos, but also prevents the rattling noise which occurs in the operation of the keys, in that class of instruments, through want of solidity in the pin-block.

Claim.—1st. The combining the action of grand pianos with a radiating key-frame in such a manner as to enable me to use a deep and strong pin-block, substantially as herein set forth.

2d. The key *K*, with its projection *p* and arrester *P*, in combination with the lever *O* and catches *m*, arranged and constructed substantially in the manner and for the purpose specified.

No. 15,915.—ALFRED P. CRITCHLOW, assignor to A. P. CRITCHLOW & Co.—*Hinge for Picture Cases*.—Patented October 14, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim a hinge of common construction, or one having each of its leaves bent at a right angle, so that it may be inserted in a mortise made in the side of a case or box.

But I *claim* the application of a hinge of a daguerreotype or picture case, moulded of a plastic material, or made of a frangible substance or substances; said hinge being made with each of its leaves bent twice, as set forth, and so applied to the halves of the box that it may embrace two contiguous sides of such halves, and be independent thereof, and extended or lap over and be fastened to the top and bottom plate of said box, substantially as described.

No. 15,068.—J. C. DICKINSON and ROBERT BATE.—*Improved Pocket-Book*.—Patented June 10, 1856.

This invention consists in attaching a plate B to one side of the pocket-book A, and having hooks *d* secured to one end of the plate, so that when the pocket-book is placed in the pocket the hooks will catch into the lining. When the hooks are not required to be used, the plate C may be fitted over the plate B.

Claim.—The plate B, with hooks *d* attached, the plate being secured at one side of the pocket-book, and used with or without the sliding-plate C.

No. 15,150.—JAMES SHAW.—*Improved Port-Folio*.—Patented June 17, 1856.

The music sheets, maps, &c., designated by D, are secured within the port-folio by passing a needle containing the thread *e* underneath the rings *d*, the needle being fitted in the groove *b* so that it may pass underneath the rings; the needle is then passed through the sheets so that the sheets will be secured to the several rings.

The inventor says: I do not claim, separately, or in itself considered, the roller B; but I *claim* the roller B attached to the covers A A, provided with the grooves *b c* and rings *d*, which are fitted in the grooves *c*, substantially as shown for the purpose set forth.

No. 14,246.—EDWARD LINDNER and CONRAD HOFFMAN.—*Improvements in Porte-Monnaies*.—Patented February 12, 1857.

These porte-monnaies can be fastened to the finger so as to prevent, in some measure, losing the same.

Claim.—The application and manner of connecting to the inside of the porte-monnaie elastic bands *m*, or India-rubber cords or springs, passing through the joint to the outside, so as to be able to attach the same to the finger, substantially as described.

No. 15,891.—JOHN L. MASON.—*Improvement in Porte-Monnaies*.—Patented October 14, 1856.

The leather A of which the pockets of the porte-monnaie are made is of quadrangular form before being folded; a part of it is represented

in fig. 2. The part included between the lines *e e* makes one pocket: this piece is first folded, as represented in fig. 3, in a transverse section; it is then folded in diagonal lines *f g*, so as to bring the two triangular pieces *f g e* into contact with the face exposed in fig. 3, as illustrated in fig. 4. It is afterwards folded back in the lines *h h*, which brings the part shown in fig. 4 to the position shown in fig. 5. Fig. 6 represents a transverse section of two pockets. Fig. 7 represents a section taken in the line *e e* after the folding has been completed, as shown in fig. 5.

Claim.—The construction of the whole of the pockets of a porte-monnaie, or other article of a similar character, from a single piece of leather, by a system of folding, substantially as described.

No. 14,867.—JAMES HEWSON.—*Fastening for Porte-Monnaies and Pocket-Books*.—Patented May 13, 1856.

d represents a ring that is fastened to the bottom of the pocket; this ring *d* is hooked in the catch *b*, and holds the porte-monnaie fast to the pocket, unless the hand is forced down to the bottom in order to press upon the spring A.

The inventor says: I do not pretend to be the inventor of springs, catches, and rings; neither do I claim to be the first one that has applied them to pocket-books. But I *claim* the combination of the catch *b*, (fig. 1,) or swivel *e*, (figs. 1 and 2,) and the spring A with the ring *d*, (fig. 1,) attached to the porte-monnaie or pocket-book frame.

No. 15,011.—CHRISTIAN KNAUER.—*Copying-Press*.—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Adjusting the plates A and D of a copying-press to suit different sized books, by means of a regulating cam C, which carries the top plate D, so arranged that it shall be the bearing of the pressure cam G, either directly or by the intervention of the friction piece *d*.

No. 16,245.—WILLIAM MOULTRIE.—*Press for Printing Hat Linings*.—Patented December 16, 1856.

The silk to be printed is guided from roller L between the tapes M and N, first between the feed-rollers 1 and *g*, then it passes between the rollers F and D, where it is sized; the projecting section E receiving the moisture from roller C, which passes through fountain B, thus sizing the silk in those places which are to be printed. The silk then passes around the drying vessel G, and the operator then spreads portions of gold-leaf on the silk at proper distances, which are fastened on it by means of the die X on the heated printing cylinder K. As the silk moves on the revolving brush P, it removes the surplus gold-leaf into the box Q, and the printed silk is lastly deposited in the trough O.

Claim.—The application and employment of the printing cylinder K described, or its equivalents, in combination with the feed and impression rollers, the fountain B, the endless tapes M N T U, the drying vessel G, and the revolving brush P, when used in the manner substantially and for the uses and purposes as mentioned.

No. 14,238.—ANSON HATCH.—*Improved Hand-Press for Stamping Letters, &c.*—Patented February 12, 1856.

When the rod E is forced down, the roll J moves down the somewhat inclined cam groove in contact with the lower face C of the groove. By this means the die K will pass in a nearly horizontal direction over and in contact with the inking-roller N until the die has arrived above the bed L, when the roll J has simultaneously arrived at the vertical part of the groove. The roll and die will then vertically descend, and the article upon the bed L will receive the impression. When the rod E is again left free, the die and roll (impelled by spring b) will rise and move backward along the inclined part of the groove, the roll being in contact with the upper face J of the groove, so that the die will pass clear of the inking-roller.

Claim.—So combining the arm which carries the stamp plate or form with the cam, as that, by vertical pressure on said arm, it shall move over the inking apparatus horizontally, or nearly so, to be inked, and then descend vertically on to the bed to give the impression; and in returning, pass above the inking rolls so as not to touch them, in the manner and for the purpose substantially as herein set forth and explained.

No. 15,358.—OLIVER S. GROVER.—*Printers' Composing-Stick.*—Patented July 15, 1856.

The slide B is pressed closely against the bed A by means of guide C, and can be secured at any desired point by the clasp D.

Claim.—The application to the composing-stick of the guide C, to prevent the slide B and the bed A from separating while adjusting the composing-stick, and the clasp D to secure and hold the slide B in its place on A when adjusted as herein described; using for that purpose the aforesaid guide c and the clasp D, or any other substantially the same, and which will produce the desired effect.

No. 14,542.—JUSTUS WEBSTER, and SAMUEL H. FOLSOM.—*Improved Printing Cylinder.*—Patented March 25, 1856.

The nature of this invention consists in the printing of paper of any desired length in a series of horizontal and transverse lines. The paper to be printed on is placed between wheel C and the driving cylinder B.

Claim.—The construction of the printing cylinder C, consisting of metallic rings or disks placed upon a shaft A², side by side; the longi-

tudinal marks upon the paper that is printed by it being produced by those disks having an unbroken perimeter, while the intermediate disks which produce the cross lines have a broken or toothed surface, the combined disks being secured to the shafts by a spline with suitable collars B² and nuts C² at the ends, as herein described.

No. 14,295.—JAMES F. STARRETT.—*Machine for Printing from Engraved Plates.*—Patented February 19, 1856.

The nature of the first claim consists in combining inking, wet-wiping, dry-wiping, and printing apparatus, with a travelling platform mounted upon an arm revolving like the spoke of a horizontal wheel and carrying an engraved plate from one apparatus to the other in succession. The nature of the second claim consists in carrying the plate through the printing cylinders in a straight line perpendicular to the axes of the cylinders, as no impression could be taken without that. The zigzag motion referred to in the third claim has for its object that the wiping cloth and the plate shall describe such relative motions that one shall rub against the other on curves differing at each rub. This is done by means of a flexible connexion between the bed of the plate and the revolving-arm, in combination with a crooked guide track. Figure 1 is an elevation of the machine from the printing-cylinder side; fig. 2, an elevation from the side of the dry-wiping apparatus; fig. 3, a top view of the whole; fig. 4, a bottom-view of one of the travelling-arms (platen and flexible connexion); fig. 5, section through the wet-wiping apparatus, cloth-rollers and cisterns; fig. 6, section through the printing-cylinder and tape-roller, showing the arrangement for feeding the paper; fig. 7, section through the printing and supporting cylinders, showing the platen, etc. The machine, as represented in the engravings, has two revolving arms and two engraved plates.

Claim.—1st. One or more travelling platforms attached to revolving arms, and carrying engraved plates from inking to wiping and then to printing apparatus in succession, or to any two such; such apparatus being so arranged that the last and first of the series are next in succession, and the arms revolve in the same direction continuously, substantially in the manner and for the purposes specified herein.

2d. I claim causing engraved plates, which are carried around in the circumference of a circle, to be submitted to a printing cylinder in a line parallel to its own axis, and not in radial lines of the circle in which the plates are carried, and then permitting them to pass in contact with said cylinder in lines perpendicular thereto, and not in the arc of a circle, substantially in the manner described.

3d. I claim imparting to a plate or plates thus handed a zigzag or devious progressive motion, while they are passing in contact with certain cloths or rollers, substantially in the manner and for the purpose herein specified.

4th. I claim the flexible connexion between the plates or their beds and the handing or carrying arms, as also grooved tracks, or their equivalents,

acting upon beds so attached; and also these two in combination, substantially in the manner and for the purpose specified.

5th. I claim such flexible connexion in combination with a stop whereby an engraved plate, carried upon a revolving arm, is properly presented to the action of the impression cylinder, substantially as herein specified.

6th. I claim wet-wiping an engraved plate by means of a travelling wet cloth, acting in combination with a plate having a zigzag progressive motion, substantially in the manner described.

7th. I claim an automatic, oscillating receiving-table, in connexion with a printing apparatus, wherein are printed in succession sheets having different matter printed thereon, so that similar sheets may be laid in the same pile, substantially as hereinbefore specified.

8th. I claim the vibrating chaps or fingers K, in combination with the tapes, for completing the delivery of a printed sheet and depositing it upon a table, substantially as herein specified.

No. 15,164.—A. ELY BEACH.—*Improvement in Printing Instruments for the Blind*.—Patented June 24, 1856.

The keys A A' are all so arranged that their inner ends *a a'* will strike a common centre and leave a raised impression upon the paper at each stroke, thus enabling the operator to form words by merely pressing the proper tape-keys. All the keys A are connected with the lower end of escapement G by means of cord J; and whenever any one of the keys is pressed, the forked end of escapement G will be also depressed; the clock-work will then be liberated and the paper fed along, as shown.

Fig. 3 represents an enlarged section of clock-work escapement.

Claim.—1st. Causing the types to strike at a common centre.

2d. Connecting each of the type-keys, or their equivalents, with the escapement, by means of a common connexion.

No. 14,919.—JOHN M. JONES.—*Printing Machine*.—Patented May 20, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—The manner of attaching the lever D to the wheel A so that the same may turn said wheel, while its fulcrum rests upon a fixed plate N, situated below the revolving wheel A, allowing at the same time a revolving motion, and a motion in the direction of its axis to the wheel A, said lever D being connected with the mechanism by the rod S passing through the hollow shaft of the wheel G. The arrangement and use of the lever C for the purpose of pressing down the type on the paper when an impression is to be made, and at the same time insuring always the right position of the type and wheel A.

I claim the surging wheel G attached to a hollow shaft, having pro-

jections on its periphery corresponding in number and thickness to the type, for the purpose of moving the carriage L, with the paper attached, the exact distance necessary for printing one letter after the other.

No. 14,907.—JOHN H. COOPER.—*Printing Machine*.—Patented May 20, 1856.

The type-wheel H is furnished with a series of characters corresponding with those on the disk D, and so arranged in relation to them that whatever character the conical point *b* indicates, when pressed into its representative countersink, shall be brought into a line of which the paper to be printed upon is the tangent. On the rock-shaft J is connected a presser arm U, which, as said shaft is rocked, comes up behind the paper and presses it against the type.

The connexion and disengaging of the carriage and endless belt *l* are as follows: On the spring-brace M is a projecting piece *r*, which, when the pins *i i* are in the spaces between the teeth of the ratch-wheels P, causes *r* to jam the belt *l* tight up against a cross-bar V of the frame; and thus the friction on the belt between *r* and V carries said frame with the belt. When the line is printed out to the edge of the paper, the pins *i i* are raised out and rested in the concaves on the points of the teeth. This disengages the piece *r* from the belt, and the carriage is run back, whilst the belt may remain stationary.

The inventor says: I am aware that a type-wheel, having upon it vertical type and moving to the paper to give the impression, has been used. This I do not claim. But I *claim*, in combination with a type wheel having its types radially arranged thereon, the pressure-bar U for carrying the paper to the type to receive the impression.

I also claim the manner of connecting and disconnecting the paper carriage and endless belt, together with the spacing of the lines by means of the points *i*, ratch-wheel P, brace M, and its projecting piece *r*, so that the belt may run in one continuous direction, whilst the paper carriage may be traversed back and forth.

No. 14,214.—JOHN STANDING, assignor to Himself and JAMES BAXENDALE.—*Improved Movement for the Doctors of Calico-Printing Machines*.—Patented February 5, 1856.

One end of the shaft *c* of the leading roller C rests upon the surface of an eccentric L, and is held down upon it by means of a spring R. When shaft *c* revolves, the crank-rod I, connected to that end of shaft *c* which is nearest to the eccentric L, will rock the rod G in its bearings H H, and thus (by means of arm *a*) impart a reciprocating motion to the shaft E of the doctor D in its bearings F. When, at the same time, the eccentric L is rotated, the shaft *c* will be elevated and depressed, and thereby the reciprocating motion of the doctor-shaft will be caused to be a variable one.

The inventor says: I do not claim applying to the shaft of the doctor a mechanism imparting to it a variable reciprocating motion, as such

by no means is new; but having invented for such purpose a new mechanism, which is very simple in its construction and efficient in operation—one possessing decided advantages over most if not all others in use, to effect such a result.

I *claim* the combination of the eccentric L, the crank K, the connecting rod I, and lever G, applied to the shaft *c* and the shaft of the doctor substantially as above specified.

No. 14,789.—SAMUEL W. LOWE, assignor to JACOB M. BECK.—
Machine for Embossing and Printing.—Patented April 29, 1856.

When the machine has to be used for embossing, the rollers *e* on the segmental roller K are removed, and the pieces *j j'* are slid in the direction of the arrow, the notch on the spring *i* retaining them in such a position that the inking apparatus becomes inoperative. When the machine has to be used for printing from engraved plates, prepared by the process, for which a patent was granted on the 18th of September, 1855, these plates are secured by clamps to the rounded portion of the segmental roller K. The small roller on the side of the latter is now replaced, and the plate V in the table U removed.

The arm *d* is so adjusted that the moment the ink has been delivered to its surface, the end of the arm depresses the lever *f*, which moves the sliding pieces *j* and *j'* back, when the inking roller K is removed from the plate on the segmental roller, and retained by the projection on the spring *i*, until the rollers *e* strike the latter as before. When the sliding pieces are moved back by the impression of the lever *f*, the roller *m* is receiving ink from the roller *n*, and this ink is distributed over the surface of the roller *l*, and thence over that of the roller K, preparatory to being applied to the engraved plate.

The inventor says: I do not desire to claim exclusively the employment of segmental or D-shaped rollers for printing and embossing, or the use of such rollers in combination with a traversing frame; neither do I claim the movable inking apparatus described.

But I *claim*, 1st. The employment of two segmental rollers, in combination with a traversing frame or table, said table having a loose plate, by removing and replacing which, the said segmental rollers may be used for embossing, for printing from the engraved plates, for which a patent was granted to me on the 18th of September, 1855, or for printing from common type.

2d. The radial adjustable arm *d*, in combination with the lower segmental roller K, for the purpose of limiting the distribution of the ink to the engraved plates attached to said roller.

No. 14,016.—GEORGE P. GORDON.—*Improved Printing-Press.*—Patented January 1, 1856.

The two racks P P bear one against the upper edges of the teeth of one wheel Q, and the other rack against the under edges of the teeth of the other wheel, so that no play is allowed between the teeth of the

racks and those of the wheels. The sheets of paper to be printed are placed upon a feed-board U, and the form is secured to the bed N. Motion is given the shaft B, and a reciprocating motion is communicated to the form-bed N by the pitmen O. When the form-bed reaches its highest point, the lower end of the swinging frame L, which is hung on the shaft M, is thrown towards the cylinder by the shaft K, which receives its motion from the shaft H, the latter being operated by the arm I, the end of which works in a groove *a* in the side of the wheel G. The cylinder R has a rotating reciprocating motion given it by the racks P P and the toothed-wheels Q Q. The sheets of paper are caught by the fingers *n* on the cylinder R; and as they are carried around between the cylinder and the form, the impression is given to the paper, and the printed sheets are deposited upon the fly-board V. Just before the form-bed commences to move upward, the shaft K throws the lower end of the swinging frame and of the form out from the cylinder, and the pawl *e* acts against the rim *m*, and rotates the annular disk X a certain distance. The circular disk W is rotated a corresponding distance in an opposite direction by means of the gearing *j k* and *l*. The disks X and W are supplied with ink from a proper fountain, and the rotation of the disks serves to distribute it evenly on the disks. As the form-bed N descends, the two disks pass behind the rollers T, one or more of which are inked by being in contact with the disks; and one or all of these rollers are thrown in an oblique position when in contact with the bed of the lever S, which is regulated by the irregular groove *f* in the side of one of the wheels Q. This oblique vibratory movement causes the ink to be evenly distributed on the rollers.

Claim.—I do not claim, separately, a rotating disk W for distributing the ink; but I do *claim*, 1st, combining with such rotating disk W an annular disk X, which shall revolve around, and in a contrary direction to it or such purpose.

2d. I claim throwing the same rollers T, one or more, used for inking the form, from the parallel position they necessarily occupy for this purpose to an oblique position, which shall give to them a lateral motion when in contact with the distributing disks, or equivalent, for the purpose specified.

3d. I claim a rotating reciprocating cylinder R, or segment of a cylinder, in combination with a reciprocating bed N, when such bed shall have a movement to and from such cylinder or segment of a cylinder, in the manner described for the purpose specified.

4th. I do not claim placing a reciprocating bed in a vertical position, or in any given angle from a horizontal position; but I do claim so placing the bed, when used with a rotating reciprocating cylinder or segment of a cylinder, which shall drop or pile the printed sheets underneath it, in the manner specified.

No. 14,558.—GEORGE F. FOLSOM.—*Improved Printing Press*.—Patented April 1, 1856.

H is a shaft to which the power is applied. I are pinions upon each end of this shaft, which engage with cog-wheels K, each of which carries two cranks *a*. L L¹ are pitmen which communicate motion from the cranks *a* to the cross-heads M M¹; by which means the platens E E¹ are made to approach the bed-plates C C, and the impression is given. The platens E E¹ are separated from the bed-plates by the springs O O¹. As the segment Z vibrates, motion is communicated to the feed-apron Q¹ by means of rod N¹, lever M², pawl *l*, and a ratchet-wheel upon the feed-roll P¹. Q¹ passes over the roller S, running in the arms *r*. The bender T¹ is supported by the arms *q*, and borne down upon the feed-apron by the spring *a*². The paper, having been fed forwards, is placed in the nippers in the following manner: upon shaft *m* rest the arms *r*, which carry the feeding-apron; the instant after the passage of the nippers, the projecting edge O² of the sheet of paper is placed therein, the apron being caused to drop sufficiently for the purpose in the following manner: P¹ is a pulley upon the shaft U, which communicates motion through the band K¹ to the pulley L¹ upon shaft *m*; this shaft is cut out at the point where the arms *r* rest thereon, so that at a certain instant in its revolution, when the notch *n* comes opposite to the notch *p*, the arm shall drop a sufficient distance to enter the sheet of paper into the nippers, which now start forward with this sheet, while the pressure-rod T¹ bears upon the upper edge of the next sheet.

Claim.—1st. The method herein described of giving the impressions with the two platens by means of the gear K and double cranks *a*, operating as herein set forth.

2d. The method herein described of feeding the sheets into the nippers by means of the binder T¹, in combination with an intermittent feed, operating as described.

No. 15,437.—THOMAS PARKES and ALFRED PARKES.—*Improved Printing Press*.—Patented July 29, 1856.

The sheets to be printed are placed upon the feed-board G; and motion being given the shaft of the cylinder B, said cylinder is rotated, and also the printing cylinders D D and ink rollers C C, the ink rollers inking the forms on the flat surfaces *a a* of the cylinder B. The shaft *s* is depressed by the cam *v*, and the top sheet of paper, having been placed by hand, passes between its pulleys *z* and the pulleys *r* on the shaft *q*, said sheet passing up between the tapes 1 and 9, and then between the tapes *b*¹ and *b*². The sliding-bars 4 4 being moved upward at this period by the cams J, so that the tapes 1 and 9 may conduct the sheet between the tapes *b*¹ *b*², the end of the sheet passes upon the shaft *g*¹ and is grasped by the fingers *d* and carried around the upper cylinder D, and receives its impression from one of the forms; the sheet printed on one side then passes upon the tapes *b*², and the shaft *d*¹ drops a trifle, the lower end of the rod *j* having the inclined plane *a*^{**} moved from underneath it, and the sheet passes between the tapes *b*¹ *b*², and

stops a short time till the other form on the cylinder B reaches a proper point, when the sheet moves backward and is again caught by the fingers on the upper cylinder D, and the opposite side of the sheet receives its impression from the other form. The dwell or cessation of the movement of the sheet is produced at the proper time by the cam L which actuates the slide M, and the reverse movement of the tapes is produced by causing the pulley *k*^{*} to bear alternately against the pulleys on the shafts *n*¹ *o*¹; the movement of the sliding-frame producing this effect, and the dwell of the tapes being produced in consequence of the pulley *k*^{*} being a short time free from contact with either of the pulleys *n*¹ *o*¹, but held by the friction shoe *k*^{**}. The sheet when printed on both sides is conveyed back between the tapes *b*² *b*³, and down between the tapes 9 and 10, and passes underneath the heel of a fly A¹ which is operated by pins *1 and one of the cams J; said fly depositing the sheet upon the fly-board H.

Claim.—The cylinder B, having flat surfaces *a a* on its periphery to receive the forms, in combination with the printing cylinders D D, placed in sliding bearings, and arranged substantially as described for the purpose set forth.

2d. We claim the reciprocating shafts 3, 5, 6, and stationary shafts *a a*, *t u v*, with the tapes arranged as shown, whereby the two printing cylinders D D are fed from one feed-board, and the sheets therefrom, when printed on both sides, deposited upon one and the same fly-board.

3d. We claim the sliding-frame M, arranged and operating substantially as shown, whereby the motion of the belt *l* is reversed at the proper time, and also stopped at proper intervals, and the shaft *d* raised and lowered for the purpose of reversing the movement of the sheets and causing them to be printed on both sides.

No. 15,477.—WILLIAM H. DANFORTH.—*Improved Printing Press*.—Patented August 5, 1856.

A detailed description of this invention would occupy too much space to be given here. The principal features will be understood by reference to the claims and engravings.

The inventor says: I do not claim the broad use of a type form, when it is required to be run out upon a stand placed outside of the platen, between every impression, to allow the types to be inked.

But I claim, 1st, the travelling bed-plate and its attachments, as described substantially, in combination with the bed B, worm C, shaft and crank C¹, or their mechanical equivalent, and table A², the whole being arranged and operated substantially as described and for the purpose shown.

2d. I claim the improved manner that I have designed, forming the two sets of gripping-bars I I¹, for insuring an equal gripe upon the sheets throughout their whole length, as set forth; and the manner of arranging the two sets of endless chains to which they are attached, so as to allow the two sets of gripping-bars to act together continuously upon

the leading edge of the sheet, from the time that they seize upon it until it is discharged, printed, from the machine. And also the manner of insuring precision and exactness of action to the griping-bars, at the time that they seize upon and relax their hold upon the sheet, by the employment of the bar-separators *m m'* and brush *P*; the whole being arranged and operated in a manner substantially as described and shown.

3d. I claim the movable or vibrating guide and gauge-frame *f*, constructed, arranged, and operated in a manner substantially as described, for the purpose of holding the ends of the curved griping-bars together, while they are required to gripe the sheets, and for giving to the cross-strings *e e e*, by means of the side lips or flanges *6 6*, &c., their required degree of tension, to enable them to hold up the centre of the sheets between the cross-bars while passing them across over the types, and also enable them to withdraw the printed sheet from off the face of the types by not allowing the chains *H H* to be displaced from the lines that they are required to travel in by this act, and for guiding the two sets of chains *H H'* and their attachments across in a line above the face of the types and pile of discharged sheets, substantially as described and for the purpose shown.

4th. I claim the employment of a series of pendants *O'*, suspended from movable top-pieces *Q*, so that they can be moved in or out, to adapt them to the various widths of sheets required to be printed, and keep them always in lines that are parallel to each other, substantially as set forth, for the purpose of uniformly guiding the discharged sheets as they fall to the pile.

5th. I claim the device employed for giving the necessary interval of rest to the feeding-chains, griping-bars, &c., at the time that the impressions are to be given, consisting of the feeding-pulleys *J J*, feeding-wheel *L*, ratchet-wheel *M*, pawl *h*, stud *h*, adjustable grooved disk-wheel *N*, wheel *L*, cam-disks *i i*, pawls *k*, pins *b b*, and brake-levers *o o*, as specified.

6th. I claim feeding the ink supply apron between the pressure roller *U* and the periphery of the ink fountain roller *V*, in a manner substantially as shown, for the purpose of insuring a graduated and an equal deposit of ink upon all parts of its surface, for the purpose shown.

No. 15,740.—A. NEWBURY and B. NEWBURY.—*Printing Press*.—Patented September 16, 1856.

Motion being imparted to the shaft *G*, a rotating and reciprocating motion is given the printing cylinder *E* by means of the endless racks *C*, pitman *I*, and bars *b*. As the cylinder *E* passes underneath the edge of the feed-board *S*, the top sheet of the paper is caught by the fingers *m*, which are opened by the rod *o*, and closed by the rod *n*. The cylinder *E*, with the sheet around it, then passes down upon the form upon the bed *B*, and the sheet receives the impression as the cylinder moves forward over the form; and when the cylinder reaches the end of its stroke, the fingers *g* on the shaft *g* catch under the edge

of the sheet, and, with the assistance of bar *z*, detach the sheet from the cylinder, the sheet resting upon the fingers *x*, and rotating around, upon, and with the fingers, until the crank *v* strikes against an arm *l*, and causes the fingers *x* to be thrown outward from the shaft *V*, the fingers depositing the sheet upon a proper fly-board.

Claim.—1st. The rotating and reciprocating printing cylinder *E*, operated by means of the endless racks *C*, pitman *I*, and bars *b*, arranged as shown and described.

2d. We claim the revolving fly *U*, constructed, arranged, and operating as set forth.

No. 16,109.—F. L. BAILEY.—*Improvement in Printing Presses*.—Patented November 25, 1856.

Rotary motion being imparted to shaft *P*, it is transmitted by gearing to cam-shaft *O* and wheel *S*, which latter is secured to the carriage *F* of the ink roller *H*. By means of this arrangement, the latter is caused to make an entire revolution and pass over the surface of the types in bed *D* once for each revolution of the cam-shaft *O* and consequent elevation of platen *I*, the wheels *S* and *R* being of equal diameter. As the ink roller *H* revolves, the springs *n*, which keep it down upon the surface of the types, also keep it in contact during a considerable portion of its revolution with the distributing roller *G*.

Claim.—The combination of the stationary bed *D* with the revolving distributing cylinder *G*, when the two are placed within the circle of revolution of the ink rolls *H*, as set forth.

2d. The impression lever *M*, in combination with the connecting bar *L*, when the two are so arranged that they may be disconnected at pleasure, for the purpose set forth.

No. 16,221.—CHARLES G. SARGENT and ABRAM KEACH, assignors to ABRAM KEACH and CALEB M. MARVEL.—*Improvement in Printing Presses*.—Patented December 9, 1856.

A detailed description of this press would take up too much space to be given here. The paper is fed to the machine by suitable nippers attached to the endless chain-carriers *L'*, which receive the paper, carry it beneath the platen *D*, remain stationary whilst the impression is given, and afterwards deliver it to a fly, by which it is thrown out of the machine.

Claim.—The described method of operating the bed by means of the pins *a a'*, and the forked lever *L*, when the motion of the latter is controlled by the spring lever *b*, arranged in the manner substantially as set forth.

2d. The wheels *Q'* *S'* *R'* *T'*, constructed as described, and operating in combination with the toes *e* and *a'*, in the manner set forth, whereby the nipper chain is fed intermittently, and at the required moment receives a slight motion forward for the purpose of opening one set and closing another set of the nippers, in the manner specified.

3d. The described method of hanging and arranging the nipper-chain L^1 and the platen D upon the wheel I^2 and K^2 and ways N^2 , whereby the platen may be moved out of the way when it becomes necessary to change the form, as set forth.

No. 16,263.—G. H. BABCOCK.—*Improvement in Printing Presses*.—Patented December 23, 1856.

The blank sheet being placed upon the platen p , as the treadle t is forced down, the form upon bed b passes under the inking rollers m n and receives a supply of ink; the frisket v closes down upon the sheet, holding it in place; and when the bed b and platen p have revolved around their fulcra b^1 and j^1 so as to assume a perpendicular position, (as shown in figure 2,) the sheet and type are pressed into contact, thus giving the impression. Upon the force being removed from the treadle, the counterweights w carry the parts back to the first position.

Claim.—1st. Attaching the bed and platen together by means of the joint e , or its equivalent, when each is made to oscillate from a fixed centre, substantially in the manner set forth.

2d. Giving an impression by means of the joint oscillation of the bed and platen, substantially as specified.

3d. Operating the frisket by means of the weight o^1 , or its equivalent, in combination with the motion of the platen, substantially in the manner described.

No. 16,138.—MOSES S. BEACH.—*Improvement in Feeding Paper to Printing Presses*.—Patented December 2, 1856.

A detailed description of this invention would take up too much space to be given here. Figures 1, 2, 3, and 4, represent vertical sections of the printing cylinder, showing the manner in which the sheet is seized at one end and drawn into the press (fig. 1) and allowed to pass out (fig. 2) after the impression has been taken on bed U , and, while being thus printed on the first side, seized at the opposite or tail end (fig. 3), and, by the revolution of the cylinder A , drawn in again, (fig. 4,) printed on the second side, and then discharged completed.

The inventor says: I do not claim the printing of sheets on both sides at one operation; but I *claim* seizing the back or tail end of the sheet, and thus returning it to the types for a second impression, in the manner substantially as set forth.

No. 16,168.—DAVID BALDWIN.—*Machine for Feeding Paper to Printing Presses*.—Patented December 9, 1856.

The paper to be printed is folded up at one edge and placed upon the platform A . Motion being imparted to the machine, the spreading-bar c spreads out the lap, as represented in fig. 2, when the clamps d of the printing cylinder take hold of the advanced edge and carry the

sheet around and over the type-bed, as in ordinary printing presses. The sheet, printed on one side, then passes between the rollers q , whence it is seized by the jaws E , which move towards the depresser F , where said jaws are forced together, and the edge of the paper is folded on the reversed side to prepare it to be printed on the other side. The spreading-bar C , attached to the vibrating lever g , is caused to rise as soon as it has folded the lap of the top sheet, and then to recede and be ready for the next operation, as illustrated in the engravings.

Claim.—The method described of feeding paper or other flexible material to printing presses and other machines which require the feed of a single sheet at a time, or separate feed of the sheets from a pile or number of sheets, by giving to or forming the sheet or sheets with a lap or fold, and establishing the feed of said sheets, by means of a drawing or spreading out bar, or its equivalent, acting within or against the fold or folds of the sheets, to effect their separation and extension with certainty and despatch, essentially as set forth.

Also, the employment of lap-folded paper, or other material, in sheets, in such machines, when the folds are made the means, by any suitable mechanical appliances, of effecting the ready separation and feed of the sheets.

Also, when combined for operation together with an automatic feed of the lap-folded sheets, a lap-folding apparatus, operating in the manner described, or any other equivalent way, to fold the sheet, after its delivery from the first feed or passage through the machine, for a second passage therethrough, by said feed acting against the fold or lap, substantially as shown and described.

No. 16,311.—MOSES S. BEACH.—*Machine for Feeding Paper to Printing Presses*.—Patented December 23, 1856.

A detailed description of this invention would take up too much space to be given here; the principal feature thereof will be understood by reference to the claims and engravings.

Claim.—Turning the sheet and delivering it to the impression cylinder for a second impression by means of an extra or second cylinder B , or its equivalent, substantially as described.

Also, the arrangement and construction of the twin fingers J M , operating substantially as described.

No. 14,084.—SAMUEL J. CHAPMAN.—*Machine for Feeding Sheets of Paper to Printing Presses*.—Patented January 15, 1856.

The nature of this improvement will be understood from the claims and engravings. The sheets of paper are marked Z .

The inventor says: I do not claim feeding paper to printing presses by atmospheric pressure, irrespective of the arrangement and construction of parts herein shown; for various devices have been patented for that purpose.

But I *claim*, 1st. Separating and detaching the uppermost sheet of

paper on the feed-board R from those underneath it, and properly presenting said sheet to the fingers, nippers, or other device, by which it is conveyed to the printing press or to the form thereon by means of the box E, valve J, and holder or lifter H; the above parts being constructed and arranged as herein shown, and operating in connexion with a vacuum produced in the box E and a blast through the tube Q, the vacuum and blast being produced by the air-pump B, or its equivalent.

2d. Operating the feed-board R by means of the cams *u*, plate V, spring *m*, and socket T, and screw-rod S fitting into said socket, as herein shown and described, motion being given to the socket by means of a collar X attached thereto by a feather *r*, whereby the feed-board is made to rise and fall, to convey the sheets to the holder or lifter, and the diminishing height of the pile of paper compensated for, and also any irregularity in the thickness of the sheets.

3d. The feed-board R, operated as herein shown, in combination with the valve J, holder or lifter H, and box E, operating in connexion with the vacuum produced in the box E and the blast in the tube Q, in the manner and for the purpose as herein shown and described.

No. 15,639.—DAVID BABSON.—*Machine for Feeding Sheets of Paper Printing Presses*.—Patented September 2, 1856.

The sheets of paper are placed within the box Y, and said box is placed upon the bed Q. Motion being given to the shaft C, the pitmen H impart a reciprocating motion to the frame I, said frame rising and descending during each stroke, which rising and descending is produced by the undulations *f* in the lower edges of the frame I and the pressure rollers *s*. As the frame I is moved back and forth, the bar *k* is operated by the lever M, said lever being actuated by the spring N and the curved end of said lever, which bears at intervals against a friction roller *a* on the frame I. The movement of the bar *k* allows the stocks *m m* to expand and contract, the stocks expanding when the frame I reaches the end of its backward stroke, so that, as the frame is depressed, the points *n n* will pass obliquely underneath the uppermost sheet of paper; and as the frame is elevated and passes forward, the points convey the sheet to the endless bands *j*; and as the frame is depressed, the stocks are contracted, and the points *n*, in consequence of the spring *e*^s, are withdrawn from the sheet which passes between the shafts G and L and upon the bands *j*, which convey it to the spot where it is caught by the nippers attached to the machine for which the sheet is intended.

Claim.—The stocks *m m*, with points *n n* attached; said stocks being placed in a reciprocating frame, operating as shown and described for the purpose set forth.

No. 15,312.—DANIEL K. WINDER.—*Improved Hand Printing Press*.—Patented July 8, 1856.

The cards to be printed are placed between the slides 13 attached to the under surface of platen 3. The lever 4 is then pressed down,

which causes the cam 5 on shaft 14 to force the platen 3 down, and thus prints the cards. The lever 4 is then elevated, and the spring 11 forces the platen up, and then the printed card can be removed. By the motion of lever 4, the distributor 6 is passed over the inking roller 7, and the types are inked by drawing the form 12 out, which is made to slide on the stock 1.

Claim.—I claim the arrangement of the distributor 6 and inking roller 7 to the platen 3, as represented, and the said distributor actuated by the lever 4 and link 9 only when said lever 4 is made to actuate the vibrating shaft 14, when said shaft is provided with the cam 5, for pressing down or operating the platen, all for the purposes before mentioned.

No. 16 270.—PLATT EVENS, JR.—*Hand Printing Press*.—Patented December 23, 1856.

By raising the handle E, the toggle N is depressed; and as the forked end of said toggle slides down the inclined plane of the guide *a*, it strikes stop *b*¹, which motion carries the platen I to one side, removing it from the ink-pad T. The follower F is now pressed down and inked; during this motion the toggle N is lifted, and the spring M carries it over the inclined plane, on the other side of the guide, to the position shown in fig. 1. By raising handle E again, the fork acts against stop *b*, and brings the platen I back to its place under the type form.

By now pressing down the handle E, the device is printed on platen I.

Claim.—So connecting the platen with the follower that the upward motions of the follower shall remove the platen from the ink-pad, and bring it back again; and during every alternate downward motion of the follower, the platen shall remain over the ink-pad and under the type follower.

The mode of communicating the motions of the follower to the platen, the same consisting of the double inclined guide *a*, with its stops or checks *b b*¹, and the forked toggle N, operated by spring M, and having bearings in the short arm of the lever A, as set forth.

No. 15,428.—SAMUEL W. LOWE.—*Portable Printing Press*.—Patented July 29, 1856.

By grasping the handle *c* of the radial lever C, and moving it either to the right or to the left, so that it shall be clear of the tympan-wire G, the latter immediately, through the spiral springs X, rises to the position shown in fig. 3, when the types can be inked, and the paper placed on the same; then, by drawing the lever C in the direction of the tympan, the roller F will, in the first instance, depress the same, and afterwards, passing over the cloth, leave the desired impression on the paper. The conical roller F can be adjusted by means of the screw *k*.

The inventor says: I do not claim the employment of a cone-shaped roller for giving impressions, well knowing that the same has been employed before.

But I *claim*, 1st. Adjusting the conical roller F, by means of the screw *k*, as specified.

2d. The radiating lever C, with its conical roller F, in combination with the tympan and its spring *x*, the whole being arranged substantially in the manner and for the purpose set forth.

No. 14,772.—JOHN MCINNIS.—*Machine for Printing Woollen and Other Fabrics*.—Patented April 29, 1856.

Motion is communicated to the wheels B³ S and G by means of shaft A³. The cloth and apron being placed in the machine, as seen in the engraving, the platen D² is brought up against the block A immediately above it; at the same instant the succeeding block receives its color by the rising of its sieve M. The block cylinder is now revolved by means of pawl D, ratchet-wheel H, and vibrating-arm E, so as to bring the next block over the platen, the sieves being revolved to their proper position by a similar mechanism; another impression is then taken, and the blocks and sieves continue to revolve until the impression is taken from the whole series of blocks; while this is going on, the curved piece *h* has held up the pawl *g*, so as to keep it out of the notches of the ratchet-wheel R². The cam *m* now withdraws the piece *h*, and permits the pawl *g* to enter the teeth of its ratchet-wheel and feed the goods. The fabric is again held stationary until an impression has been made by the whole series of blocks, when it is again moved a distance sufficient for another figure.

Claim.—The general construction and arrangement of the machine, that is to say, the vertical cylinder B, with its series of blocks A, in combination with a corresponding series of sieves, or their equivalents, arranged and operating in the manner substantially as herein set forth.

No. 15,574.—EDWIN A. RUSSELL.—*Hand-Stamp*.—Patented August 19, 1856.

When the lever E is moved over the inking-bed B, the tail of the trip-hammer I will be made to travel down the groove *d*, against the vibrator *h*, into the space *e* and vertical-groove *f* of the plate L; as soon as it enters the groove *f*, the trip-hammer I will be forced down by the spring K, and striking upon the top of the slider *a* will press the stamp F to the inking-board B, and the former being inked, the spring G will raise the stamp from the board B. When the stamp-lever is then moved over to the stamping-bed C, the rear arm of the trip-hammer will pass down the groove *c*, against the vibrator *h*, and will move the latter across the groove *d*, enter the space *e*, and thence the groove *g*, when the spring K will depress the trip-hammer smartly upon the slider *a*, causing the stamp to be forced down upon the bed C.

The inventor says: I do not claim the combination of a movable stamp-carrier or lever with an inking-bed and a bed for supporting a piece of paper or any article to be printed, the stamp being moved by one hand of a person alternately from one bed to the other, and driven

downwards by a blow from the other hand of such person, or a hammer held therein, as I am aware that such a hand-press or stamp is not new.

But I *claim* combining with the movable lever or stamp-carrier E, and beds B and C, a mechanism substantially as described, whereby, during and by the lateral movements of the said lever, or stamp-carrier, from one bed to the other, the stamp shall not only be struck or forced downwards, but raised off the same, in the manner and for the purpose specified; such mechanism being a trip-hammer, with its operating spring, and cam L, and a spring G, constructed and made to act with respect to the stamp and its carrier substantially as stated.

No. 15,764.—CHARLES W. HACKETT.—*Hand-Stamp*.—Patented September 23, 1856.

By the downward motion of cap D, cross-head G, and type-blocks M, and the bolt *u* following in one of the perpendicular grooves *f*, the two sets of type are brought, one upon the material to be printed at F, and the opposite one upon the ink-bed E, to receive a fresh supply of ink; the bolt *u*, passing from the groove *f* into one of the deeper spiral grooves *a*, is guided in the upward motion of the cap D, causing said cap and cross-head to describe half the circumference of the standard A; by which arrangement the types secured to the crosshead are alternately presented to the material to be printed, and to the ink-bed for fresh supplies of ink.

Claim.—The arrangement of a rotating printing press with two sets of type alternating with each other, in such manner that at the same time one set of types is leaving its impression, the opposite or corresponding set is being supplied with ink; the whole constructed and arranged substantially as set forth.

No. 16,167.—NATHAN AMES.—*Improvement in Automatic Hand-Stamps*.—Patented December 2, 1856.

The lower end of the wire D being placed upon the article to be printed, the operator strikes down the handle A to which the type-block is attached; this movement causes the inking roller K which is attached to rod I to glide over the face of the stamp and thus to ink the same, the roller being pressed against said stamp by the action of spring L on the short arm of rod I; as the stamp and type-block move further down, the inking roller K slides up the rear side of the type-block, and is held there during the time the impression is made, as shown in fig. 2. On releasing the handle A, the spring H forces the apparatus into the position shown in fig. 1.

The inventor says: I do not claim, in this machine, the principle by which the inking roller K is made to pass over the bottom and back of the type-block B, that being embraced in a patent granted to me, April 1, 1856.

But I *claim*, in combination with the other parts of any stamp to be held in the hand, the leg or wire D D, so constructed as to strike the

article to be printed in advance of the type-block B, and thereby cause the inking-roller, as described, to pass over the printing surface while the latter is descending.

I do not confine myself to any particular manner, as there may be many, in which the leg B D may be made to communicate motion to the inking roller. But what I *claim* is the leg D D, both independently of the inking apparatus, and also combined with it and the other parts of the stamp in any manner substantially the same as that described.

No. 14,548.—NATHAN AMES.—*Improved Self-Inking Stamps*.—Patented April 1, 1856.

I is a strong wire spring, which, acting upon the lever H of the roller G, presses the roller against the block E.

Claim.—In combination with the frame A A and shaft C, the above-described arrangement of devices, by which the type or printing surface is inked and the impression produced by one downward motion of the hand or other power applied to the perpendicular shaft C, the inking roller G (being acted upon by two forces, the perpendicular and diagonal, as described) moving first over the bottom of the type-block E, and then over the back side of the same.

No. 14,670.—WILLIAM LOYD.—*Improved Stereoscope Case*.—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engraving.

The inventor says: I do not claim the use or construction of stereoscopic lenses, which were known and used before my improvement.

But I *claim* the construction of a grooved box A, in combination with the stereoscope lenses *a a*, to hold a number of pictures; and the adjustment of the focus by means of placing the picture in one of the grooves *c c*, &c., more or less distant from the lenses, according to the eyesight of the spectator.

No. 15,386.—EDWARD PELOUZE, Jr.—*Improved Valve for Type-Casting Machines*.—Patented July 22, 1856.

When the plunger C is raised, the metal in the vessel A passes in between *m* and *o*, and, driving the valve *n* and stem *r* forward, closes the exit *e*, and allows the metal to descend through the duct *b* into the well. When lowered, the button *n* is driven back against its seat, closing the inlet and opening the exit. By this arrangement the metal is prevented from chilling at the point of the nipple, and spirting at improper periods out of said nipple.

The inventor says: I am aware that a stopper, operated by machinery, has been used in connexion with the nipple of a type-casting machine; this I do not claim.

But I *claim*, in combination with the nipple, the self-acting valve and stopper, made and operating substantially in the manner and for the purpose set forth.

No. 15,340.—JULIUS J. KOENIG.—*Machine for Composing and Distributing Type*.—Patented July 15, 1856.

The illustration represents a perspective view of this machine, a detailed description of which would occupy too much space to be given here; the parts to the right represent the arrangement for composing, and those to the left the arrangement for distributing the type.

Claim.—I claim the arrangement of parts, substantially as described, for the purpose of composing and distributing type.

No. 15,501.—RICHARD M. HOE.—*Method of Securing Types on Rotary Beds*.—Patented August 5, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—Securing or holding the column rules *a*¹ in their places on the bed by means of the feet *a*, which fit into rebated grooves in the bed, and have plates or keys *b* fitted over their lips or edges *b*¹, substantially as shown and described; and I claim this, whether the strips or plates B C D E are used in the usual quoins *a*, or any other device for wedging or binding the types and rules in the bed.

No. 16,102.—CHARLES M. ZIMMERMAN.—*Tail-Piece for Violins, &c.*—Patented November 18, 1856.

The recess *f* in the tail-piece K serves to confine the portion of the strings not required for immediate use. In connecting each string to the tail-piece, it is passed through one of the holes, and wrapped around a bent pin M with a single turn; the point *m* of the pin is then forced into the enlarged portion of the hole alongside of the strings, thus connecting the latter to the tail-piece as securely as if it were fastened by the ordinary knots.

Claim.—1st. The tail-piece K, with its recess *f* and loose cover *h*, constructed substantially as described and for the purpose specified.

2d. The employment of the pins M for securing the strings by a single fold to the tail-piece, in the manner set forth.

No. 14,860.—SAMUEL F. FRENCH.—*Improved Bow for Violins*.—Patented May 13, 1856.

By pressing on the protruding end of pin *f*, the hairs *d* are forced forward. The spring *h* acts upon the pin to force it back together with the hair.

Claim.—The attachment of a portion *dd* of the hair of the bow to a movable pin *f*, or its equivalent, operating to separate the said portion *dd* of the hair from the main body of hair in the bow, or to unite it therewith at the pleasure of the player.

No. 14,056.—MORRIS FALKENAU, MORRIS POLLAK, and SOLOMON WIENER.—*Improved Watch Key*.—Patented January 8, 1856.

The nature of this invention consists in the peculiar construction of parts, whereby the pipe 3 of the key is projected from the case 2 by means of a spring 6, when the same is to be used, and which pipe is afterwards to be again forced back into the case and retained by the spring-catch entering the hole 7; thereby said pipe is out of sight and the ornamental character of the key is not injured by the same.

Claim.—The key 9 on the pipe 3 pressed into the groove 10 by spring 6, and sliding in said groove 10, which is closed at its outer end, and thereby causing said pipe to be turned by the case, compensating for wear, and also regulating the extent of motion of said pipe, as specified.

Also, we claim the trigger-piece 8, combined with the stud-spring 6, to remove said stud from the hole 7 and allow the pipe 3 to be projected from the case, as specified.

No. 15,073.—WILLIAM HART.—*Improved Tool for Watchmakers*.—Patented June 10, 1856.

This invention consists in the peculiar construction of the tool, as clearly shown, whereby the tool may be used as a pair of calipers, pliers, or a hand-vise.

Claim.—Having the jaw C attached to the upper part of the leg A of the calipers, and the jaw D connected to the upper part of the leg A¹ by links *dd*, the jaw D having a shank *b* attached to it, the shank passing through a slot in the leg A and bearing against a spring *c*, and the shank *b* having a rod *f* attached to it, which rod passes through a hollow screw *e* which is attached to the jaw C, the screw *e* having a nut E upon it, substantially as shown, for the purpose specified.

XIX.—FIRE-ARMS.

No. 15,315.—CHARLES E. BARNES, assignor to MOSES W. OLIVER and CHALES E. BARNES.—*Improved Automatic Cannon*.—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claims and illustration.

Claim.—I claim the arrangement by which I impart a reciprocating and intermittent motion to the breech-pin H by gears H² and J² and cams G² and I², so that the gun or cannon may first receive the cartridge, bringing the nipple on which the percussion cap is placed in the centre, and immediately back of the end of the cartridge, ready for firing.

I also claim giving the ramrod or plunger Y a reciprocating and intermittent motion for placing the cartridge Y² within the gun and firing it, when so placed, by means of a hammer Y³ in the plunger Y, operated by the spring D³ and latch *c*.

I also claim the cap-wheel D² and its slide-rods *u* and D, so arranged and operated as to place or deposit the cap upon the nipple L⁵ when the breech-pin H is drawn back, so that it can then be advanced or slid into the gun, with the cap placed on the nipple L⁵ therein, ready for firing.

I also claim the cartridge-box J, so arranged and operated by the breech-pin, or otherwise, as to deposit the cartridge into the receiver S³ ready for the plunger or ramrod to force it into the bore of the gun.

I also claim the catch *i*³, or its equivalent, on the latch *c*, or otherwise formed, arranged, and operated, to stop the movement of the firing apparatus, to prevent accidents and clogging the cannon with surplus ammunition.

No. 14,215.—CHARLES C. TERREL, assignor to Himself and SAMUEL CRAWFORD.—*Improvement in Many-Chambered Breech-Loading Cannon*.—Patented February 5, 1856.

The breech-piece D can be moved transversely so as to bring either one of its two chambers in line with one of the magazines M or M¹ and ramrod L or L¹, which latter are worked by levers R R¹. As the lock-lever N is raised about its fulcrum pin *j*, the wedge *i* is raised simultaneously, so as to allow the toes *h* to move the breech-piece D slightly backward preparatory to its being moved transversely. The priming tube *m*, being pivoted to lever N at *r*, is also raised, together with lever N, and wedge 14, striking the projections *s* on valve E, shoves this valve back so as to allow one of the detonating pills to pass from the pill magazine F into the priming tube *m*. When the lever N is again brought down, the wedge *i* forces the breech-piece forward into close contact with the barrel G by means of wedge *i* being forced downward

behind the breech-piece, and the pill is exploded after the lever N has been brought down to its lowest position by the hammer *k*, which is pivoted to lever N. The hammer is held up by means of the spring-trigger *l*, which is attached to lever N and works laterally to the hammer, and it is actuated to explode the pill by a main spring *y* secured to the lever.

The inventor says: I do not claim the invention of the wedge to force a movable chambered breech into connexion with the barrel. I claim the combination of lock-lever N, the wedge *i*, and the toes *h h*, in any manner substantially as described, for the purpose of forcing up and drawing back the breech to and from the barrel.

2d. I claim the priming tube *m*, with the stationary priming magazine F, to take a new priming therefrom every time the position of the breech is changed by attaching it to the lock-lever N, and furnishing it with a wedge or inclined projection 14, to open the valve of the magazine when the lever is raised to unlock the breech, substantially as described.

3d. The combination and arrangement of the hammer, trigger, and main spring, with a lock-lever N, which is employed to lock and unlock the breech to and from the barrel, substantially as herein set forth.

No. 15,357.—JOSIAH DODGE.—*Improved Mode of Charging Cannon*.—Patented July 15, 1856.

6 represents a forked lever, one prong used for drawing the guide-pins 8 from the openings 9 made in the side of the wheel 3, by actuating the springs 7 and 14, while the other fork of the lever is furnished with a socket-shaped end and used for revolving the wheel 3 to the proper points for presenting the charges 5 of the tubes 4 to the cannon barrel 10, by prying the wheel around with lever 6; and when revolved to the right point, the guide-pin 8 slips into one of the openings 9, which gives the tube 4 the right position to be presented to the cannon barrel 10, which is then effected by sliding the frame 2 on the frame 1 until the tube 4 comes in contact with the barrel, and is then held to its place during the time of firing by means of the lever 11.

Claim.—The arrangements of the springs 7 and 14, guide-pin 8, openings 9, and forked lever 6, for the double purpose of revolving and guiding the tubing on the periphery of the wheel to the ends of the cannon barrel.

No. 14,850.—JESSE S. BUTTERFIELD and SIMEON MARSHALL.—*Improved Cartridge Opener*.—Patented May 13, 1856.

The nature of this invention consists in forming the spring-toothed jaw or cut-off (fig. 3) connected to the upper band (fig. 2) or convenient to the muzzle of the gun, operated in such a manner that a person may open the cartridge with less exertion and without that distress produced by disease of the mouth resulting from the present method.

Claim.—The combination of a steady pin, thumb-piece, toothed jaw

and spring, or their equivalents, attached to the upper band of the gun, arranged and operated in the manner and for the purpose as herein set forth.

No. 15,141.—EDWARD MAYNARD.—*Improvement in Cartridges*.—Patented June 17, 1856.

The inventor says: I am aware that cartridge cases of a tapering shape have been made of sheet copper, or other hard metal, combined with soft metal rings, as described and represented in a patent granted to A. E. Burnside, March 25, 1856. And I am also aware that the said cartridge can only be used in a movable breech-piece, and that it does not possess in other particulars the peculiar advantages which distinguish my improved cartridge for breech-loading fire-arms.

Therefore, what I claim is my improved cartridge for breech-loading fire-arms, composed of a hard metal cylindrical case *a*, charged with powder, and combined with a projectile *b* of such shape that, whether the case receives a large or small charge of powder, the said projectile is self-retained in contact with the powder in such a position that its point must be coincident with the axis of said case, and a perfectly tight joint formed between said projectile and case by filling the grooves in the former with greasy matter.

No. 15,707.—JULIUS RIEDEL.—*Improvement in Cartridges*.—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—Making the pointed ball cartridge, as described and shown. That the shape of my cartridge is such that one end is naturally loaded heavier than the other, as represented by section *a c b d*, thereby causing that end to go forward, thus guarding against all revolving motion, except a single winding or peristaltic one.

2d. As novel, the constructing the hemispherical end of the cartridge stronger and heavier than the conical end, having several objects in view, viz: that the loading of shot or balls on the inside may be kept together a considerable distance after leaving the gun, that the lighter conical end may serve to keep the whole in the given direction till the cartridge is burst, and, when burst on or near its base, give free egress to its contents.

No. 15,996.—GEORGE W. MORSE.—*Improvement in Cartridges*.—Patented October 28, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The combination and arrangement of the cartridge case, as constructed, with the priming apparatus, as constructed, or their equivalents, whereby I effect the entire exclusion of any and all escape

of the gas produced by the combustion of the powder of the cartridge and priming, except by the one channel and the bore of the barrel of the gun, the breech-joints and priming-vent being thereby so effectually sealed and closed that no air can escape at these parts of the gun after the charge is fired, until the cartridge case is withdrawn from the bore, although air blown in at the muzzle before firing the charge might escape through these joints, as it would in the case referred to.

No. 15,369.—GEORGE BUCKEL and EDWARD DORSCH.—*Improvement in Fixed Cartridges*.—Patented July 22, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

The inventors say: We do not claim broadly the use of two or more balls, or a ball and shot, in the same cartridge.

But we *claim*, 1st. The arrangement side by side in the same cartridge D, with their axes in the same circle, of a number of balls of cylindro-conoidal or other partly cylindrical form; said balls being of a size to fit each to a separate groove of a circular grooved barrel, such as herein described.

2d. The employment of a single partition piece B to separate each and all the balls, substantially as herein described, for the prevention of their union when the charge explodes.

No. 14,077.—JAMES H. MERRILL.—*Improvement in Fire-Arms*.—Patented January 8, 1856.

The cavity L is intended to prevent to some extent the escape of smoke through the joint round the pin. The bolt M enters the groove *m* at the end of the breech-pin. After the button-end I of the breech-pin F has been inserted into slot I², the outside is covered by a dove-tailed cover J.

The other parts of the improvement will be understood from the claims.

Claim.—The construction of the breech-pin F, with a receptacle *c* for tallow to lubricate the joint, as herein set forth.

Also, the depression L in the breech-pin opposite the end of the bore, as I have found it advantageous.

Also, the combination of the button on one end I of the breech-pin, and the slotted plate I² in connexion with which the button works, to secure the breech-pin firmly in place while the breech is closed; in combination with a catch M, or the equivalent thereof, at the opposite end of the breech-pin, to prevent the pin from dropping out while the breech is open, and the button in a line with the slot; by which means the breech is securely closed while the charge is exploded, and the pin, at the same time, capable of being readily removed.

Also, the arrangement of the rammer C, in the rear of the breech, in combination with the breech-pin, substantially as herein set forth.

Also, the combination and arrangement of the breech-pin; the lever for turning the same; the trough (H) to receive the charge and guide the rammer (C) in such manner that the lever, when shut down upon the stock, will cover and protect both rammer and charging channel, substantially as herein set forth.

No. 14,095.—JOSEPH C. DAY.—*Improvement in Fire-Arms*.—Patented January 15, 1856.

The short arm *h*¹ of the tumbler is jointed to bar *i*, which terminates in a spring *i*, which slides in a slot *a*; and the other end terminates in a pin *k*, which passes through a slot in lock-plate E, and enters, at the outside, a notch in the projecting piece F of slide H¹, and transfers the motion of the tumbler to the slide H¹. When hammer G is brought back to full cock, slide H¹ moves backward with it, and follower *s*, (provided with two spring tongues *s*¹ and projections *t*) catches in the next hole of slide H¹. By discharging the hammer, slide H¹ moves forward, and the follower catches in the next hole of row *pp*, where it remains when slide H¹ returns.

Pin *k*, which terminates in a button F at the outside, can be forced out of the notch in piece F¹ by the fingers, as the slot in back-plate E is for this purpose enlarged at the lower side; and then slide H¹ is drawn out just enough to bring its inner end behind the follower, and then again pushed in. This action drives the follower out of tube H, which is then filled with caps, and the follower inserted behind them.

Claim.—1st. The improved construction of the cap-feeding tube H, with a slide H¹ on one side, a row of holes *q* in said slide, and another row of holes *p* in the side opposite; the one for the purpose of moving the follower *s* along, and the other to prevent the follower returning with the slide, substantially as herein described.

Also, communicating the motion from the tumbler to the slide H¹ by a vibratory arm *i*, or its equivalent; and also adding a spring thereto, in combination with the elbow slot *k*, whereby said slide may be readily connected and disconnected from the lock and cap-tube, substantially as specified.

Also, extending the lower part of the main spring *l* from its pivot *l*¹ to, and causing it to rest upon, the sear *n* at a point *l*² very near over its centre, in order to dispense with a separate supporting stud and sear spring, and also to enable the lower part of said main-spring to be made nearly equal in length and strength to the upper part, substantially as herein described.

No. 14,667.—PALMER LANCASTER.—*Improvement in Fire-Arms*.—Patented April 15, 1856.

Before the trigger is drawn back to raise the hammer, the tooth *h* lies close to the bevelled side of the head G¹, as shown in dotted lines in fig. 2. As the trigger is drawn back, the tooth *h* is caused to work through a notch *e* *e*¹ and in contact with the inclined side *e*¹ thereof, and to move the sliding-breech A. In letting the trigger forward again,

the tooth *h* passes back through the same notch; but in returning, it works in contact with the straight side of the notch, and is caused to swing away from its bearing on the head *G*, and is inoperative on the breech; but as soon as it rises clear out of the notch, it swings back close to the head, ready to enter the next notch.

Claim.—The operation of the transversely sliding many-chambered breech *A*, by means of the notches *e e'* in the breech, and the swinging inclined tooth *h*, applied to the trigger, and acting substantially as herein set forth.

No. 14,774.—FREDERICK NEWBURY.—*Improvement in Fire-Arms.*—Patented April 29, 1856.

The magazines of cartridges and caps being filled and the pistol cocked, a cartridge passes into the chamber of the block *D*, and a cap is pressed upon its cone *Y*. The pulling of the trigger drops the hammer *L*, which permits the block to ascend by the agency of lever *G* and spring *E*; just before the hammer touches the cap, the little nick in the lever lying under *J* permits the spring *E* to carry up the block and bring the load-chamber and the bore of the barrel into range an instant before the cap is exploded, and at the same time places the upper end of lever *G* against a small stop *p* upon the block, in order to hold it firm to the barrel against the recoil.

The inventor says: I do not claim a movable block for load chamber nor tube-magazines.

But I *claim*, 1st. The method of operating the block *D* by the hammer, in combination with the forked-lever *G*, the spring *E*, and recoil stop-pin *p*, reference being had to the peculiar form of the lever *G*.

2d. The formation of the front trigger-guard into a sear-spring *M*, and its attachment to the lower end of the trigger.

No. 14,905.—SAMUEL COLT.—*Improvement in Fire-Arms.*—Patented May 20, 1856; England, March 3, 1853.

The inventor says: I do not claim as my invention the method of rotating the many-chambered breech in fire-arms by a driving pin or bolt, operated by the cock or some part of the lock moving in unison with the cock and sliding in a series of grooves cut in the periphery of the rotating-breech or some part connected with it, which grooves are so formed that in the act of firing the driving pin or bolt will run in one groove without turning the breech, thereby holding the particular chamber in line with the barrel, and in the act of cocking pass into and along another and diagonal groove, so formed as to rotate the breech and bring the next chamber of the breech in line with the barrel preparatory to another discharge, as this method has long been known.

What I *claim* is, combining with the driving pin or bolt *g*, and with the series of diagonal and longitudinal grooves *c* and *b* for rotating the breech *a*, and holding each chamber in line during the discharge, the series of short longitudinal grooves *e* for locking the rotating breech so

that the hammer can rest on the solid metal between two chambers instead of the nipple, to prevent accidental discharges.

And I also claim, in combination with the said driving-pin or bolt, and the series of long longitudinal and diagonal grooves, the lateral grooves *f* or inclined planes *d*, to admit of turning the breech by hand when the hammer is at half-cock.

No. 15,032.—FREDERICK BLACKET EDWARD BEAUMONT.—*Improvement in Fire-Arms.*—Patented June 3, 1856; England, February 20, 1855.

The spring *i i* is so applied as to constantly press the driver *h* against the ratchet of the magazine. *l* is a hook fixed to the lower part of the hammer; it enters a slot *x* formed in the driver *d*, which is thereby raised when the hammer is put back by the thumb, the trigger *a* at such time being raised into position to discharge the hammer by a very short pull.

When the hammer is being cocked, the operation of the hook *l* in the slot *x* simultaneously causes such a back movement of the trigger as will effect the rotary movement of the magazine or series of barrels. Thus, either by a back pull on the trigger, or one on the hammer, the magazine may be put in rotation, so as to bring up into the path of the hammer the nipple of the barrel next to be discharged. When the trigger is pulled for the purpose of discharging the hammer, the driver *d* will be forced upwards between the click *f* and the hammer, and will operate as a wedge to force the click *f* out of the notch by which it retains the hammer in its highest position. The hammer, on being relieved, will be thrown downward by the retractive power of the main spring *r*.

The inventor says: I do not claim to raise and discharge the hammer of a revolver by the action of the trigger, when separately considered; neither do I claim to arrange the lock of a revolver in such manner that the hammer may be cocked by hand, when separately considered; nor do I claim to rotate the magazine of barrels of a revolver by a mechanism so connected, either with the trigger or the hammer, that a pull on either of them shall effect such turning of the said mechanism; but when the hammer has a mechanism by which such hammer may be set to cock by a direct pull upon it, and when the trigger, hammer, and rotary series of barrels, are so combined that, by a backward pull on the trigger, the hammer shall be elevated, the series of barrels turned, and the hammer set free or discharged, I *claim* combining with the hammer and trigger a mechanism (viz: the hook *l* and slot *x*, or their mechanical equivalent or equivalents) whereby the trigger shall be drawn backward and the series of barrels turned while the hammer is being drawn back by a direct pull on it, as specified.

No. 15,041.—GEORGE KESLING.—*Improvement in Fire-Arms.*—Patented June 3, 1856.

D D' represent two locks, the forward one *D'* being connected to the trigger *a* by means of rod *b*, which passes through a groove in the stock

B under the barrel C. A portion of the rear of the barrel is used as a magazine, to contain a number of charges, in the following manner: first, a usual charge of powder *c*, then a bullet *d*, well patched, to prevent the fire from communicating around the bullet, each bullet acting as a breech to the charge *d* *d*² and *c* in advance of it. The bullets *d* *d*² and *c* have holes through them, provided with a fuze, which will take from the charge in front of it the fire and communicate it to the next in rear of it. 1, 2, 3, are air-holes for the escape of the air.

The inventor says: I am aware that a series of charges have been used in fire-arms, in which the balls were perforated and furnished with a fuse for the purpose of igniting the rear charge by the discharge of the one in advance of it by means of said fuse; but no provision has been made for the escape of the air in driving the balls home, whilst the ball and patching must bear tight to prevent the fire from driving past the ball. I do not, therefore, claim such a fire-arm; but I *claim* the constructing of a gun or fire-arm for firing a succession of shots, thus forming a new article of manufacture superior for practical purposes to any now in use.

No. 15,144.—HENRY S. NORTH.—*Improvement in Fire-Arms*.—Patented June 17, 1856.

The nature of this invention will be understood from the claims and engravings.

Fig. 2 is a front-face view of the rotating recoil-shield.

Fig. 3 is a view of the same, looking from underneath it, showing also the stopper.

Fig. 4 is a side view of the toggle by which the cylinder is forced up to a tight connexion with the barrel.

Claim.—First: The employment of a toggle-connexion *l l* between the cylinder D or the rotating recoil-shield E and the stock; for the purpose of allowing and producing the longitudinal movement of the cylinder to enable it to clear the barrel C in revolving, and of forcing the cylinder up to the barrel to make a tight connexion therewith.

—Secondly: Placing a regulating screw *n* between the front end of the toggle-connexion and the cylinder or recoil-shield, for the purpose of adjusting the connexion between the cylinder and barrel without requiring a great degree of accuracy in the fitting of the toggle movement, and for the purpose of compensating for any wear.

Thirdly: Connecting or combining the dog J, by which the rotating motion of the recoil-shield and cylinder is produced, with the toggle-connexion *l l*, in such a manner that it is operated by the bending of the toggle to allow the cylinder to move back.

Fourthly: Though I do not claim of itself the use of a positive stop or catch to lock the cylinder after its rotation, as such, connected by complicated devices with the trigger and otherwise, has before been done, nor yet claim the mere employment of an additional ratchet to prevent back rotation of the cylinder, I do *claim* causing the cylinder, during the one portion of its longitudinal movement, to form a ratchet-

connexion with a spring-stopper *g*¹, that admits of the cylinder's rotation only in the one direction, but, on the completion of the cylinder's rotating movement and at the termination of the back longitudinal travel thereof, forms a positive stop to the cylinder by means of the ratchets *g g* and stop-pins *h h* on the sliding-cylinder or recoil-shield, arranged and acting in concert with the stopper *g*¹, essentially as described.

No. 15,202.—JAMES WARNER.—*Improvement in Fire-Arms*.—Patented June 24, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—1st. The combination of the recoil and adjusting pin *e* with the revolving breech A, placed in the shield-plate *b* in such position that the point shall be in line with the barrel.

2d. Forming cavities *i i*¹ in the battery-plate C in such position and of such form as to receive and hold the ball or balls in case of the accidental discharge of any of the chambers not in adjustment with the barrel.

No. 15,167.—FORDYCE BEALS.—*Improvement in Fire-Arms*.—Patented June 24, 1856.

The arm-pivot or axis B is so connected with the hammer D as to move or vibrate with it; and thus, by means of the arm B and its connexion with the hammer D and the pawl C, the chambered breech A is operated upon by the pawl C at a point near its periphery, thereby giving greater force to the rotating movement of the chambered breech or cylinder than is obtained by others now in use.

The inventor says: I do not claim as my invention the use of a metallic frame connected with a chambered breech or cylinder by means of a pin passing through the frame and cylinder; neither do I claim the invention of rotating the chambered breech by means of a pawl and ratchet in connexion with the hammer. But I *claim* the arrangement and combination of parts, using the arm-pivot or axis B in its connexion with the pawl C and hammer D, for the purpose of rotating the chambered breech or cylinder A; all of which are in the manner and for the purpose as herein described, using the arm-pivot or axis in its combination and arrangement of parts, or any other contrivance substantially the same, and producing the same effect.

No. 15,292.—JAMES EDWIN HALSEY.—*Improvement in Fire-Arms*.—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claim and illustration. By means of this arrangement all the powder is burned before any portion of it is blown out of the barrel, giving consequently a greater range and more force of penetration to the ball.

The inventor says: I do not claim igniting the charge in the centre nor in its whole length simultaneously, nor at its forward end when a needle is used to explode a fulminate placed in the ball or between the ball and the powder; but I claim the tube *a*, constructed of such a length, and placed in such a position that it shall serve as a means for communicating fire from the cap to the forward end of the charge of powder only, substantially as described and for the purpose specified.

No. 15,347.—GEORGE H. SOULE.—*Improvement in Fire-Arms*.—Patented July 15, 1856.

The nature of this invention consists in the application of a copper, or other tough or malleable metal breech-plug K, in combination with a wrought or malleable iron breech-piece D; also in protecting the bore of the charging chamber L with an annular ring M of a similar soft metal, for the purpose of obviating the wearing away of the breech face, caused by the action of the gases of the exploded powder upon iron or steel.

Claim.—The use of the facings of copper, or other equivalent tough metal, less oxidizable than steel or iron by the action of the heat and sulphur gases, caused by the explosion of the powder, in combination with the breech-piece and charging chamber.

No. 15,521.—FREDERICK D. NEWBURY, assignor to RICHARD VARICK DE WITT, JR.—*Improved Fire-Arm*.—Patented August 12, 1856.

By withdrawing the bolt E by means of the thumb-piece *e*, the releasing T spring attached to the arm D throws the latter down by forcing it on the hinge *d*, and the breech is now open for inserting the cartridge. The apparatus for closing the breech consists of a conically shaped piece H, to the front end of which is secured a thin cup-shaped piece of metal M, the object of which is to furnish an elastic stop, which, if not perfectly tight when in position, may, by the pressure of the gas in firing, have its edge forced up against the surface of the chamber. The self-priming apparatus consists of a groove J K, which contains the tape priming, which latter is held by means of spring S; when the lever D is raised, it operates upon the lever *p* by means of a pin passing from lever *p* into groove L, and feeds the tape towards the priming-tube.

Claim.—The releasing spring T, to throw the arm D promptly down to permit a recharge of the piece.

I claim the concave breech seat M or its substitute. I claim the method of arranging the tape priming, by inserting the same through the stock, in the manner described, either with or without metal tubing J K.

I claim the spring *s* when applied to the stock to prevent the retraction of the tape, and to cover the priming from the weather, arranged substantially as shown and described.

I claim the feeding spring piece *p*, in combination with the lever D as its moving power.

No. 15,522.—ABNER N. NEWTON.—*Improvement in Fire-Arms*.—Patented August 12, 1856.

The cartridge is inserted through the mortise B in the rear end of the barrel A; the breech-pin D receives its horizontal and rotary motion by means of the lever C. The rear end of the breech-pin D is provided with a circular groove for the reception of the ends of the two concentric tubes E F; these tubes are slitted their entire length, and placed so that their slits are on opposite sides to each other, so as to break joints. These tubes completely overlap the joint formed by the barrel and breech-pin, and being expanded by the pressure of the gas at the instant of explosion, they preclude the possibility of escape.

The inventor says: I do not claim the self-adjusting thimble, constructed and operating in the manner set forth in J. D. Green's patent, June 27, 1854.

Neither do I claim a sliding collar on the breech, forced against the end of the barrel by a spring acting on the trigger, as in J. C. Day's patent, December 18, 1855.

Nor do I claim a cone-headed pin and five or more expanding rings, in combination with a radial breech, as in B. F. Joslyn's patent, August 28, 1855.

Nor do I claim inserting a metal ring into the slide, with a chamber in the rear of said ring, as in H. Conant's patent, April 1, 1856.

But I claim two or more expanding bands, as shown and represented, in combination with the chamber and sliding breech-pin, completely overlapping the joint between said breech-pin and chamber, substantially in the manner and for the purpose described.

No. 15,516.—FREDERICK W. HOFFMAN.—*Improvement in Fire-Arms*.—Patented August 12, 1856.

By drawing the hammer to half-cock, the cap *b* is thrown clear of the end of the barrel, and the bore is left open. The cartridge can now be inserted into the barrel, and by drawing the hammer to full cock, the toe *r* gliding along the curve *r'* brings the cap down in place over the barrel, and the piece may now be fired by pulling the trigger in the usual way.

Claim.—So combining the cap *b* with the cock that the opening and closing of the end of the barrel shall be effected by the act of cocking the piece, substantially as set forth.

No. 15,734.—EDMUND H. GRAHAM.—*Improvement in Fire-Arms*.—Patented September 16, 1856.

The ball is inserted into the chamber *c*, and the powder into the chamber *c*, both chambers being placed at right angles to each other. The chamber from which the discharge is to take place is covered by a protecting plate *k*, which thus prevents any other of the charges from exploding; and if the powder in any of the other chambers should be

come ignited, it would be consumed without expelling the ball from the cylinder, as the powder, not being confined, has no surface to react upon.

Claim.—1st. Arranging the chambers in which the powder is placed and the chambers in which the ball is placed at right angles to each other, or nearly so, and so as to communicate with each other, as described, and for the purpose specified.

2d. Covering each powder chamber at the time of the discharge with a protecting cap or plate, as described.

No. 15,797.—JOSEPH ADAMS.—*Improved Fire-Arm.*—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claims and engraving.

The inventor says: I am aware that gun and pistol barrels of three or more bores have before been used, but having either a mass of useless metal or an unnecessary space in the central portion between the bores; therefore I distinctly disclaim such an arrangement.

But I *claim* the employment of a revolving barrel, formed from a single piece of metal, with three bores of equal diameters, or four bores in opposite pairs of unequal diameters, when so arranged that the bores are located as near together as practicable, to secure the proper strength of dividing metal, while the relative positions of said bores are such that their outermost tangents shall revolve in a common circle around the central point between them, and be equidistant apart, the outer periphery of the barrel also so conforming to the bores, as to dispense with unnecessary metal, for the purpose of securing the utmost compactness, lightness, symmetry, and strength, with a given capacity, and at the same time of retaining perfect convenience in respect to revolving and discharging, substantially as specified.

Also, the employment (instead of separate breech-pins) of a single breech-piece, provided with branches or pins fitting the several bores, and secured therein by a right-and-left nut, for the purpose specified.

Also, the socket B, in combination with the breech-piece C and collar E, substantially in the manner and for the purpose set forth.

Also, the peculiar construction, arrangement, and combination of the hammer, main-spring and trigger, as adapted to the rest of the gun, and operating both to hold the hammer cocked and down upon the nipple until set free by moving the trigger, substantially as set forth.

No. 15,925.—ALEXANDRE LE MAT.—*Improved Fire-Arm.*—Patented October 21, 1856.

The operation of this revolver is as follows: The cartridge-cylinder B being charged in the usual way with bullets, and the central barrel with shot, the pistol-cock, as represented at No. 11, is used in the position of fig. 2, the hammer *a* operating upon the caps of the revolving

cylinder B. When the central barrel A is to be fired, the ring *m* is pressed down, thus releasing the point *i* or cock *b*, and the cock *b* is turned into the position of fig. 3; and then, by releasing ring *m*, the latter is pressed upwards by the action of the spring *o*, and falls into notch *h*, securing the cock from turning; in this position, upon operating the trigger, the cock *b* will act upon the cap of the central shot-barrel A, and will discharge its load.

Claim.—1st. The substitution of a shot-barrel for the solid cylinder or pin upon which the revolving cartridge-cylinder of revolvers, constructed upon Colt's or similar systems, revolve, in the manner and for the purposes as described.

2d. The gun-cock No. 11, with a double hammer *a* and *b*, constructed and operating substantially as described, and for the purposes specified.

No. 16,124.—ALEXANDRE LE MAT.—*Improvement in Fire-Arms.*—Patented November 25, 1856.

The operation of this apparatus is as follows: By placing the hammer in the position as represented in the engraving, the cord O attached at *o* raises finger E E¹ from the dotted position, and causing it to move upon its pivot G, it pushes the catch Q into the position marked in dotted lines. The gun is then discharged by the usual pulling of rope D D¹. The hammer B falls, and after having ignited the primer, recedes from vent S to the dotted position; but in this retrograde movement, the cord P P¹ attached at *p p*¹ being pulled, withdraws catch Q from under the finger; hence, immediately after the receding of the hammer, the finger, set free, is forced upon the vent by spring H, and the vent thus remains closed until the cleaning of the gun and its recharging is completed.

Claim.—The combination and arrangement of the hammer and finger with the mechanism, as described, whereby the retrograde movement of the hammer, after the ignition of the primer, produces an automatic closing of the vent by the finger.

No. 14,057.—L. H. GIBBS.—*Improvement in Breech-Loading Fire-Arms.*—Patented January 8, 1856.

This invention consists in hanging the barrel *c*, at some point *d* between its two ends, on a sliding and turning joint *f*, in combination with the connecting of the said barrel by a joint-link *h* with a lever *j*, below jointed in turn to the stock *a*, by means of its fulcrum pin *l* and catch *m*; so that, by moving the said lever downward and forward, the barrel shall be first pushed forward to open the breech, and then elevated to bring the open end thereof above the fixed breech for the insertion of the charge; and then by moving the lever *j* back to its original position, the rear end *v* of the barrel shall be depressed and then drawn back against the fixed breech to close the rear end thereof. It further consists in combining with a sliding-barrel *c*, made with the rear or breech end open, a fixed breech-pin *u*, which fits the bore of the rear end of

the barrel, in combination with an annular recess *v* surrounding the said breech-pin, to receive the rounded edge of the rear end of the barrel, to prevent, as much as possible, the escape of gases, and, in case of any escape, to deflect them towards the muzzle.

Claim.—Hanging the barrel at some point between the two ends on a sliding and turning-joint, in combination with the connecting of the said barrel of the turning and sliding-joint, by means of a joint-link, with a hand-lever, having its fulcrum in the stock or breech-piece, as herein described, and for the purpose specified.

2d. In combination with a sliding-barrel having the rear end thereof open, as described, the employment of a fixed cylindrical breech-pin, surrounded by an annular recess, to receive the rounded edge of the barrel, as described, and for the purpose specified.

No. 14,253.—WILLIAM H. ROBERTSON and GEORGE W. SIMPSON.—*Improvement in Breech-Loading Fire-Arms.*—Patented February 12, 1856.

The breech *E* having been slid into position represented in fig. 1, the cartridge is to be put into opening *c*, and then the breech to be slid back. On the opening *c* is permanently attached a thin piece of steel, projecting a small distance all round over the opening; the projecting part being bevelled to a sharp edge, to allow it to be flexible, and spring outwards by the concussion of the discharge; by so doing, it is pressed suddenly against the sliding socket covering the same, and thus makes it completely gas-proof.

Claim.—The sliding socket-breech, constructed and operated in the manner and for the purpose substantially as herein set forth and described.

Also, the flexible spring-check, to prevent the passage or escape of gas in breech-loading fire-arms, in the manner substantially as herein set forth and described.

No. 14,491.—AMBROSE E. BURNSIDE.—*Improvement in Breech-Loading Fire-Arms.*—Patented March 25, 1856.

Fig. 3 shows the cartridge case. The hole *c* corresponds to the cone-seat *d* of the breech-piece *F*. In order to loosen the empty cartridge case from its chamber, a slight motion is given to the cone-seat, by means of the groove *b* and the pin *a*, which is fastened to the stock *A*. *H* is a bolt which passes through the stock *A* in the rear of the movable cone-seat. The bolt is made to revolve by the handle *I*, and its cylindrical portion is caused to enter a corresponding cavity *g* in the breech-piece.

Claim.—1st. The use of a cartridge case, made partially or wholly of soft metals, in combination with a bevelled mouth in rear of the barrel, and the movable chamber *C* of a breech-loading fire-arm, for the purpose of packing the joints thereof, and operating in the manner substantially as therein set forth.

2d. The movable cone-seat or breech-pin, in combination with the soft metal cartridge-case, operating in the manner substantially as herein described, to eject the empty cartridge case, as set forth.

No. 14,554.—HEZEKIAH CONANT.—*Improvement in Breech-Loading Fire-Arms.*—Patented April 1, 1856.

A is the stock; *B* the barrel; *S* the breech slide, with the chamber *b* for the reception of a ring *a* of either shape, as shown in figs. 2 and 3. Fig. 4 shows a face view of the slide. The ring is inserted for the purpose of making a tight joint.

The inventor says: I do not claim the self-adjusting thimble, constructed and operating in the manner as represented in T. D. Greene's patent, June 27, 1854; neither do I claim a sliding collar on the breech forced against the end of the barrel by a spring acting on a trigger, as in J. C. Day's patent, December 18, 1855. Nor do I claim a cone-headed pin in the breech, which pin has two or more expanding metal rings acting on the cone, as in B. T. Joslyn's patent, August 28, 1855. But I claim inserting a metal ring into the slide with the chamber in rear of said ring, as shown and represented, and for the purpose substantially as herein set forth and described.

No. 14,780.—SIMON F. STANTON.—*Improvement in Breech-Loading Fire-Arms.*—Patented April 29, 1856.

As the cocking lever *H* is depressed, it retracts the spring hook *h* by means of link *k* and lever *l*, which hook, coming in contact with the teeth *i* upon plate *B*, revolves this plate, and with it the charge-chambers, one-sixth of a revolution. The inner extremity of one of the charge-chambers, being no longer sustained in its vertical position by the flange *E* of the breech-piece, strikes against lever *F*, and by it is gradually raised into position in line with the barrel. When in this position, a spring *m* holds it up against the breech-piece until the joint between the chambers and the barrel is covered.

I is a ring upon one end of the rod *k*, having a notch at one extremity, into which enters a pin *n* projecting from a plate *o*. Pivoted to the lock case *p* is a finger upon the opposite side of the plate *o*, against which a pin *r*, projecting from the link *k*, strikes as the lever *H* is returned to its place; by which means the rod *K* is moved in the direction of its arrow (fig. 3), and the ring is drawn over the joint.

As the lever *H* is thrown down and the spring hook *h* is drawn back, the pawl *c* engages with the arm *r* of the lever, and carries the other arm *q* against the finger *p*, and thus the rod *K* is moved in a direction contrary to its arrow (fig. 3), and the ring *I* is drawn off the joint, before the spring hook engages with the teeth *i* to revolve the charge-chambers.

Claim.—1st. Raising the chambers *A* into line with the barrel by the action of revolving them, in the manner substantially as herein set forth.

2d. The peculiar form of the breech-piece *D*, with its elevated and

depressed portions D D¹ and inclined planes α α^1 ; whereby, as one charge-chamber is raised into line with the barrel, the one last discharged is forced down by the inclined plane α^1 into its vertical position.

3d. The method of securing the chambers in position without interrupting their motions, by means of the lever F.

4th. I claim the ring t , constructed and operating for the purpose of arresting the motion of the revolving chambers, and closing the joint between the barrel and the chamber.

5th. I claim the combination of devices, or their equivalents, whereby the ring I is driven forward to release the charge-chambers before they are revolved.

6th. I claim the safety stop for the purpose of preventing the fall of the hammer whenever the ring I is not drawn over the joint between the barrel and the charge chamber.

No. 14,949.—NATHAN S. CLEMENT.—*Improvement in Breech-Loading Fire-Arms.*—Patented May 27, 1856.

The nature of this invention consists in providing breech-loading fire-arms with India rubber packing D in such a manner that the pressure on the head of pin D will compress the rubber and cause the breech to be air and gas tight.

Claim.—Rubber packing, or that material which is substantially the same, in connexion with breech-loading fire-arms.

No. 15,072.—HENRY GROSS.—*Improved Breech-Loading Fire-Arms.*—Patented June 10, 1856.

When the lever B is thrown forward, the chamber, by means of the slot and pin in the eccentric lever, is drawn back away from the end of the barrel M; and by a further forward movement of the lever, the chamber L is thrown upward by its coming in contact with the shank of the lever at the point e , and in a position to receive the charge. The lever is now drawn backwards, and the chamber is brought down upon its bed; and by a further movement of the lever, the chamber, by the eccentric on the end of the lever, is forced forward upon the end of the barrel, making a tight joint. The primer U is a circular box with a wheel and scroll-spring, into which percussion caps are placed and forced forward through the tube of the primer to receive the nipple K, when the chamber is raised for loading, (fig. 3.) To prevent the explosion of caps in the primer, a follower I is attached, the upper part of which covers the orifice in the end of the primer when the nipple is down, and is forced away from this point by the chamber and nipple in being raised upward, as seen in fig. 3.

The inventor says: I am aware that breech-loading fire-arms have been constructed, in which the chamber is drawn back and elevated, and then thrown down and moved forward, by means of lever and cam attachment and other analogous devices. These constructions I ex-

pressly disclaim, as where they are used the force of the explosion is either brought upon the pin on which the breech turns, or is resisted by a surface on one side of the axis of the breech.

But I *claim* the breech-piece L and eccentric lever B, working together, as described, in combination with the breech-seat F, to which the axis of the breech is normal at the time of discharge, whereby the pin around which the breech turns is relieved, and loosening from recoil prevented.

Also, the primer U and the follower I, in combination with the nipple K, working together as described. All other parts of said fire-arm I disclaim.

No. 15,240.—B. F. JOSLYN.—*Improvement in Breech-Loading Fire-Arms.*—Patented July 1, 1856.

The valve B is pulled down by means of the ring E, and the cartridge is passed through the oblong groove F cut in the dove-tail piece C into the barrel A, when the valve is returned to its original position.

Claim.—A sliding-valve B in a chamber, substantially as shown, for the purpose specified; also, combining the spring O with the valve, for the purpose as shown and described.

No. 15,307.—WILLIAM MONT. STORM.—*Improvement in Breech-Loading Fire-Arms.*—Patented July 8, 1856.

When the hammer is lifted to full cock, the bolt e is withdrawn just clear of the breech b . While the thumb still rests upon the hammer, the forefinger is hooked under the enlarged head of the usual vent-screw, and the charge-chamber is lifted out of its bearings and thrown over upon the top of the barrel, in the position shown by dotted lines, its muzzle directly facing the operator for the convenient insertion of the cartridge. When the chamber is thrown back into its original position, and does not come exactly to its bearings, it is adjusted by the bolt e . As the explosion takes place, the portion of the charge first ignited forces the tubular valve B into its seat. This description, together with the claims and illustration, will explain the nature of this invention.

Claim.—1st. The arrangement of a portion of the barrel at the rear sufficient to contain the charge, to swing by a hinge upon the exterior (as quite distinct from oscillating upon trunnions) out from the line of the bore, for the most convenient insertion of the charge, in combination with the stationary wedging incline at the rear, with which it is made to correspond, and which receives the recoil.

2d. In combination with the so hinged chamber, the long tapering valve face, projecting across the joint so far as by itself to bolt the chamber into the barrel to such an extent that no lateral force or blow can displace it from the exact line of the bore, or (as would be the case with an "obtuse angle" of valve face) wedge the face of the valve laterally against its seat, while at the same time the taper of said valve

face shall be such in relation to the joint of the hinge that it shall swing out of and into its seat without slide upon the latter.

3d. Making such valve face upon the end of a loose tube of some hard, unplastic metal, projecting or extending back into the loading chamber, of which it constitutes an essential and permanent part, and of such strength and thickness that it shall effectually resist any change of size or form by the force of the explosion or expansion thereby outwardly against the interior of the chamber by which its freedom to drive bodily forward as designed, in the manner of a poppet valve into its seat, by the force of the explosion to close the joint would be prevented, said tube being formed open to the full size of its bore at both ends, and thereat slightly exceeding the bore of the gun, for reasons rendered clear, and as is essential.

4th. Extending the rear of the so constructed tube so far back into the chamber, and no farther, that the annular edge of its open rear shall terminate opposite to or slightly in front of the point of first ignition of the cartridge; so that, while its end at this point terminates and fits closely against the cylindrical sides of the chamber to prevent the explosion from passing between them, the edge of its end or the annular surface facing rearward being left purposely exposed to the forward force of the explosion, the tube will be forced ahead to close the joint between the chamber and barrel at the earliest instant of discharge; to the end that, if the ball should be a loose fit in the tube, and at the same time not a "Minie," and thus permitted escape of gas past it before it reached and tightened in the creases, the gas should not be left free to pass through the valve joint, causing "cutting."

5th. In combination with my tube, so operating and constructed, a finger or edging of soft metal soldered to its rear annular edge, and bevelling off rearward thinner than the tube itself, so that this thinner edge shall be easily driven by the explosion slightly forward and outward into the annular corner formed by the edge of the tube and the side of the chamber, closing the joint between them tightly at this point, but leaving them elsewhere a loose fit, while such thin edging of soft metal cannot have stiffness sufficient to prevent both it and the valve from being freely driven forward in the chamber by the explosion.

6th. The bolt *e* projecting through the recoil bearing into the breech, and so connected with the lock that it must move continuously and simultaneously with the hammer, the fall of the hammer upon the cap being thus under all circumstances made dependent upon the bolt having properly entered and secured the chamber; while, moreover, by this means the bolt, which might otherwise be prevented from flying forward into the breech by rust or dirt, is forced home by the whole power of the lock.

7th. Tapering the forward end of said bolt beneath, that if the chamber is not quite home to its place when the trigger is pulled, the bolt will bring it so before the hammer reaches the cap.

8th. Connecting said bolt with the "tumbler" by the slotted head, embracing the headless stud or screw in the tumbler; so that, there being no actual attachment of the bolt and the lock, the latter may be removed in the ordinary way without regard to the former.

9th. Cutting away the recoil bearing below the centre of the bore, to insure that the explosion shall tend to throw the chamber the more tightly down into the stock, in lieu of any chance tendency upward out of its seat.

10th. The fixed, unyielding stud and bearing-screw for receiving the force of this downward action, that it may not be exerted upon the under side of the valve face.

11th. Forming the recess in the stock beneath the chamber to receive any powder spilled in loading with a "broken" or leaky cartridge, so that it shall not block under the chamber, and prevent its coming down to a horizontal line, and in contact with its bearing.

12th. The arrangement of the hinge of the chamber upon the top of the latter, in lieu of elsewhere, whereby the chamber is thrown over in the most elevated and unobstructed position for the insertion of the cartridge; while the barrel will then bear the weight of the chamber, (when open,) and not the joint of the hinge, and the stock need not be cut away and weakened, as would be the case if the chamber swung laterally, and at the same time the hinge can constitute the "crotch" sight.

13th. Making said hinge a spring, and so arranged as to yield in case of any obstruction tying or adhering in the valve face.

14th. Swivelling the chamber, so that when open it may be turned with its mouth vertical for convenient loading with loose ammunition, while the weapon lies horizontal, &c.

No. 15,496.—GILBERT SMITH.—*Improvement in Breech-Loading Fire-Arms*.—Patented August 5, 1856.

This invention consists in forming a groove *a* around the chamber, near the extreme rear thereof, to produce a lip *b* from the solid metal of the rear of the chamber of sufficient thinness and flexibility to be driven back against the breech by the force of the explosion of the charge, and thereby to prevent any escape of gas.

Claim.—Producing a flexible lip *b* from the solid metal of the rear of the chamber, to operate as and for the purpose set forth, by forming a groove *a* around the chamber at a short distance from the extreme rear thereof, substantially as described.

No. 15,990.—THORNTON A. WASHINGTON.—*Improvement in Breech-Loading Fire-Arms*.—Patented October 28, 1856.

The charge is inserted into the funnel-shaped passage *F* of the revolving breech-cylinder *C*, and is thence pushed into the chamber *D* of the barrel *B*, as represented in figure 1. The breech-cylinder *C* is then turned into the position of figure 2, by which the chamber *D* is closed; and as the charge is fired, the flange *r* of the cylinder *i* is pressed against the breech-cylinder *C*, thus effecting a tight joint and preventing the escape of gas.

The inventor says: I make no claim to the removal of the breech-piece so as to expose the base of the bore to receive the cartridge, as such construction would be inconsistent with my mode of closing the joint; neither do I claim, of itself, a revolving perforated breech. But I *claim* the revolving cylinder-breech C, having the funnel passage F and the interior flanged cylinder *i*, in combination with the chamber D and breech seat, arranged and operating substantially as and for the purposes specified.

No. 15,995.—GEORGE W. MORSE.—*Improvement in Breech-Loading Fire-Arms*.—Patented October 28, 1856.

To charge and prepare this gun to be fired, it is only necessary to pull up and back the cover *d*, which carries with it the other movable parts and cocks the hammer 9; a cartridge is then inserted and the cover *d* is thrown forward and latched, when the gun is ready to be fired. If desired, the gun can be uncocked and the firing reversed.

Claim.—Inserting the rim N, or its equivalent, without contact, into the chamber *o*, substantially in the manner and for the purpose described; contact being attained through the medium of a cartridge case.

Also, the nippers S, and the mode of operating them by the pins *r* and the shoulders 7 on the hammer, or equivalents therefor, substantially in the manner and for the purpose described.

Also, the combination of movable parts, or their equivalents, whereby I retract or deliver the gun of a cartridge, drop it, open and clear the way for the insertion of another cartridge, whether the previous charge was fired or failed to fire, and cock the hammer automatically at one motion, substantially in the manner described.

No. 16,070.—GUSTAVE SCHARFFE.—*Improvement in Breech-Loading Fire-Arms*.—Patented November 11, 1856.

When this gun is to be loaded, the handle F, and with it the breech-pin E, is turned so that the openings D and D¹ correspond, through which the cartridge is introduced into the barrel B; by this motion of the handle F, the projection G acts upon the projection P of the hammer H, thereby pushing said hammer backwards until the lever L comes into notch *o* and holds the hammer H in that position. The handle F is now turned down again so as to close up the opening D, a percussion cap is placed upon the nipple N, and the gun is fired by pulling trigger T.

Claim.—1st. The manner of cocking the hammer by the opening of the breech, substantially as described.

2d. The arrangement and construction of the hammer, operated in the manner specified.

3d. Securing the breech-cap E either upon or into the gun-barrel, said breech-cap being provided with a hole corresponding with a hole

in the gun-barrel, by the unscrewing of which breech-cap, the hammer is cocked, and both holes are brought above each other, so as to admit the cartridge, while, by the screwing up of the said breech-cap the hole in the gun-barrel is closed up again, substantially as described.

No. 16,288.—HERMANN SCHROEDER, LEWIS SALEWSKI, and WILLIAM SCHMIDT.—*Improvement in Breech-Loading Fire-Arms*.—Patented December 23, 1856.

By turning a crank on the shaft E, the pinion D is turned, and meshes in teeth of rack *e*, thereby moving the barrel B from the breech-pin *c* into the position of fig. 2. In this position the charge can be readily inserted into the rear end of the barrel B. The pinion D, in moving, pushes the hammer G into an upright position by the connexion *i* and rod *k l*, and thereby cocks the gun. The barrel B is now returned towards the breech-pin, and the gun is fired by pulling the trigger, the needle *a* piercing the priming and thus firing the charge.

Claim.—The cocking of the hammer, in the act of moving the barrel forward to charge it, by a combination of mechanical parts, substantially as described.

No. 14,147.—HORACE SMITH and DANIEL B. WESSON, assignors to THE VOLCANIC REPEATING ARMS COMPANY.—*Improved Primers for Cartridges of Fire-Arms*.—Patented January 22, 1856.

The ball being placed in the arm, a blunt projecting piece is pressed through the opening *m* in the case 4, and through the cork 3, until it bears on the fulminating powder *x* and steel disk 2; a blow from a hammer will then ignite the powder *x* and through openings *a* in the disk ignite the powder C in the ball.

The inventors say: We do not claim the steel disk, nor placing the percussion powder on it in the rear of the powder; nor the method of exploding the same, as a patent has already been granted to us for that.

But we *claim* the combination of a copper or brass case, an iron or steel disk with cork, or its equivalent, and fulminating powder, substantially as herein set forth and specified.

No. 15,262.—JAMES N. WARD.—*Improved Magazine Hammer for Fire-Arms*.—Patented July 1, 1856.

The pawl C works on a pin I, fixed in the lock L, over which passes the slot *k* of the hammer P; so that as the hammer is drawn back, the wheels A B are turned in the direction of the arrow. The primer *p* is coiled in the magazine M, and being carried under wheel A is moved forward at each turn of said wheel.

The edge *y* of cone Q, passing close to the face *z* of the hammer,

severs the protruding portion of the primer previous to the explosion, and covers the exit H from the fire.

The inventor says: Disclaiming all other parts of the fire-arm not hereinafter mentioned as being already in use—

I *claim* the feed-wheel A, ratchet B, and pawl C, in combination with each other and the coil-chamber M in the hammer-head, said wheels being so situated relative to the pawl, that the outer face of the feed-wheel shall be within the inner plane of the pawl cavity.

I claim also the combination of the cone Q with the hammer, substantially as specified, for severing the protruding portion of the primer, and closing the primer passage H.

No. 14,319.—JOHN H. B. LATROBE.—*Improvement in Percussion-Locks for Fire-Arms*.—Patented February 26, 1856.

The priming tape *b*, with the caps attached to it, is coiled around the ferrule *a*. Cocking the arm, the hammer under the end of the pusher, which is stationary in the chamber in the hammer, will be driven back just the distance between two caps, which is the same in effect as though the pusher were drawn back that distance; and when the hammer falls, the pusher will, of course, be virtually pushed forward the same distance. If the same part of the pusher is then resting on the back part of a cap, and is retained there by the detent spring, the primer will be pushed forward just the distance between two caps, and the cap under the claw of the detent C will be protruded over the nipple, completing its journey at the instant of the discharge. When the hammer falls, the cutter strikes against arm K, whereby the edge of the cutter is forced past the edge of the nose of the hammer, so as to cut the primer, while at the same time the chamber in the hammer is securely closed by the cutter itself. When the piece is cocked again, the spring of the detent presses the cutter back, and reopens the passage for the next cap; the pusher passes over the cap and takes position behind it, ready, on the trigger being pulled, to push the cap forward. To throw the pusher out of gear, a pin P (figure 3) is inserted within the chamber at (figure 1); this pin is moved backward and forward by a button, with a spring on the outside of the cover. To throw the pusher out of gear, it is moved forward under an inclined plane on the pusher from 1 to 2, raising the latter, which then passes backwards and forwards on the pin P, from 2 to 3, without touching the primer.

Claim.—1st. The hammer chambered to receive the primer, in combination with a pusher B attached to the lock-plate, and protruding the primer as the hammer moves, substantially as described.

2d. Also, the movable cutter D, in combination with the chambered hammer, and operating in combination with the projection on the piece, as described herein, to cut off the cap to be exploded, while at the same time it closes the chamber, and protects the rest of the primer from the fire of the explosion, substantially as herein described.

3d. Also, the claw on the end of the detent, to keep the primer always in place for protrusion.

4th. Also, the movable catch for throwing the pusher out of play, in the manner described, or any other substantially the same, in combination with the pusher.

5th. Also, the ferrule around the boss, in combination with the chambered hammer.

6th. Also, the twisting of the primer between the boss and pusher, to permit of its being bent to suit the form of the hammer, as described.

7th. Also, the arrangement of the parts above described, so as to protrude the primer, while the hammer is falling, instead of while the piece is being cocked.

No. 14,742.—THOMAS SMITH.—*Improvement in Projectiles for Fire-Arms*.—Patented April 22, 1856.

In firing these balls, a plug *d* is inserted into the spiral cavity at the rear end of the ball, to prevent the charge of powder blowing through the cavity, instead of exerting its force for the firing of the ball.

The inventor says: I do not confine myself to any peculiar shape of spiral; but I *claim* the construction of balls or projectiles for smooth-bore or rifle-bore fire-arms, with a spiral cavity more or less funnel-shaped, passing longitudinally through them, for the purpose of giving them a spinning motion on their long axis in their passage through the air.

No. 14,017.—BENJAMIN GROOMES.—*Improvement in Repeating Fire-Arms*.—Patented January 1, 1856.

This invention refers to repeating fire-arms, in which several cartridges are placed one upon another in a removable chamber, and discharged one after the other. A represents the section of the barrel which receives the number of charges, each corresponding to the cap-tubes *a*; it is inserted into the barrel of the gun, as represented in fig. 1, and the caps are held there on the tubes by means of thin cross-pieces of steel *k*. The hammer or exploding apparatus consists in a shaft of the required number of sides, with one end round, cut with longitudinal and spiral grooves *g g* and *h h* (fig. 2) acting as switches. This shaft is placed, by means of a circular tenon on each end, in two head-blocks, between which it is caused to revolve by means of a stationary guiding spring *c*¹ (fig. 4). These head-blocks are made to slide in inclined grooves in the side plates *y*¹ *y*¹ (fig. 2). The shaft C and pins *l* are caused to strike the steel strips *k k* with sufficient force to explode the caps. The hook *q* on the end of the rod *r* (fig. 5) catches in the hole *p* (fig. 2) of the head-block *o*; the notch *d*¹ on the rod *r* catches in the slide *f*¹ (fig. 5) and is held in its place by the retaining spring *e*¹, which is made in the same shape, and screwed upon the top of slide *f*¹. The catch *d*¹ of rod *r* (fig. 5) is thrown from its hold on the slide *f*¹ by the detaching spring *g*¹, which is raised to the proper height by the set-trigger *c*, by which means the shaft is released, and is then drawn forcibly back by means of the spiral spring *b* (fig. 2.)

The inventor says: I do not claim the method of loading repeating fire-arms by placing a number of cartridges one upon another in a separate cylindrical chamber; as such has been done before.

Neither do I claim revolving hammers, for exploding in succession the different percussion-caps of repeating fire-arms; as such have been used before, though actuated by means other than I employ.

What I do *claim* as new and of my own invention, and desire to secure by letters patent, is, the mechanism for rotating the hammer during its reciprocating rectilinear movements, or rearward motions, as described, consisting of the spring-dog or stud, the series of straight grooves formed in the hammer-shank, and arranged with respect to each other so that the spring-dog may operate in them, substantially as specified.

No. 14,820.—GEORGE LEONARD.—*Improvement in Repeating Fire-Arms.*
Patented May 6, 1856.

The nature of this invention will be understood from the claims and engravings.

Fig. 1 represents a central, vertical, and longitudinal section.

Fig. 2, a side view, with the side-plate and stock detached, and the chamber turned down from the breech in a position for capping the cones, for cleaning, &c.

The inventor says: 1st. I do not claim the invention of a central screw by which several concentric barrels may be attached to and disconnected from a chamber with a proper number of bores; but I *claim* the invention in fire-arms of an expedient for connecting several concentric barrels to a chamber A having an equal number of bores *b b b b b*, and for partially but not wholly disconnecting the same for the purpose of loading, cleaning, &c., consisting of a combination of a central screw M with a spindle G, having a projecting head and a bore of two different diameters in the centre of the concentric barrels; the front part of the bore being larger than the back part, and of the diameter of the projecting head, and the back part of the bore being smaller than the front part, and of the diameter of the spindle. The whole to be constructed substantially as shown, but independent of any accidental properties.

2d. I do not claim the invention of a revolving hammer for fire-arms of any peculiar construction, or the invention of any device or expedient to regulate its motions; neither do I claim the inventions in fire-arms of several concentric barrels, nor of several concentric barrels having anything special or peculiar in their construction. But I *claim* the invention in fire-arms of a combination of several concentric barrels with a revolving-hammer for their successive discharge, the reciprocating and revolving motions of which hammer are governed and guided by straight and oblique grooves *g g* sunk in its surface, each kind of groove to be equal in number to the barrels. The whole to be constructed substantially as shown, but independent of any accidental properties.

3d. I do not claim the invention in fire-arms of a sear, having a thumb-piece or arm projecting beyond the breech or stock, so that the fire-arm may be uncocked by pressing on said thumb-piece or arm and easing down the hammer. But I *claim* the invention in fire-arms of a combination of a cocking-lever X, trigger V, and sear *se*, with a thumb-piece *l*; the combination to have such characteristics that the fire-arm can be uncocked without discharge only by pressing said thumb-piece and easing down said cocking-lever. The whole to be constructed substantially as herein described, but independent of any accidental properties.

No. 15,110.—ALEXANDER HALL, assignor to Himself and JAMES G. CALDWELL.—*Improvement in Repeating Fire-Arms.*—Patented June 10, 1856.

In the inner periphery of the ring F are a series of recesses *c* corresponding to the number of chambers, and on top of plate G is secured a spring *d*, to which a bolt *e* is attached, so that the upper end of said bolt will take into the series of recesses *c* as the ring F is turned. The lower part of the bolt *e* hangs down in a convenient position to be used.

Claim.—The ring of chambers F, having a single spoke J extending from its inner periphery to its hub K, so that said ring may turn on a centre support, make almost an entire revolution, and pass freely and truly through the mortise E in the breech C, where its chambers are in succession brought opposite or in line with the bore of the gun.

I also claim combining the bolt *e* with the ring of chambers so that it may be detached from its catch, and the ring turned to bring the next chamber in line by the hand which supports the gun, and without changing the hand from its supporting position.

No. 15,388.—C. S. PETTENGILL.—*Improvement in Repeating Fire-Arms.*—Patented July 22, 1856.

The object of this invention is to enable the operations of rotating the breech and firing to be performed with an arrangement of mechanism operated by a single pull on one trigger, which is accomplished by a combination of parts of the lock by which the hammer is made self-cocking after every fire, and the main-spring E is relieved from all strain while the hammer remains cocked, as will be more readily understood by reference to the claims and illustration.

Claim.—1st. In combination with the arrangement of the main-spring to work on a pivot, so as to be capable of relief from all strain, except at the time of firing, I claim the application to the said spring of a spring F, operating upon it as described, to draw back and effect the cocking of the hammer, substantially as described.

2d. In combination with the arrangement of the main-spring to work on a pivot, as described, I claim the lever H and the cam C¹ on the trigger, operating together and upon the main-spring, substantially as specified, to strain and develop the elasticity of the main-spring by the act of drawing the trigger to fire.

3d. The sear D, as arranged, entirely disconnected from the trigger, and operated upon to set free the tumbler, by means of a cam C¹ on the trigger, substantially as described.

4th. The attachment of the dog, which operates in the ratchet notches *a a* on the cylinder to the same lever H by which the strain is thrown on the main-spring.

5th. The arrangement of the slot *p* in the recoil shield, and the holes *a a* at the end of the ratchet notches on the cylinder; whereby the cylinder is locked, so as to be incapable of rotation in either direction, before the hammer is let off, substantially as set forth.

No. 14,034.—JOHN C. SMITH.—*Improvement in Repeating Magazine Fire-Arms*.—Patented January 1, 1856.

The nature of this invention will be understood by reference to the claims and illustration.

The inventor says: I do not claim or confine myself to the exact process of inserting the cartridges into the magazine, or to the exact shape shown of the casing G, or to the number of cartridges or caps contained in their respective reservoirs, as these features may be altered to suit the size and nature of the fire-arm.

Neither do I desire to claim the use of a laterally radiating breech, as such is claimed in the patent of W. W. Hubbel, July 1, 1844. Neither do I wish to claim, exclusively, the combining of the hammers with the laterally swinging chamber for the purpose of effecting the simultaneous opening of the chamber and cocking of the hammer.

But what I *claim*, and desire to secure by letters patent, is, first, the trigger N, with its spring *l*, link P, lever *w*, with its dog Q and projection *v*, the hammer S, with its notch for receiving the dog, its projection *u* and spring T, the lever 4, link L with its spring *m*, lever M, link K, and lever I, or the equivalents to the above, in combination with the vibrating breech C; the whole being constructed and arranged substantially in the manner herein set forth, for the purpose of imparting to the said breech the required lateral vibrating movement, retaining the same when required, and operating the hammer so as to discharge the load by simply operating the trigger only.

2d. The magazine B, containing the cylinder W, with its hollowed flanges and spring-catches 5, in combination with the ratchet teeth on the cross-piece 6, and the ratchet-wheel *e* on the end of a vibrating breech, so that the movements of the latter may cause the said cylinder to carry round in succession the cartridges ready for insertion into the chamber of the breech.

3d. The sliding-rod V, with its rod Z and projection 8, for the purpose of allowing the operator a ready means of inserting the cartridges into the chamber.

4th. The cap reservoir 12, with the cylinder 11 and its orifice for receiving the caps, in combination with the rod 10, arranged substantially as herein shown, for the purpose of readily placing the caps on the nipple of the breech.

No. 14,118.—EBEN T. STARR.—*Improvement in Revolving Fire-Arms*.—Patented January 15, 1856.

When the key *d* is turned in the position represented in the drawings, the barrels are held firmly against the breech-plate *c* to confine the charges. The central bore, however, for a short distance from the muzzle, is cut out of a form corresponding with the form of the key *d*; so that when the key is turned to the proper position, the barrels can be pushed forward a sufficient distance for the insertion of the charges.

The two positions of stop *z*, referred to in the last claim, are represented in fig. 3: one by full, and the other by dotted lines.

The inventor says: I do not claim, as my invention, the cartridge-cutters on the breech-plate, nor any of the separate parts of which my improved arm is composed.

But I *claim* mounting the series of barrels *a* on a central, rotating spindle or arbor *b* provided with a breech-plate *c*, so that it can slide thereon, substantially as described, to be moved forward to receive the charges, and then pushed back and locked to inclose the charge, as set forth.

And I also claim the method of elevating the cock by the finger-lever *p* until it is engaged and held by a spring-catch *y*, substantially as described, in combination with the trigger *c*¹, so arranged that it can be operated by the continued pull of the finger-lever to effect the discharge, substantially as described.

And I also claim, in combination with the finger-lever and trigger, arranged and combined substantially as specified, the employment of the shifting stop *z* on the finger-lever, so that it can be set either to effect the discharge, by the continued back pull on the finger-lever, or by touching the trigger with the finger after the cock has been elevated, as described.

No. 14,420.—WILLIAM MT. STORM.—*Improvement in Revolving Fire-Arms*.—Patented March 11, 1856.

Claim.—1st. Extending the "casque" forward as far as the face of the cylinder, and surrounding it to form a receptacle or holder for it while loading, in combination with a hinged apron-piece, fig. 5.

2d. In combination with the so arranged barrel and casque for locking them together, the solid "self-acting" locking spring, (as distinguished from a locking lever, having by necessity a hinge to wear loose, &c.,) said spring being arranged to resist the discharge by its direct tensile strength.

3d. In combination with the casque or cylinder receptacle, the safety screw Q, projecting into the recess between the shoulders *r r*¹, (or, as equivalent, the screw on the cylinder, and the shoulders on the casque,) to prevent the cylinder from getting dropped while loading or capping in action.

4th. The central revolving-shaft, with the button-head *i* forward of the sleeve C, and both projecting within the central cavity of the cylinder beyond the line of its rear and the fire of the cap, in combina-

tion with a revolving wheel, loaded within the stock, enclosed from the fire and smoke, all substantially as specified.

5th. In combination with the dog, having an inclined plane or projection at its forward end to meet the purpose of such combination, an adjusting tripping screw, whereby, despite of wear, &c., the detachment of the dog from the sear may be effected sooner or later in accordance with the needed distance of revolution of the many-chambered cylinder.

6th. Extending the rear of said dog downward from where it connects to the heel of the hammer, and connecting the pawl directly thereto; by which means the pull on the dog by the trigger directly operates the pawl to push around the cylinder.

7th. I claim extending the pawl beyond where it is connected to the downward extension or heel of the dog, and connecting the main-spring to the part so extended; by which means the pull of the dog on the pawl distends the main-spring, while the latter, being distended, presses the point of the pawl more firmly into the revolving holes or indentations in the face of the revolving wheel, preventing any slip, while revolving the cylinder; and in all points rendering the use of a pawl spring unnecessary.

8th. Pivoting the usually fixed end of the main-spring in the manner explained, so that while stationary it shall not be fixed, but free to compensate for its own vibration and that of the rear of the pawl, thus rendering the use of the usual vibrating or connecting link between the main-spring and the rest of the lock unnecessary, despite the immediate connexion of the main-spring to said pawl.

9th. The locking-notches in the revolving wheel, (6,) or its equivalent, in combination with the crest on the dog, for the purpose of securing the stoppage and locking fast of the cylinder at the proper position for discharge.

10th. In combination with the forward shoulder or detent on the head or sear of the trigger, the screw projection or detent on the rear of the head or sear of said trigger; to the end that, after said forward detent or hook ceases to act by the dog being thrown off to lock the revolving wheel 6, and thereby the cylinder in place, the hammer shall not immediately fall, but be retained on cock to give opportunity for deliberate aim, as explained; said rear projection or detent catching at this point on the downward prolongation of the heel of the hammer for this purpose, the whole being arranged and acting in conjunction.

No. 14,406.—FREDERICK NEWBURY.—*Improvement in Revolving Fire-Arms*.—Patented March 11, 1856.

On pressing upon the handle of the hammer in cocking it, the lever V^2 will be pressed into its recess, and thereby the picker V will be thrown forward under the burst caps and lift them off the cone.

Claim.—The combination of the wheel-gearing and pawl with the trigger, by which means the block C is revolved. (The wheel-gearing itself is not claimed.) The priming-cap magazine, in combination with the trigger, to permit the capping of the cone by the trigger. The

spring guard-plate W , to prevent the fire from the upper chamber extending to the lower. The combination of the picker attached to the hammer, substantially as set forth in the above specifications.

No. 14,710.—GUSTAV A. BLITTKOWSKI and FREDERICK WM. HOFFMANN.—*Improvement in Revolving Fire-Arms*.—Patented April 22, 1856.

The magazine tube C being supplied with fixed ammunition, the muzzle is raised until the cartridges descend, one of which will drop partly into a cavity of the breech A , as at c (fig. IV). The toe D must then be pulled back until the gun is full cocked. This produces the following motions, viz: withdrawing the breech until the bevil a is clear of the cavity in the nozzle, pressing down the pin d to keep back the rest of the cartridges, rotating the breech one-sixth of a revolution, and thereby transferring the chamber c to the place of c^1 (fig. VII) and so that it will be opposite to the rammer b ; also, applying the cap to the nipple of the empty chamber brought opposite the magazine, and, finally, the return of the breech to its first position, and the ramming of the cartridge c^1 by that last named action. As the chamber opposite to the barrel is the fourth from that opposite to the magazine, the cock must be let down and raised that number of times, in the first instance, in order to work the charges around. The top charge may then be fixed as usual.

Claim.—First. Effecting the ramming of the cartridge c by means of the fixed rammer b in combination with the reciprocating breech-chamber A .

Secondly. The arrangement for holding and releasing the cartridges, consisting of the clamp-spring, the knob d^1 upon the axis of the breech-chamber, or its equivalent, and the magazine C for containing a supply of cartridges.

Thirdly. Effecting the several motions required for operating the rotating breech by means of an axis rigidly connected thereto and operated from one of the ends of the said axis.

Fourthly. The combination of the slide h with the axis of the breech-chamber, with the locking bolt i , and with the tumbler o^1 , or the mechanical equivalents of said parts, for the purpose set forth.

No. 15,397.—BERNARD H. WESTERHOOD.—*Improved Trigger-Protector for Fire-Arms*.—Patented July 22, 1856.

This invention relates to an arrangement for preventing the accidental discharge of fire-arms, and consists in a circular guard D encasing the trigger B ; which guard is readily locked by bolt d falling into the staple b , and which can be opened by withdrawing the bolt d by means of the button h , when the spring j will open the guard by turning it on its fulcrum a .

Claim.—The employment, in connexion with fire-arms, of a pro-

lector D, which can be locked so as to entirely enclose the trigger, and opened so as to expose the same; the said guard being arranged and constructed substantially in the manner and for the purpose set forth.

No. 14,819.—EDWARD LINDNER.—*Improvement in Breech-Loading Guns.*—Patented May 6, 1856.

When the gun is to be loaded, the part of the lever E projecting through the frame A is pulled back, whereby the breech is unhooked, when the spring D acts upon the projection *a*, forcing the forward end of the breech C upwards ready to receive the cartridge, which, while being pressed in, is opened by the knives *f*, to allow powder to fall towards the priming hole M. The breech is then pressed down, when the lever E, acted upon by its spring *n*, falls back in its place, locking thereby the breech C in its proper position. The lower end of the lever E being connected with the rod F, which latter is again connected with the lever G, the longer arm of the same, with the inclined surface *m*, is brought by this action into the gun-barrel B, when the gun is ready to be discharged. By the firing off, the ball in its passage comes in contact with the inclined surface *m* of the lever G, and presses the same outward, communicating thereby a corresponding motion to the rod F and lever E, by which the latter is pulled away from the breech C; at the same time the recess *q* in the rod F comes in contact with the projection *p* on the breech C, giving the same a start, and the spring D acts upon the breech C, throwing the forward end upwards ready to receive a new cartridge.

Claim.—1st. The application of a lever projecting partly into the gun-barrel, or of a piston forming part of the barrel, in such a manner that the passage of the ball through the gun-barrel, or the explosive power of the powder, shall act upon the same, pressing the same outwards for the purpose of communicating motion to a rod situated below the gun-barrel.

2d. I claim the manner of disengaging and opening the breech, by a motion obtained either by the passage of the cartridge through the gun-barrel, or by the action of the expansive power of the powder when the gun is fired off.

3d. I claim the box H, containing asbestos, or its equivalent, for the purpose of cleaning the rubbing surface of the breech in its motion upwards.

4th. I claim the arrangement of packing the axis of the breech against the face of the gun-nipple frame, in the manner and for the purpose specified.

5th. I claim the arrangement of the vent or priming hole from the gun-nipple to the cartridge chamber in the breech, in the manner as described.

6th. Filling the space in the recess O with asbestos, or its equivalent substantially as described and for the purpose specified.

No. 16,072.—CHRISTIAN SHARPS.—*Improvement in Breech-Loading Guns.*—Patented November 11, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—I am aware that the breech of a fire-arm has heretofore been closed by a plug breech-pin, connected therewith by a bayonet attachment, and that bevelled or spoon-formed piercers have been used to pierce cartridges. I am also aware that a bush has been used in that part of the breech which is liable to burn by continued use. I therefore lay no claim to the invention of such devices of themselves.

But I *claim* the combination and arrangement of a spoon-formed cartridge-piercer *d* with the turning breech-pin of a breech-loading fire-arm, whereby the powder is more effectually worked into the channel leading to the primer, by the operation of locking the breech-pin in its place.

I also claim the combination of the removable bush *o* and elastic packing ring *a* with the breech of a fire-arm, substantially as herein set forth.

No. 15,244.—JOHN LAURENS.—*Improved Gun-Carriage.*—Patented July 1, 1856.

To get the gun ready for action, crow-bars are applied to spindle A, and the carriage-bed is caused to move backwards. The end of the iron bar is then bolted, and the braces C C are hooked on; the wheels from the side-axle are removed and placed on the fore and aft axles D D. When the gun is loaded, the spindle is allowed to fall clear of contact with the cogs, which prevents the possibility of breaking their teeth.

In its recoil the gun slides along the bed until checked at F by a rise in the after part of the bed, and also by a fall in a slide, preventing the possibility of the gun getting loose, and doing away with the breeching now in use.

Claim.—The entire gun-carriage, it being totally different from any gun-carriage that is now or ever has been in use, with the sole exception of its carrying a gun.

No. 14,488.—GUSTAV ADOLPH BLITTKOWSKI and FREDERICK WILLIAM HOFFMAN.—*Improvement in Needle-Guns.*—Patented March 25, 1856.

The inside faces of the clutch *o*² are so bevelled that in the act of giving the blow the lower edges will pass over the head of the knob *o*¹ and embrace its shank. As the hammer is drawn back the needle is pulled back also. The arc described by the hammer finally separates the two.

When the hammer-head *o*³ strikes the stock *i*¹ the needle passes through the tube *o*, and the shoulder at the stock propels the said tube *o* along until its opposite end strikes the breech-chamber, which closes

around the touch-hole, the shoulder forming a stopper for one end and the back end of the breech the other.

The inventors say: We make no claim herein to the method of withdrawing and rotating the cylinder A, inasmuch as that is embraced substantially in another application submitted by us; but we *claim*—

1st. The method of withdrawing the needle by a positive force applied thereto by means of the knob *o*¹ upon the end of the needle-stock *i*¹, in combination with the claw *o*² upon the end of the hammer, so arranged that, becoming engaged at the moment of giving the blow, it shall cause the withdrawal of the needle in the operation of cocking, as described.

2d. The guide-tube *o*, for the double purpose of guiding the needle and of acting as a stop around the touch-hole, as described.

No. 14,597.—GEORGE BUCKEL and EDWARD DORSCH.—*Improvement in Shot-Guns*.—Patented April 8, 1856.

This invention consists in dividing the length of the bore into an odd number of parts and making them alternately of larger and smaller diameter, for the purpose of preventing the shot scattering too much.

The inventors say: We do not confine ourselves to any particular number of divisions of the bore; but we *claim* giving the bore the undulating form, substantially as herein described.

No. 14,513.—EDWIN P. MONROE.—*Improvement in Gun-Locks*.—Patented March 25, 1856.

This improvement is applicable to that kind of gun-lock in which the hammer is actuated by a coiled wire-spring; and the invention consists in supporting the spring D at each end upon pins *i* and *m*—the one projecting from the face-plate B, and the other from the tumbler E—whereby the spring is prevented from rubbing upon its arbor.

Claim.—The pins *i* and *m*, in combination with the coiled spring D, operating in the manner substantially as herein set forth.

No. 15,682.—G. W. BISHUP.—*Improvement in Breech-Loading Ordnance*.—Patented September 9, 1856.

This invention consists in providing the breech-pin B with a number of expanding segments E, which are operated by a screw *i* and toggle-joints *f*, and which can be drawn into the recess *c b* round the pin, to allow the pin B to be inserted or removed from the gun; and after the insertion of the pin in the gun, to be expanded or spread out laterally into a groove around the seat which receives the pin, so as to form stays to act between the pin and the solid metal of the extension breech for the prevention of the driving out of the pin when the explosion of the charge of the piece takes place.

The inventor says: I do not confine myself to the particular form of the groove *b c*, or of the segments.

But I *claim* the combination of the groove *b c*, made around the seat of the breech-pin, and the segments E E attached to the breech-pin; the said segments being operated by a screw and toggle movement, or other equivalent means of spreading or expanding them into the said groove, or withdrawing them therefrom, substantially as described.

No. 15,063.—JAMES CHATTAWAY.—*Improved Water-Proof Percussion Caps*.—Patented June 10, 1856.

The nature of this invention consists in placing a piece of metal over the powder in each cap, and then placing upon said piece of metal a piece of alloy or solder compound of bismuth, lead, and tin, which will fuse at a given heat, (insufficient to explode the powder,) by which fusion a complete soldering of the edges of the piece of metal covering the powder is effected to the sides of the caps, rendering them entirely impervious to water, damp, or any change of weather.

Claim.—The application to percussion-caps of a fusible alloy which will melt without exploding the powder, using for that purpose the aforesaid metallic compound, or any other substantially the same, and which will produce the intended effect.

No. 15,370.—JAMES CHATTAWAY.—*Improvement in Percussion Tube-Primers*.—Patented July 22, 1856.

The fulminating powder is placed in the indentations of a piece of metal, prepared with a coating of soft solder; then another piece of metal, prepared in the same way with a coating of solder, is laid on the former; and both are submitted to the pressure of steam-heated rollers, which will effect a permanent union by soldering.

Claim.—The improvement of substituting for paper metal hermetically sealed, and soldering the continuous band, so as to make it impervious to water, weather, or climate.

No. 14,315.—CHAS. T. JAMES.—*Improvement in Projectiles*.—Patented February 26, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. The combination of a band B of fibrous packing around a cannon-ball, with a means of distending it into the scores of rifles of the cannon, (without enlarging the shot itself, as is done where it is wholly or partially formed of flexible metal,) by the pressure of the explosive gas, substantially as herein described.

2d. The combination of a mandrel *b* passing through the shot, for the purpose of driving out the pins *c c*, with a nut *n* for drawing it in, substantially as herein described.

3d. The combination of a mandrel entering the shot, with a ratchet *r*, or equivalent catch, for holding it in its place, substantially as described.

4th. The combination of any pliable packing-ring surrounding the shot, with the openings *a* communicating between its inner surface and the chamber where the explosive gas is generated, for the purpose of communicating the power to distend such packing, substantially as herein described.

No. 15,577.—NATHAN SCHOLFIELD.—*Improvement in Projectiles*.—Patented August 19, 1856.

The nature of this invention will be understood by reference to the claims and engravings.

Claim.—The application of wings, as described, either with slight springs to force them from close contact with their seats, when left free, so as to allow the air to act thereon, to perfect their expansion, or by having a free passage for air beneath the wings, and giving them a slight inclination diagonally, on the cylindric surface, and without springs.

Also, the construction of the guiding-wings for a projectile to be fired from a gun, of thin sheets of metal, having one of their edges folded around a piece of wire, or its equivalent, to form journals on which the wings may turn as joints.

Also, applying these wings, either plane or curved, on the cylindric surface of a projectile, and either parallel to its axis or diagonally in such form and position that the said wings may be closed down on the cylindric surface or on grooves thereon, fitted to receive them, and by the action mainly of the air on the wings as the projectile is discharged, they shall be opened and expanded, as described.

Also, the construction and application of these wings slightly curved, composed of metal possessing elasticity to resume their curved form after being changed therefrom, so that, if, while its rear end rests on its seat, the forward end of the wing is elevated therefrom when free, then if this end is also pressed down to its seat, it shall be raised again by its elasticity when left free from pressure, so that the action of the air on the exposed curve of the wings will force them open to their greatest capacity after being discharged from a gun.

No. 16,076.—WILLIAM TAGGART.—*Improved Projectile for Fire-Arms*.—Patented November 11, 1856.

The hollow projectile *A* is provided on its inner circumference with a spiral partition *C*, and the wings *a* are situated at right-angles to the rear end of the spiral partition, to increase the revolving motion given to the ball by the spiral partition *C*.

The inventor says: I do not claim the central aperture, nor communicating a revolving motion to the ball by spiral ridges or projections on the inner surface around such an aperture.

But I *claim* the spiral partition *C*, arranged and operating substantially as specified.

I also claim the wings *a a*, arranged in the manner and for the purpose described.

No. 15,999.—JOHN B. READ.—*Improved Projectile for Ordnance*.—Patented October 28, 1856.

The nature of this invention consists in the attachment to the butt of an elongated cannon-shell of a cupped-cylinder *B* of wrought-iron, fastened to the body of the shell by having its perforated bottom imbedded in the cast-iron metal of which the shot may be composed, while its sides *H* project beyond, and are so thinned down as to be capable of such expansion by the charge of the gun on firing as to fit its bore exactly, thus imparting rotary motion to projectiles when rifle grooves are employed, securing, by the striking of the projectile upon its apex, the advantage of using percussion-shells.

Claim.—The attachment to elongated shot or shells of a cylinder of wrought iron fastened to the body of the shot or shell, by having its bottom or sides more or less imbedded in the cast metal, of which the shot may be composed; the cylinder to be attached to the butt of the shot or shell, and its sides to project beyond, being thinned down, after a short bevel, to such a degree as exactly to fit the bore of the gun when the charge is fired, so as to save windage in all cases, and impart rotation when rifle grooves are employed.

No. 15,454.—ETHAN ALLEN.—*Improvement in Moulds for Hollow Projectiles*.—Patented July 29, 1856.

On holding the mould by the handles *A* it can be filled, and then by turning the handle *J* it cuts off the sprue *L* even with the surface of the ball. The screw form of the rings *D* prevents the ball from turning; by opening the handles *A* the pins move the piece *E* with the core over the sprue, carrying the ball with it free from both sides, and allowing it to drop.

The inventor says: I do not claim any particular form or arrangement of parts.

But I *claim* cutting off the sprue by means of a cutter working on the curve of the inner surface of the ball, so as to leave the ball smooth and symmetrical, substantially in the manner and for the purpose set forth.

No. 14,460.—JOHN LIPPINCOTT.—*Improvement in Percussion Projectiles*.—Patented March 18, 1856.

It is the object of the spring *s* to prevent any recoil of the piston *h*. The concussion will drive the nose-piece *m* down, and with it the piston *h*, which will strike the percussion-wafer or explosive powder *g*, and explode the shell.

Claim.—The combination of the cylindrical chamber *g*, piston *h*, spiral spring *s*, cap *f*, and nose-piece *m*, constructed and arranged as

described, forming an improved percussion apparatus to be inserted into the powder-chamber *c* of bomb-shells, either in combination with or without a shallow sabot of lead *b*, of the shape described; the whole being constructed and arranged substantially in the manner and for the purposes herein before set forth.

No. 15,529.—A. B. SMITH and WILLIAM WEAVER.—*Improved Machine for Throwing Projectiles*.—Patented August 12, 1856.

The projectiles are fed into the machine through the hopper *t*, and pass down into the spiral tube *E*, where, by means of the centrifugal power imparted to them by disk *B* revolving rapidly within ring *A*, they are thrown towards the periphery, and discharged through the muzzle *D*. By means of the valve *o*, spring *n*, lever *H*, cam *L*, and lever *m*, the ball can be made to reach the periphery of the ring *A* at any desired point.

Claim.—We claim the conformation of the ring which encloses the revolving disk with a movable muzzle, in the manner and for the purpose specified.

We also claim the spiral tube *E* for gradually communicating the motion of the disk to the balls when its outer end is turned radially (or thereabout) outward, and is provided with a valve in said radial portion, substantially in the manner and for the purposes set forth.

We also claim the mode of opening the valve *o*, substantially as described, whereby the balls are invariably brought to the ring *A* at a given point, and that point changeable at pleasure, irrespective of the position of the ring relative to its disk, or of the point to which it may chance to be directed.

We also claim the employment of the cam *j*, in the manner and for the purpose described.

No. 15,425.—RALPH HENRY ISHAM.—*Improved Mode of "Patching" Rifle-Shot*.—Patented July 29, 1856.

The nature of this invention consists in coating or plating leaden balls with brass, to prevent the rifle-barrel from leading or filling, as is the case when leaden balls are used without patching.

Claim.—The use of a leaden ball or bullet of any desirable form, with a metallic case or coating of brass or other firm metal, in whole or in part, whether plated, washed, or galvanized, or by whatever mechanical device the coating or partial coating may be effected for the use and objects of this invention, as set forth.

No. 14,503.—WILLIAM W. HUBBELL.—*Improvement in Explosive Shells*.—Patented March 25, 1856.

The peculiar construction and distribution of the masses of this shell insures a rotary motion, combined with great explosive force and destructive effect.

I do not claim spirally-winged elongated shells, nor elongated shells with cylindrical body and spherical hinder part, either with or without

tails or wings behind, nor with elongated head; for I am aware that they have been long known, and I have, many years ago, experimented with them.

But I *claim* combining or forming a series of oblique or propeller surfaces *D D D D* uniformly around the fuze hole *c*, on the extreme front face of the metal of an enlarged or thickened head of an elongated shell, with cylindrical body and smooth semi-spherical hinder part, substantially as described.

No. 15,760.—A. M. GEORGE.—*Improved Explosive Shell*.—Patented September 23, 1856.

The chamber *E* contains the charge of powder, the chamber *b b c*, contains non-conducting material, and the chamber *D* is filled with melted metal, and closed by means of plug *e*; the shell is fired in the common way, and lighted by means of fuse *d*; and when the charge in the chamber *E* becomes ignited, said chamber and the shell explode at once, and the melted metal is scattered about.

Claim.—The described arrangement and combination of the chambers *D E* and *b b c*, to constitute a new projectile for the scattering of melted metal or other incendiary substances.

No. 14,133.—WILLIAM W. HUBBELL.—*Improvement in Eccentric Explosive Shells*.—Patented January 22, 1856.

The object of this improvement is to compel the fuse to be uniformly foremost in the flight of the shell.

The inventor says: I am aware that shells having eccentric hollows and reinforcements around the fuse hole have been used before my invention, but in different arrangement of the metal and with different effects from those discovered by me, and I do not claim such arrangements of metal nor their effects.

But I *claim* the combination of the head or segment of the solid sphere with flat base, uniformly around the fuse hole, with the segment of the hollow part forming a spherical shell with flat based heads, and externally smooth, as described.

No. 15,075.—WILLIAM W. HUBBELL.—*Improved Sabot for Rotating Shot and Shell*.—Patented June 10, 1856.

The arrows *x y* indicate the directions of the forces of rotation and projection, both attained by the sudden pressure of the power of the cartridge or the oblique faces *l l l l* and *m m m m* of the sabot, and the friction caused by the pressure of the solid bowl against the surface of the shell *A*, with the relief of the friction of the shot on the under side of the bore, by the gas which passes between the body *i i* of the sabot and bottom *q* of the bore, as indicated by the arrow *n*, against the lower curved surface *d* of the shot.

Claim.—The construction of wooden sabots, substantially as de-

scribed, adapted to relieve the friction of and easily rotate the smooth spherical shot or shell of the common diameter, consequent weight, form, and extent of windage, and bearing of its weight on the bore, out of its usual size of smooth-bored canon under the conditions as described.

No. 14,151.—JOSEPH T. CAPEWELL.—*Improvement in Shot Pouches*.—Patented January 29, 1856.

K represents the cut-off having its vertical edges turned over in order to prevent it from slipping sideways when at its lowest point after the charger has been withdrawn.

In figure 4, T represents the tool used in fastening the ring R to tube A. The operation of the tool will be understood from said figure 4.

The inventor says: I do not claim the construction of the charger D (figure 3) as new; neither do I claim the main tubes as shown at A, (figure 1 and figure 2,) nor yet the small tube *a*. I do not claim the ring C (figure 1) nor the spiral spring *s*.

I claim my improvement in the construction of a cut-off having the lower edge or bottom straight; also having the vertical edges turned up or over, for the purpose substantially as described at figure 2, letter K.

I also claim the mode of fastening the rings around the main tube or throat of the shot pouch, in the manner as substantially described and shown at figure 4.

No. 15,651.—JOHN M. HATHAWAY.—*Improvement in Chargers for Shot Pouches*.—Patented September 2, 1856.

The charge to be used is separated from the shot in the pouch by means of the slide F, into which a piece *m*, provided with holes *n*, is inserted, and said piece *m* is pressed by means of spring *o* against pin *x*, which latter is thus inserted into one of the holes *n*, which thus locks the slide against accidental opening. In operating this pouch the lever *s* is pressed upwards, and the spring *o* is thus pressed down and the slide *f* is unlocked; then by pressing on the piece F the slide *m* separates the charge from the shot in the pouch, and at the same time the slide *h* is opened for the discharge of the charge. By releasing the piece F, the spring *t* will throw back the slides into the former position, and the slide *f* is locked again as before. The inner tube C, which fits loosely on the outer tube D, is provided with a button 9 and tongue 7, which can be made to slide in the groove 1, and adjusted and fixed in the grooves 2 3 4, &c., so as to adjust the tubes for the reception of smaller or larger charges, said tongue and button being kept stationary by a spring *i* attached to the inner side of cylinder C.

Claim.—In combination with the slide of a shot-charger a locking apparatus, substantially such as described, to prevent the accidental opening of the charger, but readily unlocked by the user, as set forth.

Also, the slots 1 2 3 4, &c., on the tube B, and the tongue-button and spring on the tube C, in combination, as a device for adjusting and holding said tubes, as set forth.

XX.—SURGICAL INSTRUMENTS.

No. 15,626.—LOYALL TILLOTSON.—*Improvement in Cupping*.—Patented August 2 1856.

A metal wire G is attached to the cup F of a cupping instrument, to the end of which wire is fastened a plate H, the other end passing through a hermetically sealed aperture, and terminating in a loop I, to which the connecting wire of the battery is to be fastened. The wire G is coiled for the purpose of allowing it to be extended or contracted so that the plate or pole H can be placed on or over the diseased part, consistent with the kind of force employed.

The inventor says: I wish to be distinctly understood as not claiming the use of a cupping instrument, nor the employment of electricity for the reduction of disease in the human body, separately considered, the use of both, singly, having been long known to the medical profession.

But I claim the within described apparatus, viz: the spiral wire G, disk H, and loop I, combined and attached to a cupping instrument, for the purpose of employing electricity in conjunction with cupping as an adjuvant for diseased parts of the human body, as set forth.

No. 15,568.—SHERMAN McLEAN.—*Improvement in Cupping Instruments*.—Patented August 19, 1856.

The nature of this invention consists in having the cup B of the implement formed of a series of concentric chambers, one of which is represented at D in the illustration, said cups being placed one within the other, and having perforated sides, so that a good bearing surface is obtained for the cup, which is consequently prevented from being pressed into the body by the pressure of the atmosphere.

Claim.—Constructing the cup B, with one or more smaller cups D fitted and secured within it, and provided with perforated sides, substantially as described.

No. 14,739.—L. D. SIBLEY.—*Improvement in Rings to Prevent Nocturnal Emissions*.—Patented April 22, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—The combination of an elastic strip or strips *m* with an internally toothed ring A in such a manner that the strip or strips shall serve as a protection against the teeth until the distension of the penis takes place, when it or they will yield to said distension, and allow the teeth of the ring to act.

I also claim forming the notches in the edge of the slide *n* in combination with the spring-catch *o*.

No. 15,215.—HAZEN J. BATCHELDER.—*Improvement in Dental Forceps*.—Patented July 1, 1856.

The inventor says: I do not claim the application of a rest or bearer to a pair of dental forceps whereby they may be supported on any part of the jaw or teeth adjacent to a tooth to be extracted. Nor do I claim combining the forceps with the fulcrum slide or plate by a universal joint. Nor do I claim combining with the fulcrum or bearer the handle or lever by which the said fulcrum may be maintained in place.

But I *claim* applying or connecting the forceps A and the bearer B by a stirrup *h* and slot irrespective of the universal joint, or the equivalent therefor, so that the distance between the extreme end of the bearer and the points or ends of the jaws of the forceps may be adjusted, or, in other words, either increased or diminished as circumstances may require.

No. 15,730.—JOHN G. COATES.—*Improvement in Dentists' Forceps*.—Patented September 16, 1856.

The nature of this invention consists in using removable and revolving beaks *c*, to be inserted into the dental forceps, so as to be adapted to any formation of teeth and to grasp said teeth with a uniform bearing during the process of extracting.

Claim.—Constructing forceps with rotating beaks, to adapt themselves to the exterior formation of the tooth, substantially as and for the purpose specified.

No. 14,085.—JOSEPH CHEEVER.—*Improvement in Apparatus for curing Varicocoele, Sterility, Impotency, and other diseases of the Genital Organs*.—Patented January 15, 1856.

The chain T is attached to the plate in the back pad S, and from thence it is carried through the hollow belt A; near the buckle U, it is carried through the side of the belt and into strap V; thence down through the hollow strap, through the side of the strap at the lower end and over the outside of the scrotum bag C. The chain is then carried through the bag and fastened to one of the series of plates *x*, which are connected together by smaller chains. The plate in the pad S and the series of plates in the scrotum bag are of positive and negative metal respectively.

The inventor says: I am aware that there is nothing new in the application of galvanic electricity for the cure of diseases, and that electro-positive and electro-negative metals have been applied in pads, and in various ways, to diseased parts of the human system; I, therefore, do not claim such, nor do I claim making a scrotum sack of net-work. But I *claim* combining the electric plates of an elastic scrotum sack by chains, or such a series of electrical conductors, extending from one to the other as described, as will permit the necessary expansion or contraction of the sack to take place without obstruction therefrom.

I also claim extending the connecting-chain of the positive and nega-

live plates into and throughout one of the straps of the scrotum sack, and thence into and through the body-belt, substantially in manner and so as to protect said chain from injury, as herein before specified.

No. 15,372.—JOHN S. DRAKE.—*Improvement in Artificial Hands and Arms*.—Patented July 22, 1856.

3 represents a ratchet-wheel on the part *c* at the joint *i* with a pawl 4 and spring 5, which will hold the fore-arm at any desired angle relatively with the stump; and when said fore-arm is to be dropped, so as to hang down, the back of the pawl 4 is pressed on, disengaging it from the ratchet 3. The whalebone ribs *d* extend from the straps *c* to the circularly formed wrist *e*, which receives the wrist-piece *f*, which, by means of the mortises 7 and rivets 6, can be turned to a limited extent. By pressing on the outside covering of the hand, the pawl *m*, which may be also applied to any joint of the hand, can be adjusted so as to keep the joints in any desired position, or to disengage the pawl from the ratchet 13. The fingers can be turned freely towards the palm of the hand, and will be held there by means of their respective ratchets and pawls. By pulling out the button *s*, the cross bar *p* is driven up and overruns the rods *t*, which will bring the fingers back to their distended position.

Claim.—I *claim* the ratchet 3 and pawl 4, in the elbow joint, to sustain the fore-arm at the proper position relatively with the stump, substantially as specified.

I also claim the construction of the wrist joint *f*, with the slots and stops for allowing the necessary motion, substantially as specified.

I also claim forming the knuckle-joints and joints between the different parts of the fingers and thumb with ratchets and pawls, so as to secure said joints at the point to which they may be moved in adjusting the fingers or thumb to any given article or purpose, substantially as specified.

I also claim disengaging the pawls *n* and *o* from their respective ratchets by means of the sliding cross-bar *p*, (actuated by competent power,) rods *t*, and cam pieces 20, substantially as specified.

I also claim the arrangement of the bars *p* and *q*, crank *r*, button and rod *s*, for actuating the bar *p* and rods *t*, substantially as specified.

And, in connexion with this arrangement, I also claim the cross lever 22, for actuating the bar and pawl *u* of the thumb, substantially as specified.

No. 15,831.—O. D. WILCOX.—*Improvement in Artificial Legs*.—Patented September 30, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The employment of the pulley P, at the knee-joint, as a common centre of motion of the elastic cords M M¹ and N N¹, as

described, for the purpose of producing a natural movement of the artificial limb, in the manner set forth.

I also claim the employment of the sack O, whether used in this limb or any other.

No. 14,836.—WILLIAM SELPHO.—*Improvement in the Construction of Artificial Legs*.—Patented May 6, 1856.

The nature of this invention consists in so forming the joint at the knee that there is no liability to move sidewise, but at the same time the limb is free to move in the natural manner. A similar joint is used for the ankle, but applied in connexion with an India-rubber cushion, which allows the foot to accommodate itself to any irregularities of the surface on which it rests.

The inventor says: I do not claim a ball and socket joint, as these have been used, but the same are liable to motion and wear sidewise; neither do I claim two knuckle or strap joints, as these have been used, one on each side of the knee or ankle joints, but these are objectionable on account of the small bearing surface; neither do I claim springs for throwing the toes of the foot up; neither do I claim spring toes in themselves, as they have heretofore been jointed on to the foot and kept in place by metallic springs. But I claim the semi-cylindrical joint *b*, fitted with the pipe 2 and pin 3, to connect said joint together, and give facility for lubricating the same.

I also claim, in combination with said semi-cylindrical joint, the elastic cushion 6, at the ankle joint, for the purpose specified.

I also claim the elastic cushions 9 and 10, on the upper part of the heel and lower part of the limb *c*, to act in the manner and for the purpose specified.

I also claim attaching artificial toes of India-rubber to the wooden part of the foot, to act in the manner and for the purposes specified.

No. 14,293.—F. ROESLER.—*Improvement in the Construction of Pessaries*.—Patented February 19, 1856.

Figs. 3 and 4 are drawn on a smaller scale than figs. 1 and 2.

Claim.—An instrument composed of a ring A and two supporting pieces B B, hinged thereto by spring-stop hinges, either with or without a front or back supporting piece A.

Also, fitting the supporting pieces A A to their hinge with a pin *f* and socket *g*, or the equivalent thereof, to allow of one or both of the supporting pieces being set oblique to the ring or extended lengthwise.

No. 14,161.—NOAH W. KUMLER.—*Improvement in Pill-Making Machines*.—Patented January 29, 1856.

The pill material 24 is placed in the opening 26 upon belt 2, whence it is rolled and carried along by apron 2 between plates 4 and 7, and

down between plates 5 and 8, and discharged between the grooved roller 12 and segmental plate 14, where it is cut into proper sized pieces and rolled into balls.

Claim.—The combination of the adjustable plates 7 and 8, apron 2, pulley 1, and drum 3, and these in combination with the grooved roller 12 and segmental plate 14, all substantially as and for the purposes set forth.

No. 16,066.—EDWIN M. MURPHY.—*Medical Respirator*.—Patented November 11, 1856.

In using this inhaler the medicine is first reduced to a powder and introduced through the opening B; then by introducing the mouth-piece E into the mouth, closing the lips, placing the thumb over the opening B, and inhaling the air through the opening C, the fan A is revolved, which fans up the powder in a cloud, which is thus inhaled directly into the lungs.

Claim.—The combination with the usual medical inhaler of a fan A, to be revolved by the act of inhalation, in the manner and for the purposes substantially as specified.

No. 14,853.—JOHN CLOUGH and DANIEL M. CUMMINGS.—*Improvement in Surgical Splints*.—Patented May 13, 1856.

The nature of this invention will be understood from the claims and the engravings.

Fig. 2 represents a view of the splint as applied for a fracture of the limb below the knee.

Fig. 3 represents a view of the splint as applied to the limb for a fracture or dislocation of the thigh.

Claim.—1st. The bed composed of strips of cotton cloth *h h¹ h²*, &c., or other suitable material passing through the slots *i i² i⁴ i⁵*, &c., in the leg side-pieces A A¹.

2d. The foot frame and bed composed of the oblique standards I I¹, the bone P, and the strips of cloth *h h* or other suitable material passing through the slots *i i¹ i² i³*, attached to and adjustable upon the leg side-pieces A A¹.

3d. The device for extending the leg by the employment of the lower extension screws *e e¹*, the traversing nuts *j j¹*, and their guides *k k¹* with their connecting straps *x¹ x² x³*, in combination with the cross-bars J and K, the leg side pieces A A¹, the femur side-pieces F F¹, the femur splint E, the cushions G and H, the bolster L, the bandages V and O, with their connecting straps and the brass straps V V¹.

4th. The device for extending the thigh by the employment of the upper extension screws *r r¹* in combination with the femur side pieces F F¹, the leg side-pieces A A¹, the femur splint B, the cushions G and H, the bolster L, the bandages Y and O, with their connecting straps, and the brass straps V V¹.

5th. The device for flexing and extending the limb by the employ-

ment of the elevating screw *c* and its supports *y y*¹, in combination with the cross-bar *M*, the leg side-pieces *A A*¹, the femur side-pieces *F F*¹, the supports *m m*¹ and *o o*¹, the braces *t t*¹, the elongating arbor *T*, the concave flooring *N*, and the bed pieces *B C* and *D*.

6th. The elongating arbor *T*.

7th. The device for spreading and contracting the splint by the employment of the elongated tenon *d* passing through corresponding mortises in the lower ends of the bed-pieces *B C* and *D*, the double elongated tenons *j j j*¹, firmly fixed in the upper ends of the bed-pieces *B* and *D*, and passing through a corresponding mortise in the upper end of the bed-piece *C*, and the confining pin *k k* in combination with the bed-pieces *B C* and *D*, the supports *m m*¹ and *o o*¹, the braces *t t*¹, the elongating arbor *T*, the femur side-pieces *F F*¹, the leg side-pieces *A A*¹, and the cross-bars *J* and *K*.

No. 15,504.—JAMES T. ALSTON.—*Improvement in Invalid-Supporters*.—Patented August 12, 1856.

The principal features of this invention will be understood by reference to the claims and illustrations. The supporter can be used to support the invalid when in bed. The invalid is placed between the sides *d* of the frame, and is supported by the cushioned back *g* and the arms *a a*. When the flaps *c c* are combined with each other, they form a seat for the invalid to sit upon when the supporter is placed upon the floor.

Claim.—Hinging the cushioned back thereof to the central connecting cross-piece *k* of its base-frame, when the side pieces of said frame, in front of said cross-piece, are left open for the reception between them of an invalid to receive the benefit of the back and arms of said supporter, substantially as set forth.

I also claim connecting the arms *a a* to the base-frame of the supporter in such a manner that either of said arms can be readily detached from said frame, and be confined therewith again, when the said base-frame is left open in front, and is combined with the back of the supporter, substantially as set forth.

I also claim combining the recessed flaps *o o* with the arms *a a* of my improved invalid's supporter, when the said arms are arranged in conjunction with the base-frame and the back of the supporter, substantially as set forth.

No. 14,524.—JOHN STULL.—*Improvement in Syringe Bottles for Medicinal Agents*.—Patented March 25, 1856.

A represents the bottle, and *B* the syringe. The metallic band *C* is fitted around the neck *d*. The inner side of this band has a screw cut into it in order to receive the cap *f* of the syringe.

Fig. 2 shows the manner of adapting the syringe to a common bottle. *h* is a cork which serves as a substitute for the ring *C*.

The inventor says: I do not confine my claim to either of the parti-

cular modes described of constructing the apparatus; but I *claim* the combination and arrangement of a syringe and bottle, so that the latter shall serve as a protraction case for the former, as well as a receptacle for the medicament to be used thereby, substantially as described.

No. 15,966.—ISAAC B. BRANCH.—*Apparatus for Applying Freezing Mixtures to the Teeth*.—Patented October 28, 1856.

The freezing mixture, which is contained in the receptacle *B*, imparts a low temperature to the cover *f*, which is made of India rubber, or other conducting material, and the cold surface thereof is applied to that part of the body which is to be operated upon, thus producing insensibility to pain in said part; the spiral spring *g* and follower *h* serving to bring the solid parts of the freezing mixture in contact with the conducting cover *f*.

Claim.—The employment in instruments for applying cold as an anæsthetic of the lip or lips described, substantially as and for the purpose set forth.

Also, the combination with said instrument or the application thereto of the spiral spring *g* and follower *h*, or of their equivalent, substantially as and for the purpose set forth.

No. 15,139.—SAMUEL MALLETT and AUGUSTUS B. SMITH.—*Improvement in Adjustable Punches for Setting Artificial Teeth*.—Patented June 17, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The combination of two punches, one immovable, the other (fig. 2) movable in the slot *c*, with a spring *d*, and the two cavities, one *e* in the plug or immovable punch, and the other *e*¹ movable with the movable punch, the latter to be set by the insertion of the wires of the teeth into said cavities, in order to make the distance between the holes in the plate correspond with the distance of the pins in the tooth.

No. 14,924.—WILLIAM G. OLIVER and THOMAS HARRISON.—*Improvement in Devices for Setting Artificial Teeth*.—Patented May 20, 1856.

The nature of this invention will be understood from the claims and the engravings.

Claim.—Making the teeth with grooves in their cheeks, and attaching them to the plate by fusible metal cast into said grooves.

We also claim making the plate and attaching the teeth at one operation by casting.

No. 15,965.—HAZEN J. BATCHELDER.—*Tooth Extractor*.—Patented October 28, 1856.

When the jaws *a* embrace the tooth, the operator has only to apply his left hand to the arms *b*, so as to close the jaws *a* firmly upon the

tooth, the spring bolts *h* serving to maintain the grasp of the jaws upon the tooth. The fastening of the instrument having been thus effected, the operator is enabled to use it as a turn-key, while the handle *C* is held in his right hand.

Claim.—The described improved dental instrument or combination of forceps, the latching mechanism, the supporting shank, and handle, applied and arranged together, substantially as specified.

No. 15,706.—JOHN L. NEWELL.—*Improvement in Casting Artificial Tooth Plates by the Electrotpe Process.*—Patented September 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I do not claim the electrotpe art of depositing metals into casts or moulds; neither do I claim the making of the cast or mould; but I *claim* constructing the linings in one piece, and simultaneously with the plate, by the electrotpe process, as set forth.

Also, filling the interstices of artificial teeth, when attached to a metallic plate, with a metallic precipitate solidified, in the manner described and for the purpose specified.

No. 14,440.—JOHN BROILES.—*Improvement in Hernial Trusses.*—Patented March 18, 1856.

The claim and engraving fully explain the nature of this invention.

Claim.—The peculiar adaptation of the steel ribbon to the body of the patient, by making its lower edge flared out, the block or circle end flared out on its upper edge for about two inches, the strap end slightly curved upwards, and the block end curved downward and outwards on its upper edge, in combination with a pear-shaped pad *A*, having a slice taken off, commencing at the outer edge of the base and continued to about two thirds its length towards the seam, thus forming a broad plane surface to be applied to the body of the patient.

No. 16,292.—SYLVESTER J. SHERMAN.—*Improvement in Truss Pads.*—Patented December 23, 1856.

The spherical ball *G* is firmly attached to strap *A*, and placed between the two plates *H* and *I*; the screw *b* serves to hold the two plates together, while they can be drawn together by means of screw *c*, until the required degree of resistance is obtained.

The inventor says: I do not claim setting truss pads to a given position, nor do I claim a ball and socket joint; but I *claim* rendering the joint of truss pads rigid in any desired position, by compressing the ball between two plates, as described.

No. 15,858.—CHARLES C. REINHARDT.—*Improvement in Glass Earthen Truss-Pads.*—Patented October 7, 1856.

This invention consists in constructing the back *B* with a flange *f* extending around its edge, so as to slip within the rim constituting the edge of the glass pad *G*, whereby the back *B* is secured to the glass.

Claim.—The attachment of metallic backs to the glass faces of truss pads by a flange around the edge of the back slipping within the rim, constituting the edge of the glass-face piece, substantially as and for the purposes specified.

No. 14,993.—WILLIAM ALLEY.—*Improvement in Uterine Supporters.*—Patented June 3, 1856.

The nature of this invention consists in the addition of circular wings, springs, and hinges to the common or ordinary pessary now in use, and worn by females to prevent the falling of the womb.

Claim.—The circular wings *A*, perpendicular springs *B*, and the hinges *C* to the wings.

No. 15,897.—WILLIAM PROVINCES.—*Improvement in Uterine Supporters.*—Patented October 14, 1856.

The flexible tube or syringe *a* can be inserted into the mouth piece *b*, and the supporter *C* made of elastic material can be inflated to any desired degree. By introducing a blunt point into the opening *b*, the valve *d* can be raised, and the air will escape from the supporter, and the latter will be reduced to a flaccid state.

Claim.—The combination of the ball and the valve apparatus, described in the manner and for the purposes set forth.

XXI.—WEARING APPAREL.

No. 15,570.—WILLIAM OSBORN.—*Improvement in Machines for Pressing Bonnets and Bonnet Frames.*—Patented August 19, 1856.

The nature of this invention consists in the peculiar shape of the upper and lower dies *J* and *c*, as represented in the illustrations; the upper die being provided with heaters *a*, and the lower die with a heater *b*, by which the entire bonnet can be pressed by one single impression.

The inventor says: I do not claim any of the separate parts set forth. Neither do I claim pressing or forming a separate flaring face-piece or a separate crown-piece for bonnets or for bonnet frames.

I *claim* forming the flaring face-piece and side crown of a bonnet or a bonnet frame in one piece and at one operation, substantially in the manner set forth, and irrespective of the particular form of the bonnet or frame.

No. 15,671.—WILLIAM SLADE.—*Improved Buckle for Wearing Apparel*.—Patented September 2, 1856.

This buckle is constructed of two bows B and two sets of tongues b. Both pairs of tongues may be secured to a single central piece A, to which the bows are hinged at four corners a, or each set of tongues may have its separate axis hinged to the bows and connected with each other by links C.

Claim.—The double-jointed buckle, constructed substantially as set forth.

No. 15,666.—EDWARD PARKER.—*Improved Buckle for Wearing Apparel*.—Patented September 2, 1856.

The nature of this invention will be understood from the claim and engraving.

Claim.—Swaging or cutting the blank, or the bow A and loop B, entire or in one piece, from a metal plate, and securing the tongue D in the buckle by bending or closing the cross-piece C around the shank c, substantially as described.

No. 14,019.—WALTER HUNT.—*Improvement in Shirt Collars*.—Patented January 1, 1856.

The nature of this invention will be readily understood by reference to the accompanying claim and illustration.

Claim.—What I claim as my invention and desire to secure by letters patent in the manufacture of shirt collars, or sham shirt collars, is uniting only the extremities of the lower edges of the side pieces b b to the neck band d by means of any suitable fastenings, for the purpose of enabling a flat-sided collar to fit easily and gracefully about the face, substantially as herein set forth.

No. 14,308.—OTHNIEL W. EDSON.—*Improvement in Machinery for Making Shirt Collars*.—Patented February 26, 1856.

The jaws A and B have longitudinal folding corners v and u. The upper jaw A is thin at its rear end, so as to constantly spring upward. The elastic tongue D is fastened to B, and springs into and fills u when not held up. C is another tongue similar to D, fastened to A, and filling recess v. One thickness of the double cloth W is inserted between A and C, and the other between B and D, and the edges of both layers between E and F, (see fig. 1.) The cam N is then turned, (see arrow q¹.) when C and D will spring back into their recesses, and clamp the cloth in the corners u and v, (see fig. 3.) To insure the crimping, the clamps are then pressed together (see fig. 4) by the action of projection j², and then allowed again to separate (see fig. 3) when N reaches position fig. 2. As N is turned further, the blades E and F are carried between C and D, and thus the edges x y are folded

inwards, (see fig. 5.) and by turning the cam further the clamp A is pressed down (see fig. 6) to insure the crimping between C and E and between D and F. N is then turned back so as to allow E and F to spring back to position fig. 1, when the folded cloth is drawn from between the jaws and tongues ready for stitching, (see fig. 7.)

The inventor says: I do not limit my claim to the particular modes herein described of giving the desired or necessary movements to the jaws, tongues, and blades, as other devices besides the cams and levers shown in the drawings can be effectually employed in their stead for these purposes.

I claim the jaws A B, tongues C D, and blades E F, when the same are combined and operated substantially as herein described, to simultaneously fold inward two contiguous edges of double cloth.

2d. I claim giving a forward longitudinal motion to the blades E F immediately after the edges of the cloth have been turned inward thereby, as herein described, to complete the formation of the corners of articles folded.

No. 15,634.—WILLIAM FOSKET and BENJAMIN S. STEDMAN, assignors to JULIUS PRATT & Co.—*Machine for Sizing Comb-Blanks*.—Patented August 26, 1856.

Rotary motion being imparted to the arms G G G, the blanks are placed upon the resting place c between the arms G. The blanks rest at their lower edges on the rebate f, and their upper edges are supported by the projection a. The blanks are swept around by the arms G, and passing from the narrow part of the groove to the wider part of the same, they will drop through such one of the openings E as exactly corresponds to the length of the blank. In fig. 1 one blank is represented as being supported by the edge a and rebate f, while the other is on the point of dropping through the opening E.

Claim.—The gradually receding edge a, arranged within or around and inclining towards a rebate f, so as to form a tapering opening E between them, with a resting place c at the narrow end of the opening, when combined with a set of arms G G rotating or otherwise moving over the opening, and with boxes, compartments, or other receptacles below, to operate substantially as and for the purpose set forth.

No. 16,289.—SELIGMAN H. STROUSE and JOSEPH STROUSE.—*Improvement in Shirts*.—Patented December 23, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventors say: We do not claim the formation of the sweep or the arched profile from the neck to the shoulders of shirts by means of inserted pieces, such as gussets.

We claim the yoke a constructed as described, with curved springs C d, in combination with the manner of attaching the same to the back of the shirt, with the gathers in the centre, as set forth.

No. 16,050.—JOHN P. DERBY.—*Sleeve Fastener*.—Patented November 11, 1856.

The cross-bar F is attached by means of stem D to the face-plate A, and is inserted through a hole in the wristband and attached to its underside. The face-plate A is then turned and the stems N are inserted into the slots P on the under side of said face-plate. The object of the cams will be understood by reference to the claims.

Claim.—Arranging and combining with a face-plate by means of a post or stem, or cross-bar or plate, which, with proper construction, admits of the insertion of a stem or stems into the holes of a wristband or cuff, and is then secured in place by means of slots in the plate that revolves until the stems are entered therein.

Also the spring which serves to keep said stems in place in the slots, and which prevents the face-plate from being turned until its force is overcome.

Also combining with the stem of face-plate and cross-bar, in manner substantially as described, two sets of cams, whereby the distance between the stems of cross-bar and face-plate can be graduated to receive the wristbands at pleasure, and whereby the distance that the face-plate and cross-bar traverse in opposite directions may also be controlled, the whole making a perfect and safe fastener for the purpose described.

No. 14,756.—LUCIUS PAIGE, assignor to Himself and ALBERT L. LINCOLN.—*Improvement in Studs for Wearing Apparel*.—Patented April 22, 1856.

The inventor says: I am fully aware that it is not new to make a shirt stud with a wire shank extending from its centre and bent around in a helix or spiral form. Therefore I do not claim the same nor the principle of the screw contained therein.

But I *claim* my improvement, which consists in constructing the back disk holder of an ordinary shirt-stud or button with the slit *d* extending from its circumference to the shank, and having one of its edges raised with respect to the other.

No. 15,824.—AMOS STOCKER.—*Improvement in Tailors' Measures*.—Patented September 30, 1856.

The shape of this instrument for taking measures is represented in the engraving; it is provided with a number of eyelet-holes A B C, &c., and with small hooks at the points A and R. In using this instrument the straight edge is placed on a line with the bottom of the arm, as represented, extending to the centre of the breast or beyond, and serving as a base line from whence to start in taking the measures.

The inventor says: I do not claim such an instrument as the one patented to B. J. Lewis, November 19, 1833; nor do I claim the instrument as described by Samuel T. Taylor, rejected November 18, 1840.

Nor do I claim the instrument referred to as patented to W. J. Wells, April 20, 1852; nor do I claim as new the use of a tape measure, as seen in figure 12; nor do I claim the use of the hooks as new.

But I *claim* the instrument, as seen in figure 1, with the arrangement of its eyelet-holes, eyelets, and letters, substantially as described and for the purpose set forth.

No. 16,106.—C. W. WILLIAMS.—*Improvement in Tailors' Pressing-Machines*.—Patented November 18, 1856.

By reference to the engraving it will be seen that the pressing iron *l* is suspended from a convex disk *b*, which turns upon a ball and socket joint *e*, and that the hand-lever *k* is connected to the disk by means of a universal joint, consisting of the joints *n* and *o* and turning rod *p*. By moving the pressing iron in the same manner as by ordinary hand pressing, by means of handle *k*, the operator can regulate the pressure with a very slight expenditure of strength.

Claim.—Suspending the iron or goose from a convex disk, which turns freely upon a ball and socket joint, or its equivalent, and which forms a bearing for the lever to act against, as set forth.

No. 14,431.—CHARLES C. REED, assignor to CHARLES C. REED, WILLIAM S. REINERT, and JACOB SCHNELL.—*Improvement in Umbrella Ribs*.—Patented March 11, 1856.

By combining strips of cheap material with narrower strips of whalebone, umbrella ribs can be furnished at less cost than those made entirely of whalebone.

Claim.—The manufacture of umbrella ribs, by grooving a cheap material, such as hickory, bamboo, or ratan, and securing within the groove a strip of whalebone, substantially in the manner set forth.

No. 16,063.—JAMES W. MARTIN.—*Improved Method of Preparing Ratan for Umbrellas*.—Patented November 11, 1856.

The ratan is first squared by passing it through between the knives *a b*, which operate on three sides, the fourth resting on a metal plate of a frame, to which said cutters are attached. When the ratan is squared, it is fastened between the jaws *i* of the mandrel *h*, and operated upon by the rotating cutter *l*, by which the end is formed to the proper shape.

Claim.—The combined devices, as described, for forming and tipping the ratans or whalebone for umbrella ribs, as set forth.

No. 14,683.—DEWITT C. WARNER.—*Improvement in Wigs*.—Patented April 15, 1856.

This invention consists in attaching the hair to a ground-work of gutta-percha, either in the form of a perfect scalp or frame-work for

a whig, or in plates or strips of any desired form for toupees, plaits, curls, &c.

The inventor says: I do not confine myself to any particular method of inserting the hair in the gutta-percha.

But I *claim* attaching the hair to a ground-work of gutta-percha, by means of the adhesive property of the gutta-percha, as developed by the application of heat.

No. 16,140.—JOHN P. DERBY.—*Wristband-Fastener*.—Patented December 2d, 1856.

When the fastener is open, as in figure 2, the stationary arm C can be inserted into the button-hole of the wristband; and when so inserted, the section D can be easily entered. When both are entered by turning the face-plate A, the position of lever F is altered, which has the effect to turn the wing D, thus closing the fastener. The face-plate A, being attached to cross-piece B by means of joint P, is easily turned; and when the fastener is closed, it is held in place by means of slot N, which a projection on the cross-piece B enters.

Claim.—Arranging and combining with a face-plate, in manner substantially as described, two parallel cross-pieces B and C; one of which, the lower or second cross-piece, is constructed with a movable section D.

The hollow stem E, through which the post passes, that is connected with the movable section of the cross-piece.

Also, the arrangement of the lever H, in connexion with the face-plate and the movable section D of the cross-piece, whereby, by turning the face-plate, the desired motion is given to the cross-piece or wing; the whole making an effective fastener for the purposes described.

XXII.—MISCELLANEOUS.

No. 14,719.—WILLIAM H. HALE.—*Improvement in Hotel Annunciators*.—Patented April 22, 1856.

By drawing the wire D, the hammer 2 is made to fall over and strike bell G, resting on rack H, opposite apertures in front board, (fig. 2,) and remains until crank J is turned, which raises rack H and throws said hammer back at rest, like hammer 1, ready to work again.

The inventor says: I do not claim the device of tilting number plates to denote which number is wanted, as it is not new; but I do *claim* the combination of the number plate with a hammer, whereby I am enabled to show the number and strike the bell with the same piece.

I also claim the arrangement of said tilting number plates, or number hammers, or their equivalents, in ranks upon ranks of wires, respectively operating them, the wires passing through slots in the hammer levers.

No. 16,116.—EDWIN O. GOODWIN.—*Improvement in Backgammon and Checker Boards*.—Patented November 25, 1856.

The playing face of the checker board is provided with indentations A of a proper depth to receive the pieces and to prevent them from sliding together when at play. The backgammon side, (fig. 2,) is provided with raised partitions B, to prevent the pieces from sliding from one partition into the other. Each of the halves of the box is provided with a drawer C, to hold the pieces when playing and when not in use. These arrangements are made so that two persons can play when riding in railroad cars, carriages, or on shipboard.

Claim.—The construction of draught boards with the indentations on the face, the raised divisions in the backgammon part, and the drawers for the pieces, all in combination, in the manner and for the purpose substantially as set forth.

No. 14,900.—SAMUEL D. QUIMBY, assignor to EDWARD A. LOCKE.—*Improvement in Frames for Travelling Bags and Mail Pouches*.—Patented May 13, 1856.

The gore-pieces D C serve to extend the hinges apart from one another, and also to project into or close the opening between the frames when they are brought together.

Claim.—The improved mouth frame, or combination of two folding side frames A B, and two hinge-extenders and gore-closers C D, arranged, connected, and made to operate together, substantially in manner and for the purpose as stated.

No. 15,042.—SERVETUS LONGLEY.—*Improved Apparatus for Rolling and Handling Barrels, &c.*—Patented June 3, 1856.

The nature of this invention will be understood from the claim and the engraving.

Claim.—The levers 2 and 3, in combination with the spring 6, chain 8, cam attachment 9, clutches 10 and 11 working freely upon wrists, and the handle 4.

No. 14,964.—CONRAD LEICHT.—*Improved Billiard Cues*.—Patented May 27, 1856.

When the cue to be topped is inserted into the tube C, the screw D is turned until it comes in contact with the surface of the cue; the gimlet B is then inserted until the handle comes in contact with the head of the screw, this being the depth required, and thus making all

holes uniform in the cue. The top layer G is affixed to the cues by means of a screw H, thereby preventing their falling off, or of admitting said tops to be replaced at a moment's notice.

Claim.—My mode of providing the cue tops with screws, and adjusting them to the cues, in the manner as above substantially described.

No. 14,290.—MICHAEL PHELAN.—*Improvement in Billiard-Table Cushions.*—Patented February 19, 1856.

The object of this improvement is to construct a cushion of the proper degree of elasticity, and which will cause the ball to perform perfect angles over its entire surface.

Claim.—A billiard-table cushion, composed of a block of India-rubber C, a layer of cork D, and strip of leather E, arranged, combined, and applied, and operating substantially as and for the purpose set forth.

No. 15,994.—WILLIAM B. CARPENTER.—*Improvement in Billiard-Table Cushions.*—Patented October 28, 1856.

The spring-strip A is secured to the wood-work C at its lower edge by means of screws c c. The upper edge is to be left elastic along its entire length; the space B between the spring A and wood-work C may be stuffed with cloth, and the cushion covered with leather.

The inventor says: I distinctly disclaim the use of the metallic spring-strip or facing in the construction of billiard cushions.

But I *claim* the mode described, or its equivalent, of fastening of the metallic spring-strip or facing firmly at or near its entire lower edge c c, substantially as and for the purposes described.

No. 15,788.—AMASA STONE.—*Improved Tool for Forming Grooves Around the Orifice of Bottles or other Vessels made from Plastic Substances.*—Patented September 23, 1856.

The circular flange F, which forms the groove around the orifice of the bottle, can be made to revolve freely with or without the plug G, which is inserted in the neck of the bottle at the same time that the jaws B are caused to hold the nozzle of the bottle by operating them by means of the springs A, to which they are attached.

Claim.—In the described tool for forming the orifices of bottles or other vessels made from plastic substances, with a groove around the orifice, the revolving flange F, constructed and arranged to form a groove in the end of the bottle-nose, or other vessel, substantially as described.

No. 15,098.—GEORGE BLANCHARD.—*Improved Apparatus for Cutting the Strings that Secure Corks in Bottles.*—Patented June 10, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The internal and slanting arrangement of one or more knives C inside the cup D, the knife or knives being so arranged in the cup that, when the cup is put over the cork and turned, the strings are immediately cut, and the cork safely received in the top of the cup.

No. 14,446.—HENRY N. DEGRAU.—*Improvements in Machines for Corking Bottles.*—Patented March 18, 1856.

The cross-head C, together with the cylinder G, is depressed by operating the treadle I. The cork is then placed in the upper end of the cylinder G, and the gas allowed to pass through tube U and cylinder G into the bottle S. When the bottle is charged, the piston H is made to descend by depressing one end of the lever K, whereby the cork is forced into the bottle.

The inventor says: I do not claim the piston H and cylinder G, operating as shown, for the purpose of placing the corks in the bottles, for they have been previously used; but I *claim* securing corks in bottles and other vessels containing liquids, charged or impregnated mechanically with carbonic acid gas, by having proper cork-holders T attached to the bottles or vessels, and closing the jaws of the same by the levers R h h and jaws P P, or other analogous devices, immediately after the corks are forced into the bottles by the piston H, so that the holders will secure the corks in the bottles as soon as the piston is withdrawn from them; whereby the corks are secured in the bottles without removing the bottles from the bed or platform of the apparatus, and consequently the work of charging the bottles with gas, placing the corks therein, and securing them in the bottles, is performed at one operation, as herein described.

No. 14,255.—JOHN SEITHEN.—*Improved Envelopes for Bottles.*—Patented February 12, 1856.—Antedated August 29, 1854.

The rushes or straws S are spread round the neck of the pattern E of the bottles to be covered. This is done when the ring L is at its lowest position (see full lines in the engraving); the lower ends of the rushes will then cover the exterior of ring L. The cap D is then brought down upon the top of the bottle, as represented in the engraving, and held down by a weight or otherwise. The elastic ring K is placed as represented by full lines, before commencing to make the envelope for the bottle. The rushes are tied in under the ring K by a string N. The ring L is then to be raised into the position represented by dotted lines, by which the lower ends of the rushes will be folded up, as represented by dotted lines, and may then be tied by strings 1 and 2. The cap is then removed, and the upper ends of the rushes are to be tied in by a string, thereby completing the envelope.

Claim.—The combination of mechanism and the making of envelopes for bottles, as herein described.

No. 15,802.—MILLS B. ESPY.—*Improved Mode of Hermetically Sealing Bottles*.—Patented September 30, 1856.

The flat cork *d* is placed upon the mouth of the bottle, and the screw collar *C*, composed of two parts, is held against the under edge of the lip of the bottle; the cap *B* is then screwed to said collar, and thus secures the cork *d* hermetically to the bottle.

Claim.—The employment of the two-part screw collar *C*, for the purpose of drawing down and holding the cover over the mouth of a bottle, so that the said bottle shall be hermetically closed by the cork *d*, or its equivalent, being compressed upon the upper edge of the lip of the same, as described; the said collar being constructed, applied, and operating substantially in the manner set forth and described.

No. 15,514.—JABEZ W. HAYES.—*Fruit Box*.—Patented August 12, 1856.

This invention consists in forming a box of two pieces of veneering *A* and *B*, and using no other fastenings than a cord. The piece *A* is slid through the slots *c* of the piece *B*, as represented in fig. 2; the sides are then bent at right angles, and fastened by means of a cord *e* passing through the notches *a*.

Claim.—The combination of the two pieces of veneering *A* and *B* with the notches or slots *a a a* and the longitudinal openings *c c*, interwoven at the centre, bent at right angles, and secured together by the cord *e* in the slots *a a a*, as described, and for the purpose mentioned.

No. 14,783.—CHARLES P. S. WARDWELL.—*Improvement in Box-Openers*.—Patented April 29, 1856.

The advantage of rotary dogs *C* is in presenting a flat surface to the wood and maintaining it during the operation of opening a box, which lessens the liability of splitting the cover.

Claim.—The employment of rotary dogs *C C*, or their equivalents.

I also claim the combined arrangement of the spring *G* and flattened shanks *F F* of the dogs, whereby the wedge lips of the dogs are kept in the same line or parallel with each other for convenience of insertion, without hindering the desired rotary motion of the dogs.

No. 16,017.—WILLIAM McLACHLAN, assignor to ROBERT LIVINGSTON.—*Burglars' Alarm*.—Patented November 4, 1856.

The plate *B* is fastened to the handle of the key *A*, and the alarm is set, as represented in fig. 1. When the key is turned, the ball *G* of rod *D* slips through one of the holes *O*, and the bell *J* falls into the position of fig. 2, bringing the stop *F* from the position *X* into the position *Y* which causes the hammer in the bell *J* to strike the alarm.

The inventor says: I am aware that alarms have been applied to locks; I therefore do not claim the alarm, or any particular construction of the alarm.

I *claim* simply the application of a portable alarm of any construction to the key, in the manner set forth, so that the key, being in the lock in one position, cannot be interfered with, or the position changed, without indicating the same by causing an alarm to be given.

No. 16,200.—WILLIAM PALMER SURGEY, assignor to CHARLES HENRY STANLEY.—*Improvement in Cigars*.—Patented December 9, 1856; England, September 25, 1854.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I am aware splints of wood or other matter, with combustible and ignitable composition applied thereto, have been inserted into the ends of cigars, and then, by the application of friction to such combustible composition, the cigars have been ignited; but such combustible compositions were formed separately, and were capable of being ignited separately, for the purpose of lighting; and to the best of my belief, such application has been found objectionable, from the trouble occasioned in effecting the insertion of the wood or other matter, to which the combustible composition was applied, and by the injury to the cigar, by breaking the end of it, in effecting such insertion. I do not claim for the application of such composition to the ends of cigars, cigarettes, or cheroots, in the form of separate instruments, to be applied, when formed into igniters; as my invention consists in applying the compositions so as to form the igniter into and as a part of the cigar, cigarette, or cheroot, whereby such ignitable matter, mixture, or composition, becomes a component part of such cigars, cigarettes, or cheroots, to be ignited by the simple application of friction, as when lighting fusees, vistas, lucifer matches, and other instantaneous lights, as expressed.

And I *claim* cigars, cheroots, and cigarettes, so made, as a new and useful article of manufacture.

No. 14,763.—WILLIAM DAWSON.—*Improvement in Cigar Machines*.—Patented April 29, 1856.

The cutter *W* cuts off the required amount of filling, and presses it between the rollers *b b* on to the flexible apron over the shaping dies *d d*. The wheel *C* in its revolution brings the projection *E* into contact with the clutch, and throws it into connexion with the roller *I*; the strap *J* moves the bed *K* forward; the flexible apron *L* attached to it moves under the forming rollers *b b* and over the shaping dies *d d*, rolling the filling and giving it a proper compression. The wrapper is placed diagonally on the apron *L*, and is wrapped around the filling during the further movement of the bed. When the bed *K* reaches nearly the end of its travel, the forward die *d* is moved by the strap *e*

and lever *f* away from the back die, allowing the cigar to fall through the aperture *i* in the apron *L* into a box.

Claim.—The combination of the forming rollers *b b*, the flexible apron *L*, and the shaping dies *d d*.

No. 14,732.—THOMAS PETHERICK.—*Improvement in Coal-Breakers.*—Patented April 22, 1856.

The coal, after falling from the platform *e* on the teeth or chisels, drops therefrom upon the sloping surfaces *g g* of the block *A*, and slides into the screens *h*. Any coal which may remain of a larger size may be, after passing over those screens *h*, elevated to the platform *e*, to be dropped again. The coal may be raised to the platform by an inclined plane, windlass, or by any other suitable and convenient means.

Claim.—The mode of breaking coal by causing it to fall from a suitable height, and between proper guards or guides *f f*, upon sharp pointed teeth *b* and chisels *c* placed on blocks *A*.

No. 16,098.—BENNETT POTTER, JR.—*Mode of Softening Cork by Steam.*—Patented November 18, 1856.

The rough cork in sheets is placed upon a wooden grating *C* in the boiler *A*, and steam being admitted, the action of the steam softens the shell and prepares the cork for cutting.

Claim.—Subjecting the cork to the action of steam for the purpose set forth.

No. 14,527.—WILLIAM H. TOWERS.—*Improvement in "Creepers" to Prevent Slipping on Ice, &c.*—Patented March 25, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Forming the "creeper" of three plates *B B A*, having calkins, or pins *B¹ B¹ A¹*, on their lower surfaces, and bent on their outer ends, and jointed together at their inner ends, and in such relative position to the sides and back portion of the heel of the boot or shoe, for which they are designed, as will enable their outer ends to move eccentric with the curves of the said side and back portion to secure the "creeper" to the heel, and their security of attachment to be increased by the act of planting the foot of the wearer in walking, as herein set forth.

No. 15,294.—ASAHEL A. HOTCHKISS and ANDREW HOTCHKISS.—*Improvement in Curry-Combs.*—Patented July 8, 1856.

The nature of this invention can be understood by reference to the claim and illustration.

The inventors say: We do not claim striking up or forming a curry-

comb from a solid sheet or piece, as this was patented to Andrew Hotchkiss on the 13th March, 1849; but we *claim* the turning of solid corners upon the shell to save riveting, and the serrating of the ends of the shell to form teeth thereon, the corners of the plate being first scoloped out, so as not to project beyond the teeth after they are bent up into shape, as set forth and represented.

No. 15,440.—SOLOMON W. RUGGLES.—*Pick-Pocket Detector.*—Patented July 29, 1856.

This device is worn similar to a watch, and has a chain attached to the hook *E*. A pick-pocket, in pulling the chain to extract the supposed watch from the pocket, will turn the spring-wheel *B*, and the projections *b* on the said wheel will actuate the hammer *C*, and the bell *A¹* will be sounded, the spring *h* throwing the hammer against the bell, and the alarm will consequently be given.

The inventor says: I do not claim in alarm-detectors starting or operating the alarm by pulling or drawing on a cord, or its equivalent, connected therewith; nor yet in such devices, of itself, the mechanism here employed of a spring-barrel provided with teeth, and in its rotation operating the spring-hammer of a bell to give a repeated alarm.

But I *claim* suspending the alarm-detector or instrument proper, including the case *A* and its working parts, by the cord or chain *D*, from or through the spring-barrel *B*, for alternate operation of the cord and bell-hammer by said barrel, in relation to the case, as and for the purposes specified.

No. 15,889.—DON J. MOZART.—*Improvement in Escapement Movements for Automatic Fans.*—Patented October 14, 1856.

This fan is kept in motion by a common clock-work, and the invention relates only to the manner of giving to the fan a reciprocating rotary motion, which is accomplished by means of the two scape-wheels *D* and *E*. Each of these wheels is provided with alternate sections of teeth *d* and *e*, and spaces between them, and the respective sections of each scape gear alternately into the pinion *f* on the fan-spindle *I*, thereby alternately turning said spindle and the fan *L* in opposite directions.

Claim.—In combination with sectional scape-wheels *D E* the banking-pin *M*, meeting the sections thereof at each vibration, substantially in the manner and for the purposes set forth.

No. 16,014.—ELMORE HORTON.—*Fishing Implement.*—Patented November 4, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

The inventor says: I am aware that spring grab-hooks, with notched cross-bar, have been used.

But I *claim* the spear cross-bar *c*, notched at each end *e e*, in combination with the spring-jaws *a a*, as set forth and described.

No. 14,587.—WOOSTER SMITH.—*Fishing-Lead*.—Patented April 1, 1856.

The lead A consists of a round piece of lead from two to five pounds in weight, with a swivel F to prevent the attached line from twisting. The cap B cannot be easily battered by striking the rocks at the bottom.

Claim.—The improved shape of my lead A, the improved mode of fastening the long part of the fish-line to the swivel F in the top of the lead, the cap B, of iron, brass, or other hard metal, on the bottom or descending end of the lead, the horse-line running through the lead at the bottom end, the swivels and rings D attached to the ends of said horse-line, to which rings of the swivels the small lines, to which the hooks are fastened, are attached, and said swivel in the top of the said lead, to which said long part of the fish-line is fastened, as aforesaid.

No. 15,466.—JOHN A. BAILEY, assignor to JOHN WARRIN.—*Reel for Fishing-Rods*.—Patented August 5, 1856.

The reel-frame A and reel B, with the line wound around it, are constructed in the usual manner, but the bevel pinion G on the crank-shaft F is kept out of gear from the pinion D on the reel-shaft by the pressure of a spring E upon the face of the bevel pinion G. By this arrangement, the reel will revolve freely when the line is thrown out, not being obstructed by the friction caused by the gearing. When the line is to be wound up, the pinions G and D are thrown into gear by pressing inwards crank H and crank-shaft F.

Claim.—The sliding crank-shaft F and spring E, arranged as shown, or in an equivalent way, so that the pinion D and wheel G may be placed in and out of gear, as desired, and the reel B connected with and disconnected from the shaft.

No. 14,706.—JULIO T. BUEL.—*Improved Fishing Tackle*.—Patented April 22, 1856.

The upper part of the shank terminates in a small barb A¹, whereby a minnow can be secured more permanently, and in a position to insure the capture of the fish. The hook consists of two parts, so as to allow the lower barb being turned out of line with the upper one; and the upper barb is so constructed that an elastic eye shall be formed, whereby the artificial minnow may be placed on or removed. The minnow-barb, combined with the barb A, turns free of the barb A, so that a spiral twist may be given to the natural minnow.

Claim.—1st. A hook with two barbs A A¹, substantially as and for the purpose set forth.

2d. Making the hook hang two barbs A A¹, in two parts, and uniting said parts loosely together, so that one shall turn free of the other.

3d. Combining with the barb A one or more minnow-barbs, and having one of the barbs turn free of the barb A, substantially as and for the purpose set forth.

No. 15,279.—EDWARD S. BOYNTON.—*Apparatus for Hitching Horses, Clothes-Lines, &c.*—Patented July 8, 1856.

To use this horse-hitch, the arm of the lever C must be pressed downward to open it for the strap D to pass through. The spring E will press the cam against the strap, and the eccentric form revolving will retain it fast, and the harder it is pulled the tighter it will hold.

Claim.—The application of a cam-shaped lever C for horse-hitches, in the manner and for the purpose substantially as herein set forth and described.

No. 15,337.—THOMAS J. GODMAN.—*Apparatus for Slaughtering Hogs*.—Patented July 15, 1856.

The hogs are scalded in the scalding-vat A and drawn out on the inclined bench B; and when arrived at the platform P, a gambrel is inserted into the hind legs and passed over one of the hooks H of the revolving wheel E, in which manner the hogs can be removed more expeditiously than by carrying them.

The inventor says: I do not confine myself to the precise details herein given, so long as the peculiar character of my invention is retained; but what I *claim* is, the horizontal revolving wheel or frame provided with hooks on its periphery, arranged at or near the scalding bench, and used to transport and transfer the hogs from the bench (on which they are deprived of their hair by pulling and shaving) to the scraper-down, gutter, washer out of the inside, and off-bearers who hang them in the drying-room, holding the hogs convenient to each laborer in succession a proper time for him to perform his allotted or respective portion of the slaughtering process.

No. 16,312.—JAMES BORTON.—*Improvement in Horse-Fastening*.—Patented December 23, 1856.

The operation of this apparatus is as follows: When the horse is to stand, the tie-rein C is attached to any one of the rings A by means of the spring-hook B. If then the horse attempts to move forward, the catch b, pressing against one of the teeth of ratchet a, carries the box D around with the hub of the wheel. By this means the tie-rein between B and C is wound around the hub of the wheel and quickly stops the horse.

Claim.—The combination of a ratchet-wheel with the hub of a wheel of a vehicle and with a tie-rein capable of adjustment so as to bear equally upon both sides of the bit of a horse or other animal used for draught, whereby the rein is drawn and the animal is checked if he move forward, and the rein is loosed if he move backward, as set forth.

No. 15,483.—ISAAC H. GIFFING.—*Instrument for Breaking Ice*.—Patented August 5, 1856.

In using this instrument the pointed end is placed on a piece of ice, the loop is held in one hand, and the weight B sliding on rod A is raised with the other, and when the weight falls down upon the shoulder *c*, the concussion will cause the ice to break.

The inventor says: I do not claim a pointed iron or steel for breaking ice.

But I *claim* the looped rod, the sliding ball or weight, and the point, all in connexion, as set forth, using for that purpose any metal of any size or shape that may be necessary for the purpose of ornament or for attaining the object in view, viz: breaking ice.

No. 16,152.—STEPHEN SCOTTON.—*Ice-Saw*.—Patented December 2, 1856.

The operation is as follows: The swinging frame M is turned to the desired angle by turning the wheel *k* so that the saw O may be set at the proper height to cut through the ice. By turning the crank G, the saw O is rotated and cuts the ice; the saw is fed to its work in consequence of the screw *h* gearing into the toothed wheel L, and as the front wheels *b* have points in their peripheries, the platform is moved along and is kept in a right line by the knife-edged plates *d* on the peripheries of the back wheels *c*. When the device has reached the end of its cut, the wheels of the platform are raised up from the ice by turning down the wheels S so that they bear upon the ice. This is done by turning shaft R by means of a lever attached to it. The wheel *o* is also depressed and made to bear upon the ice by turning crank *s* of shaft *q*; and by operating hand lever *l*, the wheel *o* is turned and the platform is moved laterally the width the blocks of ice are intended to be.

Claim.—1st. The saw *o*, operated or rotated, as shown, and placed in the swinging frame, which is rendered adjustable by means of the rack Q, pinion *i*, and notched wheel *k*, as described, for the purpose set forth.

2d. Moving the platform A and feeding the saw O to its work by means of the wheels H I on the driving shaft C, the pinion *f* and screw *h* on the shaft J, and the toothed wheel I on the axle B, as shown and described.

3d. Moving the platform A laterally, when necessary, by means of the wheels S S on the shaft R, and the wheel O on the plate T, these parts being arranged as described.

No. 15,226.—SAMUEL B. FAY.—*Metallic Hooks for Labels*.—Patented July 1, 1856.

The nature of this invention will be understood from the claim and engravings.

Claim.—The constructing of tags or labels by affixing thereto a hook E so formed as to readily hook into the goods to be marked, and by the spring of its shank retain its position without being liable to become readily detached.

No. 15,883.—DOMINICO GIAMBASTIANI.—*Firemen's Ladder*.—Patented October 14, 1856.

This firemen's ladder consists of sections *a b c d e*, which can readily be put together, so as to form a double ladder of great steadiness and strength. The two lowest frames are connected by braces *f*, which are hinged together, and to the frames at *t u* and *s*, forming the foundation for the upper structure, consisting of the rest of the sectional frames. The entire ladder can be folded and put together, so as to be transportable.

Claim.—The combination of the folding foundation-frame *e e'* with the detachable single ladder sections *a a'* *b b'* *c c'* *d d'*, as above described, and for the purpose stated.

No. 15,941.—SIDNEY S. TURNER, assignor to Himself and ELMER TOWNSEND.—*Machine for Splitting Mackerel*.—Patented October 21, 1856.

In the operation of this machine, when the carriage E is drawn entirely backward, it is ready to receive a mackerel between the jaws H I. During the act of retracting the carriage, the front arm of lever K will be drawn against the post N, and so as to cause the lever to be moved on its fulcrum, and thereby move the jaw I away from the jaw H, thus opening the jaws for the reception of the fish. On introducing the mackerel between the jaws, its head is to be presented towards the cutting-knife B, the belly resting on the carriage E. The carriage is then moved in the direction of the arrow, causing the shaft C and cutter B to revolve at a rapid speed, and to force the rearmost arm of lever K in contact with post M, thus moving the front end of the jaw H away from that of jaw I. During the operation of the machine the mackerel will be split, and be thrown out from between the jaws, and discharged from the machine.

Claim.—Combining with the cutting-knife B and the movable carriage E a set of centring and holding jaws H I, or the mechanical equivalent therefor.

Also, the improvement of making the knife move faster than the carriage, or in other words, combining with the cutting-knife and the carriage a mechanism for rotating the cutting or splitting part of the knife at a greater velocity than the carriage may be moved, the same being not only to facilitate the splitting of the fish, but to cause the discharge of it from the carriage, as described.

Also, combining with the holding carriage, the centring jaws, and the splitting-knife, a mechanism for operating or opening the centring

jaws to allow of the discharge of the fish by the action of the knife as specified.

Also, combining with the holding carriage, its centring jaws, and the knife, a mechanism to open the said jaws during the backward movement of the carriage, the same being to prepare said jaws for the reception of a fish, substantially as set forth.

No. 15,393.—CALVIN D. SMITH and HORACE PATTERSON.—*Improved Friction-Match Machine*.—Patented July 22, 1856.

The motion of the table B on moving towards the dies brings the projection J against a stationary cam R, so as to turn the plate G, and press the pieces I I I on to the splints, as the table B finishes its motion that way, at which point it rests until the block E comes against the dies F, moving with the same speed as the block-holder, until the splints are forced out of the dies, and are left in the pieces I I I. The table B continuing its motion towards the rack, motion is given to the elevator K, which separates the pieces I I I in time to enter the ends of the splints into the grooves; the last part of the motion of the table B towards the rack L bringing a projection against a stationary cam, which turns the plate G, casting off the pieces I I I from the splints, leaving them in the rack, and the backward motion of the table B reverses the action of the elevator K, bringing the pieces I I I down to correspond with the dies.

The inventors say: We do not claim any particular form or arrangement of parts or number of splints made or carried at once.

But, 1st, we *claim* the table B with its plate G, and pieces I I I, or their equivalents, to carry the splints from the dies, and place them in the rack, substantially as set forth.

2d. We claim the peculiar construction of the rack pieces L L L to facilitate their receiving the splints, and for the better control of them, as described.

No. 14,782.—ALEXANDER UNDERWOOD.—*Improved Machine for Manufacturing Friction-Matches*.—Patented April 29, 1856.

A detailed description of this invention would occupy too much space to be given here.

Claim.—The cutting and racking device T T T, formed of the several parts or elements *b c c d d e e f¹ f¹ g g h*, as described, and as fully shown in figures 2 and 3.

2d. I claim the manner or mode of feeding the blocks or billets of wood to the cutters by the alternate lateral shifting motion of the box *f¹ f¹*, caused through the intervention of the devices *b j j q¹ q² r u v y y*, combined with the fluted rollers, &c., as shown in figure 1.

3d. I also claim the toothed or geared reciprocating crank device A, with the combination parts *c c x f² k m n*, and the dipping pan *g c*, substantially as represented in figure 1.

4th. I claim the construction of the endless chain rack devices, formed

with a series of pins or teeth, as at E, together, in combination with the intermittent rotary rack carrier D and crank ratchet device G H, used and operated substantially as described.

5th. I claim the boxing and capping device K K L M N O O O P R W 2 2 4 4 9 9, as shown in figure 6.

No. 15,238.—LAWRENCE HOLMES.—*Improved Match Machine*.—Patented July 1, 1856.

The rollers *b* below the feeding-hopper *c* are grooved, the projections between the grooves being brought up to an edge; a thin slip of wood being passed down between *b b* is reeded and nearly severed into round splints. As the reeded slip of wood passes down between the rollers *d d*, it will be evident, from the form of said grooved rollers *d d*, as shown, that the reeded slip will be separated into a series of round splints, separated in one direction the breadth of an intermediate splint, and in the other any desirable distance, as shown. The splints are then projected down through holes in the die-plate *e*, their lower ends entering between the slats *g* of a spring-clamp, which slides along below, and holds the splints after they are cut off by the vibrating knives *f f*. The ends of the splinters press against a shield *x* as they move forward, without coming in contact with the knife; this shield *x* yields as the knife operates, and is kept up against it by spring *y*.

Claim.—1st. The combination of the reeding-rollers *b* and separating rollers *d*, as herein described.

2d. In combination with the above the die-plate *e* and knives *f*, for completing the splint, constructed and operated substantially as set forth.

3d. I claim the shield *x* employed in the manner and for the purposes above described.

No. 14,655.—SAMUEL E. HARTWELL.—*Improvement in Frames for Mosquito Nets*.—Patented April 15, 1856.

The ribs *o o o¹ o¹* are extended by laying each one in its appropriate groove *b*, and then turning the clamp until each prong *d* lies over its respective groove. The clamp is secured to its position by the screw-nut *f*.

Claim.—The arrangement for securing the ribs rigidly in position when expanded, that is to say, the radial grooves on the knob, in combination with the grooved clamp, constructed and operated as described.

No. 14,910.—WILLIAM O. GEORGE.—*Oracular Wheel or Centre-Table*.—Patented May 20, 1856.

The top of the table is so constructed as to be taken off. Within the table is a wheel revolving on a pivot *b*. This wheel contains a number of movable boxes or drawers, 1 2 3 &c. *i* is a circular compartment containing the checks.

A description of this game would occupy too much space to be given here.

Claim.—Said table, called the oracular wheel or unique centre-table, in combination with the game of Equality, together with the checks.

I do not claim those parts which, if taken separately, are well known, and those parts which are common to the usual round centre-table; nor do I claim that checks are new and of my own invention. But I claim, in regard to these checks, their application in this particular way and for this particular purpose, and the method or arrangement of them, in combination with the table and game, by which particular effects are produced, or certain results arrived at.

No. 16,019.—HENRY B. OSGOOD.—*Spring Frame for Packages.*—Patented November 4, 1856.

The nature of this invention consists in attaching a receptacle A, by means of elastic fastenings C, to a rigid protector B, so that, in transporting said box, the articles contained therein may not suffer from the jolts or jars of the vehicle.

Claim.—The arrangement of the protector frame B in relation to the box or other receptacle A, and its combination therewith by means of the elastic fastenings C, or their equivalent, substantially as and for the purposes set forth.

No. 14,685.—GEORGE P. WILCOX and WILLIAM BUTLER.—*Improvement in Apparatus for Teaching Phrenology.*—Patented April 15, 1856.

The wire B, being enclosed in the tube A, is guided in its movement by the shape of the tube A: the organ C and key D being firmly attached to the wire B, enables the operator to move the organ C by the movement of the key D; and thus in the movement of the organ C, when provided with a rubber covering, we are enabled to modify the shape of the bust.

Claim.—The combination of the tubes A, wires B, organs C, keys D, or their equivalents, when provided with a rubber covering, or its equivalent, for the purpose and in the manner described.

No. 14,904.—HENRY E. CHAPMAN.—*Improvement in Pill Machines.*—Patented May 20, 1856.

When motion is given to the driving-shaft L, the composition contained in the feeding cylinder C is forced through the perforations of the nose piece of the feeding cylinder by means of the bell-crank lever E, pawl G, ratchet-wheel H, feed-screw I, the follower J, and their attachments. When a sufficient quantity has been forced through, the knife K is forced down by the pins *l l'*, striking it on the top, which, as it passes the perforations, cuts off small cylindrical pieces, which

fall into the grooves of the cylinders B B, whose surfaces being driven at different rates of speed, by means of cog-wheels D D, shape them into a spherical form, the bed-piece N serving the purpose of retaining the rolling motion of the pills, and smoothing down any remaining inequalities.

Claim.—The feeding cylinder C, the knife K, the grooved bed-piece N, and the two grooved cylinders B B, having their surfaces driven at different rates of speed.

No. 16,231.—JOHN EDWIN FORBES.—*Improvement in Skate Runners.*—Patented December 16, 1856.

The plates *a* and *b* can be separated and sharpened without resorting to the laborious task of sharpening skate irons by means of round files, as has been done heretofore.

The inventor says: I do not confine myself to common iron skates alone; but steel blades or runners may be successfully used until they are entirely worn out, which is not the case with the skates that are in common use, for they cannot be kept sharp, and consequently are abandoned.

Therefore, I *claim* forming the iron or runner of two parts or plates *a* and *b*, for the purpose and in the manner substantially as described and shown.

No. 14,586.—FERDINAND KLEIN.—*Improved Skates.*—Patented April 1, 1856.

The bar *a a'*, forming a part of the heel-plate *b*, prevents the wood from splitting. The knobs *d d'* receive the heel straps *e e'*.

The inventor says: I do not claim the wooden stock A, neither do I claim the plate *b* nor the skate iron *c*; but I *claim* the iron bar *a a'* attached to the heel-plate, and having two knobs *d d'*, for the purpose as described.

No. 14,624.—EDWIN YOUNG.—*Improved Slate Frame.*—Patented April 8, 1856.

The frame consists of one piece of wood B, grooved to receive the edge of the slate and bent in such a form as to fit it. The ends C C are fastened together with a metal dowel D.

Claim.—As a new manufacture, a slate frame made of a single piece of wood B, provided with a groove to receive the edge of the slate, and bent so as to fit it, with the ends fastened together.

No. 15,366.—ABNER G. BEVIN.—*Improved Mode of Attaching Sleigh-Bells to Straps.*—Patented July 22, 1856.

The nature of this invention will be understood by reference to the claim and illustration.

Claim.—Making the bells B without shanks and having holes *e* made through them to receive the staples *b*, which pass through the strap A and cover *c*, substantially as described and for the purpose set forth.

No. 14,490.—ADOLPH BROWN and FELIX BROWN.—*Machine for cutting Loaf Sugar.*—Patented March 25, 1856.

The hopper A contains openings which are covered with wire so as to allow the brushes *a a'* to reach through. The endless band E carries the slabs of sugar into the second hopper D, in order to be cut into cubical pieces.

Claim.—1st. The application and use of two or more rollers B B', having brushes *a a'* around their circumferences and acting upon both sides of slabs of sugar for the purpose of cleaning off the dust adhering to the same by the process of sawing, thereby reproducing the appearance of the crystals, as described.

2d. We claim the application of drums or rollers F F', connected together by gearing, having steel knives *n* inserted and attached around their circumference, forming squares and corresponding to each other, and acting on both sides of sugar-slabs simultaneously, like pincers, for the purpose of cutting up said slabs into regular cubical morsels, in the manner specified.

No. 14,740.—HENRY H. SIBLEY.—*Improved Conical Tent.*—Patented April 22, 1856.

The tent is pitched by means of a single pole, arranged with an iron tripod, so constructed that the legs shall work upon hinges and fold against the pole. To assist the escape of smoke a triangular piece of canvass, with an eyelet-hole in each angle, is fitted by one angle to the pin on the top of the pole, the other angles are secured by means of cords to the tent-pins.

Claim.—1st. So constructing the tripod, or its equivalent device, attached to a single pole, as to admit of easily building a fire.

2d. Constructing the tent with its hood and cowl, in combination with the door and half door or opening, to effect ventilation and the escape of smoke.

No. 15,378.—JOSEPH HYTER.—*Fly Trap.*—Patented July 22, 1856.

The flies enter the trap through the passage B, and after satisfying their wants from the bait seek to escape; and being attracted by the strong light from the glass back *d* and glass top *c*, they attempt to rise under the latter; when, by means of its inclination, they are precipitated into the trough D and are drowned.

Claim.—A trap for catching flies, having an opaque front and bottom *a b*, inclined transparent back *d*, small front decoy passage B, grooved bait board C, and trough D, substantially as set forth.

No. 15,464.—SAMUEL ARNOLD.—*Fly Trap.*—Patented August 5, 1856.

The box A is covered with two pieces of cloth F, to which are fastened two cords M M of India-rubber, extending diagonally across the box. To set the traps, the loops N N are hitched over the triggers D D, which are fastened to the lever B B of the fulcrums *e e*. The bait will attract the flies to the bottom of the box A, and by pressing the lever E upwards, the triggers D will be depressed below the top of the box, the loop N N will slip off, and the elastic cords M will close the cloth over the flies. The slide H is then drawn across the box by means of handle K, till it arrives at slide L, which is drawn by means of handle P towards the aperture O of the receiver T, thus forcing the flies into said receiver, where they are submerged in soap-suds.

Claim.—The mechanical arrangement of box, jar, springs, lever, slides, and covering, described for the purposes set forth.

No. 15,752.—SAMUEL ARNOLD.—*Fly Trap.*—Patented September 23, 1856.

The flies will enter the cylinder C through the perforations *g*, being attracted by the bait in the cylinder; and when a sufficient number of flies are collected in the cylinder, the cylinder C is caused to revolve by giving a twirl to the rod of the piston D, and by depressing the spring-catch K the piston is caused to descend, and the flies are caused to descend into the soap-suds in the glass vessel.

Claim.—1st. The employment of the revolving perforated and grooved hollow cylinder C, applied in connexion with the reticulated piston D, and glass vessel B, substantially as and for the purpose set forth.

2d. The arrangement for retaining the piston elevated while the flies are being entrapped, in connexion with the device for releasing it when necessary, substantially as set forth.

No. 15,848.—GEORGE GILBERT.—*Fly Trap.*—Patented October 7, 1856.

The surface of the cylinder B is covered with a substance to attract the flies, and motion being imparted to said cylinder in the direction of the arrow, the flies are carried through the space D, and are prevented from escaping by the bar *h*; they then fly upwards, attracted by the light which passes through the screen *d*, and are prevented from escaping below by the screens *e*.

The inventor says: I disclaim the use of floats, ledges, or any other projections on the surface of the cylinder. I also disclaim the use of a movable cleaner or wiper of any description whatever to remove the flies from the surface of the cylinder, or to force them into the box or any other receptacle, as neither projections nor cleaners are needed or used in my manner of constructing and using the fly trap.

I claim the combination of the revolving cylinder with the screens or wire work, when the whole is constructed, arranged, and combined substantially as described.

No. 16,217.—LEVI VAN HOESSEN.—*Trap for Catching Fish, &c.*—Patented December 9, 1856.

The fish in snapping at the bait on plate *j* disengages the notch *h* in the bar *F* from the pin *i* in the back part of the half sphere *b*, and the jaws *B* are forced towards each other by the spring *D*, the fish being caught between them.

The inventor says: I do not claim separately, or in themselves considered, two jaws connected with a spring, for similar devices are employed in various kinds of traps.

I claim forming the two plates *C C* of the jaws, and the stem or head-piece *A*, with portions of hollow spheres *d d b*, substantially as shown, for the purpose of protecting the bait when the jaws are sprung, as described.

No. 14,531.—SAMUEL BEAUMONT.—*Self-Setting Rat Trap.*—Patented March 25, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—Attaching the door *H* to the platform *C*, and supporting said platform when elevated or inclined, by means of the swinging rods or arms *D*, which are connected to the bait hook *F* by the levers *E E*. The above parts being arranged substantially as shown, or in an equivalent way, and having springs *G J* attached, so that the platform, when the animal nibbles the bait, will have its support drawn from underneath it, and be allowed to descend and close the door *H*; the door and platform rising to their original position, when the animal passes off the platform into the compartment *e* of the box.

No. 14,336.—JOHN GOODYEAR, JR., and THOMAS J. BERRY, assignors to Themselves and WILLIAM M. PORTER.—*Improved Roach Trap.*—Patented February 26, 1856.

The bait is placed in a trough *D*; the insect entering through tube *C* upon fall *B* approaches the bait, when its weight will tilt the fall, (see *B'*) and the animal will fall into the retaining chamber *A'*.

The inventors say: We do not claim the falls, tubes, or boxes, separately considered; nor do we confine our claim to the precise form and construction of the body of the trap, nor to the precise number or form of the tubes and falls, as these may be varied to suit circumstances.

But what we claim is, the tubes *C C* and the fall-box *B*, when the same are arranged and operated together substantially in the manner and for the purposes set forth and described.

No. 14,612.—LIVERAS HULL.—*Improved Machine for Tapering Whalebone for Whip-Handles.*—Patented April 8, 1856.

A wedged strip of whalebone is placed, with its narrowest end between the rollers *a a* and under rollers *N N*, which keep it close to the

bed *A*. As the whalebone is moved between the rollers it will move the rollers together with the slides *I* apart, so as to produce a corresponding elevation of the cutter-cylinder *K* by means of the levers *G E*, friction-rollers *D*, and plate *C*, to which latter the frame *L* of the cutter-cylinder is fastened; the whalebone will thus be reduced to a tapering form. The spring *U* serves to insure the approach of the slides *I I* after the whalebone has been drawn out.

Claim.—Combining with the cutter-cylinder and the bed-plate of the machine mechanism to operate against, and to be operated by, the sides of a stick of whalebone, and so as to control or regulate the vertical movements of the rotary cutter-cylinder, as described.

I also claim constructing the cutter-cylinder and combining it with the plate *G*, in manner as described, or by such devices as will enable it to be moved endwise for the purpose as specified.

No. 14,669.—WILLIAM H. LYMAN.—*Improvement in Whip-Sockets.*—Patented April 15, 1856.

The nature of this invention will be understood from the claim and the engravings.

Claim.—The application of a piece of sheet India rubber *A* to the common whip-stock, so as to secure the whip to its place and to prevent dirt, moisture, and other injurious substances from entering the socket and causing damage to the whip.

APPENDIX.

[The cases contained in this Appendix were omitted in their proper places.]

I.—AGRICULTURE.

No. 15,819.—LUTHER ROBINSON.—*Improvement in Cultivators*.—Patented Seember 30, 1856.

As the machine moves forward, the cutters G cut the sod along its edges ready for the cutter H, which passes under it, and cuts and lifts it up thereby, and causes it to come in contact with the cutters J K K, and to be divided into four equal parts which escape at the rear of the machine, as follows: one half of the central portion remains undisturbed other than being loosened underneath, from being cut up, lifted, and allowed to fall a short distance; while the other half, one quarter of which is on the right, and the other quarter on the left of the central portion, comes upon the mould boards L, is inverted and thrown thereby so as to fall upon the central portion and form a hill and cover the seed as illustrated.

Claim.—Arrangement consisting of the vertical cutters G G J K K, horizontal cutter H, mould-boards L L, and seed-dropper D, said parts being placed in the relation to each other shown, substantially as and for the purpose set forth.

No. 15,334.—CHARLES W. GLOVER.—*Improved Cutting Device for Harvesters*.—Patented July 15, 1856.

Within each finger B there is placed a rocking cutter E fig. 2, having their cutting edges at *b* and *b*¹, and oscillating slightly in the grooves *c*. The front ends of the cutters E are provided with projections *e* fitting in recesses *f* in the fingers. As the teeth *a* of the sickle C work back and forth over the cutters E, the edges *b* and *b*¹ will bear alternately against the cutting edges of the teeth *a*: for instance, when the sickle is moving in the direction of the arrow, the edge *b* will bear against the cutting edge 1 of the teeth *a*, and when moving in an opposite direction, the edges *b*¹ will bear against them; thus the edges act similar to a pair of shears, not being liable to become clogged.

Claim.—The oscillating or rocking cutters E, placed within the fingers B, and used in connexion with the sickle *c*.

No. 16,216.—MARSHALL TURLEY.—*Improvement in Prairie Ploughs*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engraving.

Claim.—The arrangement of the standard mould-board and side-cutter K, with regard to each other and to the other parts of the plough, so that they will operate as set forth and explained.

No. 16,218.—GEORGE WATT.—*Improvement in Ploughs*.—Patented December 9, 1856.

The nature of this invention will be understood by reference to the claim and engravings.

Claim.—The curved standard, when its front or concave side is rounded off, in combination with the undulating lines *x x x*, extending from the point of the plough to the tail of the mould-board, and when formed by the intersection of the two curvilinear surfaces of the mould-board and the standard.

No. 14,270.—CHARLES MORGAN, assignor to SAMUEL EMLIN.—*Improvement in Potato Planters*.—Patented February 12, 1856.

In order that the pieces of potatoes may be stirred up and become so situated in the hopper as to be easily penetrated by the fork, the plunger S receives a vertical reciprocating motion. The plunger is made to rise at the time the fork *m* is withdrawn, and the projection U covers the opening in the hopper. It will be understood from the engravings how the fork and plunger are connected together and work from the eccentric rod *i*.

The inventor says: I do not desire to claim especially the use of forks in potato planters for extracting the seed from a hopper, as such is described in the specification of Enoch Wood, January 10, 1845; but I *claim* the fork *m* and plunger S with its projection U, in combination with the hopper H, said fork and plunger being operated simultaneously, substantially in the manner and for the purpose set forth.

No. 16,212.—EDWIN MOORE.—*Improvement in Seed-Planters*.—Patented December 9, 1856.

As the machine is moved along, the shares *f* enter the ground, and cause the hub C to rotate. As the hub C rotates, the orifices of the passages *g* pass underneath the holes *a* in the disc E, which is rotated by the cogs *h* on the plate I, acting against the cogs *i* on the disc E; and the seed passes from the holes *a* through the hole *d* in the plate F, and into the hollow-arms H.

The inventor says: I do not claim the hollow arms R, through which

the seed passes from the hopper; for hollow-armed wheels have been previously used for that purpose. Neither do I claim operating the distributing device by means of radial rotating arms or rods penetrating the ground, for they have been previously used as a specific device for that purpose.

But I *claim* the hollow-arms H, provided with flaps *e*, and beaks or shares *f* at their ends, the arms being attached to a hub *c*, provided with passages *g* and cogs *h*, and the perforated disc E, and cut-off plate F, underneath the hopper D, the whole being arranged as shown and described, for the purpose set forth.

II.—METALLURGY.

No. 15,588.—JOHN T. WILLMARTH.—*Improved Machine for Swaging Iron*.—Patented August 19, 1856.

This invention consists in mounting the faces of two hammers, one on each side of a rocking-frame *d*, which, being caused to vibrate on shaft *c*, and strike a blow alternately on opposite sides, is operated upon by means of eccentrics *j* on shaft K.

Claim.—Mounting the hammers on opposite sides of a rocking-frame, operated by eccentrics, or their equivalents, substantially as specified, in combination with the anvils placed on opposite sides of the axis of vibration of the said rocking-frames, as described, and for the purpose specified.

No. 15,632.—DANIEL N. BAIRD, assignor to NATHANIEL POTTER.—*Improved Brace*.—Patented August 26, 1856.

The nature of this invention will be understood from the claims and engravings.

Claim.—1st. Inserting the mandrel B in the chamber in the shank of the brace; this I claim in combination with the washer F, set-screw G, and thumb-piece D, arranged in the manner described, and for the purpose set forth.

2d. I claim the manner of attaching the head of the brace to the spindle L, by means of the thumb-nut *o* and collar N; this I claim in combination with the chamber that receives the collar and screw of the thumb-nut O, in the manner substantially as described, for the purpose specified.

X.—LAND CONVEYANCE.

No. 14,678.—JOSEPH SUMMERS.—*Improved Wheel Hub*.—Patented April 15, 1856.

The flanch *c*, which radiates from the centre pipe box *b*, and is cast in one piece therewith, has a series of alternating flaring grooves *d d* cast in opposite sides thereof. The flanch half hubs *a* and *e* fit on to the ends of the pipe box *b*, and the flanches which radiate from the inner ends of said hubs correspond in size with the flanch from the centre of the pipe box. Flaring grooves *f f*, in the half-hubs *a* and *e*, form, with the grooves *d d* of the pipe box flanch *c*, angular holes for the reception of the spokes.

Claim.—My improved wheel hub, composed of the pipe box *b* and its radially grooved central flanch *c*, combined with the half hubs and their radially grooved flanches, and with the embracing band *g*, substantially as herein set forth.

XI.—HYDRAULICS.

No. 14,247.—JOHN L. MCPHERSON and JACOB O. JOYCE.—*Improved Diaphragm Pump*.—Patented February 12, 1856.

The nature of this improvement will be understood from the claims and engravings.

Claim.—1st. The application to pistons of pumps of a corrugated diaphragm C, which admits of greater length of stroke without overstraining the material, substantially as described.

Also, in combination with a corrugated diaphragm, the flaring or rounded followers A, so that they will approach and take up the folds of the diaphragm in accordance with the length of the stroke given to the piston-rod, as described.

Also, the wedge-shaped valve G, which lies loose in its seat, and rocks on its rounded base to open or close the passages I L, as herein set forth.

LIST OF RE-ISSUES AND CLAIMS FOR 1856.

No. 337.—*Improvement in Ploughs.*

What I claim is, constructing a mould-board and moulding part of the share of a plough, so that a horizontal line drawn at any height across their working side shall describe a convex arc of a circle, and any line drawn across its working side at right angles to the base, shall also describe the convex arc of a circle separately or connectedly, the whole or either part substantially as set forth.

SAMUEL HULBERT.

No. 338.—*Improvement in Cotton Presses.*

What I claim is, the recesses or slots *j j* in the hubs of the toothed wheels on which the chains that raise the follower work, for receiving the lower ends of the chains when wound up, and bringing the pressure nearer the centre of the bearings of the wheels, substantially as described.

NATHAN CHAPMAN.

No. 339.—*Machine for composing and Setting Types.*

What I claim is:

1st. The composing wheel *W*, as herein specified, and for the purposes set forth.

2d. The means above described for delivering the types from the various cells to the jaws of transits or their equivalents, fixed to a wheel or other rotary apparatus.

3d. The construction and application of the transits as described, or their equivalents, attached to a wheel or other rotary motion, to convey the types from the slides or their equivalents, to the galley or composing chamber.

4th. The devices for effecting the delivery of the types from the cell of small *j's*, and those cells which are similarly conditioned in the case of italics.

5th. The construction and arrangement of the lever *G* and its head *i*, as described, and for the purpose set forth.

6th. The construction and arrangement of the justifying bar *a*, in combination with the cam-ratch *b*.

7th. The index *N*¹ fixed to the bar *a* by which it is operated, in combination with the index plate *K*¹.

8th. The application of the detent *g*, operating as described.

9th. The construction and arrangement of the lever *O* in combination with the "rule" or line register *M*, as described.

10th. The tappet *t* constructed as described, so as to effect the horizontal and vertical changes of the lever *O*.

11th. The detents *W* so applied as to retain the slides *R* when they are thrown back after delivering a type.

WM. S. LOUGHBOROUGH.

No. 340.—*Improvement in Machines for Washing Paper Stock.*

What I claim is, the employment of a wire gauze or reticulated cylinder with open ends and placed with its axis in a horizontal or nearly horizontal position, and with its lower part revolving in a trough of water, substantially as herein described; but this I only claim when the said cylinder is provided on the inside with hooked or bent teeth for the purpose of catching and elevating the paper stock in separate portions to drain the water out of it and drop it in the water, and thus subject it to the several operations required as it is moved from end to end of the cylinder, as set forth.

And I also claim in combination with a reticulated cylinder armed with hooked teeth, and rotated in a trough of water, substantially as described, for the washing of paper stock, the employment of inclined curbs, substantially as described, at the delivery end of the cylinder, for the purpose of regulating the delivery of the paper stock, as set forth.

HORACE W. PEASLEE.

No. 341.—*Improvement in Track-Clearers to Grass-Harvesters.*

What I claim is, the rolling cone *G* moving on the axis *I* at an acute angle to the finger-piece and furnished with a joint-clearer *J*, as described, and for the purpose of clearing a track in the cut grass.

ABNER WHITELEY.

No. 342.—*Improvement in Machines for Threshing and Winnowing Grain.*

What I claim is:

1st. The peculiar construction of the chaff-screen *Q*¹, which consists of a thin plate of metal punched with a semi-circular instrument, for the purpose of producing semi-circular apertures, and at the same time leave the parts of the metal thus partly punched from said plate overhanging said apertures at an angle of thirty or forty degrees, or at any suitable angle greater than that of the plate; for the purpose of allowing the grain to pass through, said apertures, and at the same time prevent the chaff and straw entering them and thereby preventing choking.

2d. The combination of the system of screens, the blower, and the elevators X, for cleaning and conveying the cleaned grain to the granary or other place of deposit, substantially as herein set forth and represented.

ANDREW RALSTON.

No. 343.—*Improvement in Sewing Machines.*

What I claim is, 1st, the combination of the spring clamp D with the feeding bar or dog f, constructed, arranged, and operating together against the cloth on its one side or surface, substantially as set forth.

2d. The arrangement for effecting the feed; that is to say, setting the arm F of the feed finger at such angle to the table that the diagonal direction of the thrust will cause the reciprocating motion imparted to the upper end to produce, in combination with the table, a lateral motion of the feed finger as well as the requisite pressure for gripping and feeding the cloth, as set forth.

T. J. W. ROBERTSON.

No. 344.—*Improvement in Apparatus for Dissolving Silica.*

What I claim is, the method of taking the liquid from the upper part of the charge in the boiler or digester containing the silicious matter and the solvents thereof, passing it through a heater, and discharging the vapor thereof in the lower part of the charge, substantially as described when this is combined with a boiler or digester provided with stirrers for stirring the charge, substantially as described.

BENJAMIN HARDING.

No. 345.—*Improvements in Sewing Machines.*

What I claim is, forming a stitch by each throw of the shuttle and corresponding motion of the needle; that is to say, making one stitch at each forward, and another at each backward, motion of the shuttle; this being effected by the needle in combination with the shuttle, both constructed, arranged, and operated as herein described, or in any other mode substantially the same.

ALLEN B. WILSON.

No. 346.—*Improvements in Sewing Machines.*

What I claim is, the method of causing the cloth or material to be sewed in a sewing machine, to progress regularly by the joint action of the surfaces between which it is clamped and which act in conjunction, substantially in the manner and for the purposes herein specified.

2d. I claim holding the cloth or other material at rest by the needle, or its equivalent, in combination with the method of causing it to progress regularly, the whole substantially as herein set forth.

3d. I claim arranging feeding surfaces, substantially such as are herein specified, in such relation to the needle, as herein set forth, that they, or one of them, shall perform the office of stripping the cloth or material from the needle as it rises or recedes from it, as herein described.

4th. I claim so mounting and attaching one of the feeding surfaces to some other part of the machine, that it may be removed or drawn away from the other surface at pleasure, substantially in the manner and to effect the objects herein set forth.

ALLEN B. WILSON.

No. 347.—*Improvement in Grinding Mills.*

What I claim is, 1st, in combination with the cylinder and concave, the cap H, provided with spiral ribs on its under side for carrying forward the ground material towards the discharge end, and thus to make room for that which follows and prevent clogging or choking, substantially as described.

2d. I also claim, in combination with the cylinder, concave, and cap, the fingers e, for agitating the material and causing it to pass more readily in between the cylinder and concave, substantially as described.

AMORY FELTON.

No. 348.—*Improvement in Harvesting Machines.*

What I claim is:

1st. The retracting divider, substantially as described.

2d. The grain guard, substantially as described.

JOHN REILLY.

No. 349.—*Improved Tonguing and Grooving Machine.*

What I claim, is:

1st. Giving a lateral movement to either of the edge cutters by any suitable arrangement of mechanical devices, while the board is being fed through the machine, so as to adapt the edge cutter to any taper of the board.

2d. I claim arranging the box or bearing of the shaft of either of the edge cutters, so as to slide laterally on a rail; and connecting said box or bearing to a sliding guide-bar d¹, which bar is governed or regulated in its movements by the edge of the board, and kept up against said edge by means of a weight operating on it, (so as to press it laterally) through the medium of a rack and pinion, as herein before set forth,

the mechanical arrangement and operation being substantially as herein above specified.

3d. I claim the combination of the sliding bolts $r^1 s^1$ with the turning rod $o^1 o^1$, (having right angular arms $n^2 n^1, p^1 p^1$), and pawl l^1 , and ratchet-wheel k^1 , on the end of the shaft, which the weight i^1 turns or revolves; said combination being arranged substantially as herein before set forth, and for the purpose of permitting or checking the operation of said weight i^1 upon the sliding guide bar d^1 , as herein before specified.

CHARLES W. BROWN.

No. 350.—*Improvement in Polishing Stone, Metals, &c.*

What I claim is, a process by which the friction of the surface of the rotating polishing wheel upon the surfaces of the articles operated upon will impart rotary movements to said articles, substantially in the manner and for the purpose herein set forth.

ALBERT BROUGHTON.

No. 351.—*Improvement in Spike Machines.*

What I claim is, the friction roller f and lever I , to which the cutter k is attached, when said roller and lever are placed upon adjustable centres, or pivots, or rods $e i$, in combination with pointing dies inserted in the jaws, arranged substantially as shown, for the purposes specified.

A. M. GEORGE.

No. 352.—*Improvement in Machines for Sewing or Stitching Straight Seams.*

What we claim is:

1st. The feeding of the article to be stitched automatically forward to the needles, so as to determine thereby the length of the stitch, by means of the apparatus herein described, or any known mechanical equivalent therefor.

2d. The employment of a weight or its equivalent to draw out the thread, substantially as herein described.

3d. The combination of pincers to draw the needles and thread through the article being sewed.

4th. For the purpose of working with two needles at the same time, I claim giving to the pincers a simultaneous lateral movement, to change the needles from one pair of pincers to the other, as described.

5th. The stop motion, consisting of an arrangement of apparatus described, for stopping the machine when the thread breaks or becomes too short.

ISAAC M. SINGER.
EDWARD CLARK.

No. 353.—*Ticket Register for Railroad Cars, &c.*

What I claim is, providing a suitable box A for holding the tickets and employing and arranging a distributing lipped slide $c d$ upon the bottom of said box or underneath the tickets, in combination with the employment and arrangement on top of the tickets of a spring or weighted follower D , substantially as and for the purpose set forth.

I also claim providing the extension or small box E and inclined way n , substantially as and for the purpose set forth.

WILLIAM APPERLY.

No. 354.—*Improvement in Harvesting Machines.*

What I claim is, a draught bar or tongue, constructed with an arm G , extending backward over the main frame, and connected with a suitable device for supporting it at various heights, whereby the cutter can be conveniently adjusted to different heights by an attendant on the main frame, substantially as herein set forth.

JOHN H. MANNY.

No. 355.—*Improvement in Sewing Machines.*

What I claim is:

1st. The making of a seam with a single thread, by the combination of a single needle, forked hook, and expanding lever, operating substantially in the manner and for the purposes herein specified.

2d. The forming or making of a seam from a single thread, by the running of a loop of the thread through the material to be sewn, the running of a second loop through the material, and pulling the first loop through the second, the running of a third loop through the material, and through the first named loop, the carrying of a fourth loop through the material, and putting the third through it, and so on; putting the first loop through the second and around the third, the third loop through the fourth and around the fifth, and so on, forming the belaying double-loop stitch herein described, in the manner set forth.

3d. The feeding of the material to be sewn, by means of a vibrating piercing instrument, whether said instrument be the needle itself or an independent instrument in the immediate vicinity thereof, substantially as herein described.

WILLIAM H. JOHNSON.

No. 356.—*Improvement in Spark and Gas Consumers.*

What I claim is, the combination of the receiving case, shield plate or head, and filterer, with and over the top of the sectional chimney with enlarged base and smaller section in the smoke-box, to convey off and arrest the sparks without pernicious effect, as described.

Also, I claim increasing the base of the chimney beyond the diameter

of the upper end of the section extending vertically to near the lower horizontal flues and bottom of the smoke-box, to aid in the generation of steam, as described.

Also, I claim the trumpet-mouthed tube over the chimney, said tube being divided into two or more parts to collect sparks, and direct them inwardly by aid of the opening between said parts, as described.

Also, I claim the manner in which I connect the case at the top of the chimney, with the furnace or fire box, by means of the tubes or pipes G G and H, the cases L L, and the openings thence into the fire-box or furnace, to carry the sparks and gas to the furnace to be consumed, as described.

DAVID MATTHEW.

No. 357.—*Improvement in Spark Arresters.*

What I claim is, the combination of the cone and deflecting head with the wire gauze inside of the outer case, to deflect the steam gases and sparks downwards, retain the sparks, and allow the expanded steam and gases gently to escape through the gauze.

I also claim forming the chimney of sections, with the base of the upper section C, enlarged beyond the diameter of the top of the section E below it, substantially as described.

DAVID MATTHEW.

No. 358.—*Improvement in Grain and Grass Harvesters.*

What I claim is:

1st. Changing the angle of the fingers and cutters of reaping and mowing machines while the machine is in motion and the finger piece resting on the ground as described, and for the purposes set forth.

2d. I do not here claim oscillating the finger-piece about an axis within itself irrespective of the relations between the main frame and the master wheel shaft; but I do claim so constructing the machine, (as described or otherwise, the result being substantially the same,) that the driver is enabled while the team is in motion, the boxes of the master wheel shaft being rigidly connected with the main frame, to change the angle of the fingers and cutters without moving the finger-piece from the ground.

ABNER WHITELEY.

No. 359.—*Improvement in Machinery for Splitting Match Splints.*

What I claim is:

1st. The use of the arrangement of the four cutters, arranged and operating substantially as herein before set forth, in combination with the cutter frame or box, for the purposes herein before described; and

also the use of the cutters and cutter frame, arranged and operating as hereinbefore described, in combination with an adjustable cap or clearer plate for the purpose of holding the blocks of wood while under the action of the cutters, substantially as herein before described.

2d. I also claim the jointed levers, or their equivalents with or without springs at their backs, for the purposes herein before set forth, and their combination with the cutters and crank motion or other equivalent device, for working or operating a crimper for crimping or matting the surface of blocks of wood.

3d. I also claim the use of the crimping or compressing levers or their equivalents in combination with the bed board M, for crimping or matting the lower surface of the blocks substantially as hereinbefore described.

4th. I also claim the use of the shafts R and ratchet feed wheels or equivalents, for the purpose of feeding the blocks through the machine, in combination with the adjustable cap or clearer plate and bed board, when used for the purpose of splitting blocks of wood.

BENONA HOWARD, Assignee of
LEWIS SMITH.

No. 360.—*Improvement in Railroad Cars.*

What I claim is the construction of the frames of railroad cars, substantially in the manner and for the purposes specified.

B. J. LA MOTHE.

No. 361.—*Improvement in Machines for Making Nuts, Washers, &c., &c.*

What I claim is:

1st. The use of the die T and die-box M, for severing the blank, the close die-box in combination with the dies and bracket Q for pressing, and the punch L for perforating the same during the pressure; the whole operating conjointly, as herein described, for making nuts or washers at one operation.

2d. The manner substantially herein before described of so arranging the dies, in relation to the punch, that any excess of iron in the blank shall be forced into the path of the punch, thus securing the compression of the nut without risking the breaking of the machine.

WILLIAM KENYON

No. 362.—*Improvement in the Machine for Forming the Web for Cloth, of Wool, Hair, or other suitable substance, without Spinning or Weaving.*

What I claim is, the combined use of them, as herein described, for the purpose of crossing the fibres of the material of which cloth may be made, in the manner and on the principle herein described, and the

new machinery necessary to effect that object, particularly the comb-carrier, the means described for severing the weft or web, and the fallers for placing the weft upon the warp, operated substantially as herein described.

I also claim the depositing of the weft in separate sheets, edge to edge, upon the continuous sheet of warp, substantially in the manner and for the purposes described.

STILES CURTIS, *President*.

No. 363.—*Improvement in Sewing-Machines.*

What I claim as the invention of said Turner is, the arrangement of a hook, or hook-needle, underneath, and so as to work up through the feeding-bar L, in combination with the arrangement of the presser M above the feeding-bar, and so as to press downwards towards it, substantially in the manner as above described, such enabling me to obtain an important advantage in operating by the single chain-stitch sewing-machine.

And, as the invention of the said Turner, I also claim, in a chain-stitch sewing-machine, arranging and operating the awl and the hook-needle, as described; that is, so that they may not only pierce in opposite directions the material to be sewed, but be withdrawn in opposite directions therefrom.

And, as the invention of the said Turner, I also claim in combination with the mechanism for giving the vertical movements to the needle, the slot *a b c* and the screw or pin F, or mechanical equivalents therefor; for producing reciprocating semi-rotative movements of the needle, during the vertical movement of it, substantially in the manner and for the purpose as above described.

ELMER TOWNSEND.

No. 364.—*Improved Arrangement of Means for Working and Stopping Chain Cables.*

What I claim is, the arrangement of the capstan, the removable rollers, and the sockets for said rollers, in such a manner, and having such relations to the hawse-holes, chain-locker, deck-pipes, and under-lifting stoppers, that a chain cable can be continuously hove in by means of said capstan and rollers, or be directly run out of the lockers without any previous overhauling, substantially as herein set forth.

I also claim the flaring and radially flanged annular recess in the capstan, when it is given such a shape, that in handling a chain cable, the series of cavities in the faces of said recess will so perfectly adapt themselves to the varying lengths and widths of the links of the cable, that it can be safely and securely handled when the cable has only a partial turn around the capstan, substantially as herein set forth.

I also claim the arrangement of the within described under-lifting

bow-stoppers and after-stoppers, by which more cable can gradually and controllably be given to a vessel whilst riding heavily at anchor, substantially as herein set forth.

THOMAS BROWN.

No. 365.—*Improved Sawing Machine.*

What I claim is, attaching saws to parallel rocking beams, by means of swivel bearings.

I also claim the reversible graduating scale-gauge in combination with the saw-table, substantially as set forth.

WILLIAM P. WOOD.

No. 366.—*Improvement in Printing Presses.*

What I claim is:

1st. A rotating reciprocating platen, operating substantially as described, for the purpose specified.

2d. The arrangement of two side arms, so combined as to form a frame to carry the inking-rollers both forward and backward over the form for each impression.

3d. Throwing a *vibrating bed* from the point of its receiving the inking-rollers, as described, directly to the impression, by means of toggles arranged as shown, or in an equivalent way; so that said bed, after receiving the impression, will be allowed to recede or fall back to its original position, by its own gravity.

4th. The combination of the vibrating bed with the roller frame, composed substantially as set forth.

5th. The grooved cam-shaped guides, or their equivalents, for throwing the frisket, or its equivalent, in the proper direction, and holding it in the desired position during the intervals of rest given to the platen, for the purpose specified.

GEORGE P. GORDON.

No. 367.—*Improved Mode of Constructing Walls and Floors of Cellars.*

What I claim is, the mode herein described of forming walls and floors by combining into one mass the water cement and asphaltum, or its equivalent, by means of the solid building materials, as herein fully set forth, by which the asphaltum, or its equivalent, is caused perfectly to adhere to the bricks or stone of the wall, built with a water cement, which also adheres to the same stone or brick, as above described.

A. R. MOEN.

No. 368.—*Preparation of Oil Ground to receive Photographic Impressions.*

What I claim is, the mode of preparing and rendering oil (or oleaginous) bodies, grounds, or surfaces, impressible or sensitive to the photographic art, by the temporary destruction or chemical change of the oil or oleaginous matter, on the immediate surface only, by the use of spirits of wine and alkaline solution or their equivalents, and after fixing the impression by the use of hyposulphate of soda, the use of dilute acid, by which last application the alkalies are neutralized, and the oil restored with the impression permanent upon the surface.

JOEL HAYWOOD TATUM.

No. 369.—*Improvement in Machines for Planking Hat Bodies.*

What I claim is, the use of an endless table or band, having a differential or vibratory forward revolving motion, in combination with a rubber or presser, operating substantially as herein before set forth; whereby a forward, vibratory, rolling, and pressing motion is given to the roll of hat bodies or felt for sizing it up, and, at the same time, carrying it through the machine, made and operating substantially as herein before set forth.

ALBERT SPENCER,
ALVE E. LAING, Assignees of
PHINEAS EMMONS.

No. 370.—*Improvement in Self-Sealing Preserve Cans.*

What I claim is, the employment of elastic packing, arranged in and retained by a groove of an acute form, or whose sides are in close proximity, in the manner and for the purpose above described.

ROBERT ARTHUR.

No. 371.—*Machine for Cutting the Threads of Wood Screws.*

What I claim is:

1st. In combination with the shaft or mandrel which gives the rotary motion to the screw blank, the employment of the rotating wedge-formed cam, or the equivalent thereof, for determining the pitch of the thread, and for permitting the return motion to repeat the operation, substantially as described.

2d. Causing the chaser or cutter at each successive cut to approach nearer to the axis of the screw blank, by means of a revolving conical cam, which, at each successive operation, acts by a greater radius, substantially as described.

3d. Governing the motions of the chaser or cutter to make the core

or body of the screw of a conical or tapered form along the whole or any part of its length, by combining therewith a cam of gradually enlarged diameter, substantially as described, the form of such cam depending on the form intended to be given to the core or body of the screw.

4th. Combining the cam which determines the form of the core or body of the screw (to make it tapering or conical in whole or in part) with the chaser or cutter by means of a rock-shaft and adjusting lever, substantially as herein described, the said adjusting lever being interposed between one of the arms of the rock-shaft and the face of the cam, so that, by the use of a set-screw or other analagous device, the cutter or chaser may be readily set, as described.

5th. Shifting the cam which determines each successive cut of the chaser or cutter, by combining therewith a ratchet movement, operated by an eccentric or cam, the wheel of the ratchet being provided with pins which operate a lever connected with the cam to shift, substantially as described.

6th. Disconnecting the shaft or mandrel from the driving power at the end of each complete operation of the machine, by combining the clutch, or the equivalent thereof, with the ratchet, by means of an index-wheel or perforated rim, which, at the required periods, liberates or acts upon the connexions of the clutch to disengage it, substantially as described.

7th. Making the chaser or cutter for chasing or cutting the threads of wood screws by machinery with a groove of the form of the thread in its cutting face and in the direction of its length, substantially as described; whereby the said chaser can be sharpened by simply grinding off at the end, and without changing the form of the groove, and whereby, also, the said chaser cuts on both sides of the thread and finally on the edge thereof, as described.

8th. The combination of the screw-driver for holding and rotating the screw-blank with the tubular rest open at the side, to support the shank of the blank while being threaded, substantially as described.

CULLEN WHIPPLE.

No. 372.—*Improvement in Bellows for Musical Instruments.*

What I claim is, the combination of the reeds with an exhaust chamber of variable capacity and an air pump, whose action exhausts and rarifies the air therein, the exhaust chamber tending to expand with a force that will balance the rarification to be preserved in the chamber, for the purposes herein set forth.

J. CARHART.

No. 373.—*Improvement in Annealing Furnace.*

What I claim is, charging and discharging an annealing furnace in bulk, substantially in the manner and for the purposes set forth.

I also claim opening the bottom of the annealer for the purpose of discharging its contents and recharging it, as above set forth, or any mode analogous thereto.

I also claim the employment of a continuous heat, with an air-tight annealer, substantially in the manner and for the purpose described, by which iron wire can be annealed with the same facility as brass and copper, where the air is not required to be exhausted.

J. JOSEPH EAGLETON.

No. 374.—*Improvement in Spirit Levels.*

What I claim is, the spring-catch (or known equivalent thereof in this combination) to hold the level in place upon the square or ruler in combination with the bearers, the latter being so formed in respect to the level that when they are placed upon a horizontal line the bubble will be in the middle of the glass, and thus a horizontal or a vertical line may be ascertained from a ruler or from a square when said level is attached, substantially as herein set forth.

S. J. SHERMAN.

No. 375.—*Improvement in Securing Pinions, &c., of Watches in Lathes.*

I claim the employment of adhesive cement for securing staffs and pinions of watches, and like articles of small dimensions, for lathe operation, in combination with a chuck A, having a female centre a therein, either with or without the tube B, or its equivalent, as described and set forth, or any device substantially the same.

JAMES M. BOTTUM.

No. 376.—*Improvement in Grain and Grass Harvesters.*

What I claim is:

1st. Extending or widening out the guard finger, substantially as herein described (and represented by the overhanging bars *m m*, fig. N) for the purposes herein set forth.

2d. Dropping that part of the frame (herein called the clamp) down to the ground in the manner above set forth, when constructed, arranged, located, and used, substantially as herein described.

3d. The mould-board L, constructed and used for the purpose and substantially as herein set forth.

4th. The arrangement and combination of a right-angled stanchion made of wood or metal, with a pivotal motion on the frame-work of the machine, and supporting upon its upright part a lever made of wood or metal, with a pivotal motion on the said stanchion (or post), to which

lever is attached a rake. By the combination and operation of these two pivotal motions of the stanchion and lever as set forth, a direct line motion may be given to the rake when needed, and also a circular motion; so that a person may remove the grain from the platform in bundles, and sit or stand on the machine near the driving wheel, as herein described.

ELIAKIM B. FORBUSH.

No. 377.—*Improvement in Sowing Machines.*

What I claim is, the manner in which I have combined the stirring-rod or bar H with the dropping-bar or vibrating-bar *m m*, and in combination therewith the gauge-rod *c c* with its index for regulating the amount of seed to be dropped, in the manner above described.

I also claim the lever *e* with a movable pin or fulcrum operated by the zig-zag motion for working the vibrating-rods, and regulating the quantity per acre to be sown by increasing or decreasing the motion of the vibrating-rod, as set forth.

PIERPONT SEYMOUR.

No. 378.—*Improvement in Machinery for Filling Seine Needles.*

What I claim is, imparting to the needle and to the arm or equivalent therefor the motions substantially such as herein described, for carrying the twine, cord, or thread into the eye of the needle, around the tongue, and then out of the eye, substantially as described, and by the means specified, or equivalents therefor.

H. M. GLINES.

No. 379.—*Improvement in Cotton Gins.*

What I claim as the invention of R. A. L. McCurdy is, the revolving screen situated in the hopper or "roll box," arranged and operating substantially in the manner and for the purpose herein set forth.

In combination with the revolving screen, I also claim the spirally winged shaft, revolving within said screen, and operating substantially in the manner and for the purpose specified.

DAVID G. OLMSTEAD.

No. 380.—*Improved Metallic Pen.*

What I claim is, reducing or thinning the sides of the pen at *a* between the shoulder A and split *c*; whereby the advantages above stated are freely attained, and the metallic pen made to possess the qualities of the quill pen.

A. WM. RAPP.

No. 381.—*Machine for Raking and Loading Hay.*

What I claim is, the combination of rake S with spring guard-plate S¹ and fork P, the whole being arranged and operated in the manner and for the purpose set forth.

JOSEPH SMITH.

No. 392.—*Improvement in Operating Valves in Direct-Acting Steam-Engines*

What we claim is, giving to the valve the whole or part of the movement necessary to effect the change in the direction of the movement of the engine piston, by means of the steam acting upon a piston E, which is fitted to work perpendicularly to the valve in a cylinder D, forming a part of the valve driver, or device employed to drive the valve, and is supported against the pressure of steam by a rocker e, or its equivalent, by which it is caused to operate on the valve driver, substantially as herein set forth.

WILLIAM H. GUILD,
WILLIAM F. GARRISON.

No. 383.—*Improvement in Bagasse Furnaces.*

What I claim is, combining with the receiving chamber a square mixing or second chamber, whose hearth is substantially level with that of the receiving chamber B, separate and distinct from the heat conduit or flue which conducts the heat to the boilers, and located between the aforesaid heat conduit and the receiving chamber of the furnace, and combined with any bagasse furnace; for receiving the products of the burning bagasse, mixing mechanically, and perfecting the combustion of the gases thereof, after they pass out of the first or burning chamber, and before they enter the heat conduit, or flue, and thereby promoting the deposit of the solids, substantially as described, whether the said second chamber B is provided with a pit D or not.

I also claim the use and adaptation of the pit D, located in and combined with the second or mixing chamber B, as an auxiliary to increase the agitation and perfect the mixture and combustion of the gases, and also to promote the deposit of the solids, substantially as described.

SAMUEL H. GILMAN.

No. 384.—*Improvement in Photographic Pictures on Glass.*

What I claim is, the combination of balsam, or its equivalent, with positive photographic pictures on glass, and with the additional glass, by which they, with the balsam, are hermetically sealed, as described in the specification, and for the purposes therein set forth and for no other.

JAMES A. CUTTING.

No. 385.—*Improvement in Apple Parers.*

What I claim is:

1st. The combination of the spiral-groove i, the rack-bar P, and sector O, or their equivalents, for the purpose of moving the knife automatically, in the manner and for the purpose herein set forth.

2d. The combination of the spiral groove i, the lever R, and the sliding-bar W, or their equivalents, constructed and operating in the manner substantially as herein described, for the purpose of throwing the apple from the prongs after the paring is completed, as set forth.

3d. Giving to the knife a slight play around its axis, independent of the mechanism which actuates it, for the purpose herein set forth.

CHAS. P. CARTER.

No. 386.—*Machine for Making Wrought Iron Railroad Chairs.*

What I claim is:

1st. The combination of two or more properly shaped dies, between which a chair blank is clamped prior to the cutting of that portion of it which constitutes the lips thereof, substantially in the manner and for the purposes herein described.

2d. I claim automatic shears in combination with properly shaped dies for clamping a chair blank and cutting the lips thereof, substantially as herein set forth.

3d. I claim such shears when they also act as benders, to complete the formation of a chair lip, by reason of their having a motion in two directions, substantially in the manner herein specified.

4th. I claim a double or parting clamp and die, substantially such as is herein described, so that a chair may be removed from the die upon which it is formed, as herein set forth.

5th. I claim discharging a chair from a double or parting die, or its equivalent, by their hooks or their equivalents acting to shove the chair off of a die, substantially in the manner herein described.

6th. I claim in combination two clamping dies, one of which acts as a former, and divides at proper intervals; shears which also act as benders, or their equivalents; and a discharging apparatus, acting in respect to each other substantially in the manner and for the purposes herein set forth.

WM. VAN ANDEN.

No. 387.—*Improvement in Reaping Machines.*

What I claim is:

1st. The sickle with its cutting edge when both scalloped and serrated.

2. Reversing the serrations on the edge of the sickle, in short sections, substantially as herein set forth.

3d. Constructing the guard-fingers in the shape of a spear head, for the purpose of affording a shoulder on each edge against which the

grain will be held, thus counteracting its tendency to slip from the action of the sickle, and forming an acute angled space in front of the sickle, to render the severing of the grain more easy and certain.

JONATHAN READ.

No. 388.—*Improvement in Reaping Machines.*

What I claim is:

1st. The combination with the platform of a reaping machine of a mechanical rake, which traverses said platform at intervals and draws off the grain gathered thereon, substantially as herein set forth.

2d. The combination with a mechanical rake of the roof or screen herein described, or the equivalent thereof, to intervene and keep the gavel of grain collected on the platform separated during its discharge by the rake from the grain just cut and falling towards the platform, thereby avoiding the scattering and entanglement which takes place when the grain passing off and that falling upon the platform are not kept separate.

3d. The combination with the roof or screen of a mechanical rake of a stripper or guard P^1 or P^2 , or its equivalent, to sweep from the screen any grain which may have fallen upon it during the passage of the rake to and fro over the platform, substantially as described.

4th. Constructing the platform with slats or ribs for the grain to lie on, and intermediate spaces for the teeth of the rake to run in, to pass below the grain and thus avoid all danger of overrunning and imperfectly discharging it, as herein set forth.

JONATHAN READ.

No. 389.—*Improvement in Reaping Machines.*

What I claim is, the combination of the reel for gathering the grain to the cutting apparatus and depositing it on the platform, with the seat or position for the raker located and arranged substantially as described, to enable the raker to ride and to rake the grain from the platform and free the reel and cutting apparatus from obstructions, as described.

JONATHAN READ.

No. 390.—*Improvement in Reaping Machines.*

What I claim is, in combination with the main frame of the machine, hung or balanced on the supporting wheels, and the thills or tongue by which the horses draw the machine hinged to the said frame, a lever connected with or acting upon one, and extending to the driver's stand or seat on the other; so that the driver, who is the sole conductor of the machine, may from said stand by this arrangement raise or depress

the cutter at pleasure during the operation of the machine, for cutting grain at any suitable height above the ground or for passing over any intervening obstacles, substantially as described.

JONATHAN READ.

No. 391.—*Improvement in Reaping Machines.*

What I claim is, the arrangement of parts whereby a clear space is obtained and the grain discharged between the platform and the path of the driving-wheel before the latter has passed the discharged grain, as herein set forth.

JONATHAN READ.

No. 392.—*Improved Bomb-Lance for Killing Whales.*

What I claim is, the mode of sustaining the fuse rope in the fuse tube, and preventing the fire of the charge of the gun from passing by the fuse rope and into the bomb, viz: by metal or metallic plugs, or the equivalents thereof, cast around or made to closely encompass the fuse rope, after it has been inserted in the fuse tube, as specified.

And I claim so making or applying them to the shaft shank or to the body of the bomb, that not only may they be folded or moved down, so as to be capable of entering with the shaft the bore of the gun, but each have an elastic property or spring, such as will cause it to unfold or be thrown outwards, immediately after the projectile may be discharged from the gun; such wings being made of vulcanized India-rubber, or any substance or substances which may be deemed an equivalent thereto, inasmuch as such may possess the requisites, as above specified.

CHRISTOPHER C. BRAND.

No. 393.—*Improved Method of Hanging and Straining Reciprocating Saws.*

What I claim is, the manner or mode of hanging reciprocating saw-blades, by forming thereon, or by attaching to the ends and front edges thereof, ears or guide-flanges $n n$, figure 2, hook clamps $q q$, and shank devices $r r$ T, figure 4; so that the tension or strain and the draft of the blades will be in a direct line, longitudinally through the base of the teeth and front edge of the blade, whereby the whole of the surface or the plate part of the saw-blade is left free, unstrained, and divested of all rigidity and stiffness, in the manner substantially as described.

I also claim the adjustable guide plates, with the slotted or grooved gauge pieces $g g$, figure 1, and $x y$ X y , figure 3, substantially as set forth.

ISAAC N. FORRESTER.

No. 294.—*Harness-Saddles.*

What I claim is, making the upper or saddle part of harness-saddles of metal, giving the required form thereof by moulding, when such saddles are so formed, substantially as described, that the leather parts such as the skirts can be secured thereto without stitching, as set forth, or by equivalent means.

And I also claim forming the upper or saddle part and the under or crotch part in combination, so that the skirt and jockeys, if jockeys are used, will be embraced between them, and secured in the manner substantially as described, or by equivalent means.

JOHN T. DENNISTON.

No. 395.—*Improvement in Folding Life-Boats.*

What I claim is, the chain or chains, or their equivalents, as connected and arranged in relation to the stern and stern-posts, ribs, and central frame, and operated as herein set forth.

C. LOCHER.

No. 396.—*Improvement in Machinery for Making Hat-Bodies.*

What is claimed herein as the invention of the said Henry A. Wells, deceased, is, forming bats of fur-fibres, by throwing the fur in properly regulated quantities, substantially as herein described, against a section of the circumference of a perforated cone or other form, as the same is rotated to present in succession every part of the circumference thereof to the current of impelled fur, to obtain the required thickness of bat, substantially as described, in combination with the method of holding the fibres on to the cone or other form during the operation, substantially as described and for the purpose specified.

CHARLES ST. JOHN,
H. A. BURR,
A. H. WRIGHT,
JAMES M. RIBLET.

No. 397.—*Improvement in Rotary Pumps.*

What I claim is, the rotary eccentric piston, working within an oscillating barrel, with any arrangement of inlet and outlet passages, substantially as herein set forth; and this I claim, whether my invention be applied to a pump or a rotary steam engine.

JOHN BROUGHTON.

No. 398.—*Improvement in Furnaces for Burning Wet Fuel.*

What I claim is, the combustion, for the purposes of a high degree heat, of bagasse, refuse tan, saw-dust, and other wet refuse sub-

stance, or very wet and green wood, by the employment of a series of fire-chambers, arranged in any manner substantially as described, to communicate with one common flue or mixing chamber, when any number of said chambers are nearly closed to the admission of air when first charged, as described, whilst the remaining chamber or chambers, is in full communication with the flue, and has a free supply of air admitted, and the ash-pit of each chamber in its turn is nearly closed, and then opened and has air admitted, whereby the heat required is rendered continuous and comparatively uniform, while the fuel in some of the chambers is being heated and decomposed to a desirable degree, as herein set forth.

MOSES THOMPSON.

No. 399.—*Improvement in the Buff for Polishing Spoons and Other Articles.*

What I claim is, a cylindrical buff composed of soft leather disks or rings, when the outer portions of said disks are left perfectly free from each other, so as to admit of the yielding necessary to their proper action, substantially as herein described.

LUTHER BOARDMAN.

No. 400.—*Improvement in Manufacturing Hat Bodies.*

What we claim, as the invention of the said Henry A. Wells, deceased, is the forming of the bat of fur fibres on a perforated cone or other form, in manner substantially as described, in combination with the hardening of such bat while on such cone or other form, to give it the required consistency to admit of taking it off in a suitable condition for sizing by the well known process of felting, substantially as described.

CHARLES ST. JOHN,
H. A. BURR,
A. H. WRIGHT,
JAS. M. RIBLET.

No. 401.—*Improvement in Door Locks.*

What I claim is, making the cases of door locks and latches double faced, or so finished that either side may be used for the outside, in order that the same lock or cased fastening may answer for a right or left-hand door, substantially as described.

I also claim the peculiar construction and double action (upon an inclined and horizontal track or way) of the locking car B, as herein before described, and the combination of the locking car B and safety cars G G² with one another and with the connecting or vibrating bar and bolt A, as within described, so as to fasten the bolt c securely and prevent its being picked.

I also claim so constructing the bolt, as herein before described, that by simply turning it over in the lock case it is adapted to a right or left hand door.

JOHN P. SHERWOOD.

No. 402.—*Improvement in Artificial Stone.*

What I claim is, the composition of marl and slaked lime, substantially in the proportions herein specified, for producing an artificial stone, or a substitute for stone and bricks.

ST. JULIEN RAVENEL.

No. 403.—*Improvement in Self-Sealing Cans.*

What I claim is: 1st. A vessel made with a groove to surround its mouth, prepared with cement, and ready for hermetical sealing; but to hermetical sealing itself I make no claim.

2d. The employment of elastic packing, arranged and retained by a groove of an acute form or whose sides are in close proximity, in the manner and for the purpose above described.

R. ARTHUR.

No. 404.—*Improved Boring Machine.*

What I claim is: 1st. The tubular or hollow auger or bits D, as constructed, having the cutting lips of the bits approach the centre and yet separated from each other, doing without the use of a screw on the end of the bit, for the purpose of preventing the bit from following the grain of the wood.

2d. I claim the worm J, operating on its own axle, and independent of the revolutions of the auger or bits D, for the purpose of clearing away the chips, as set forth.

ARCALOUS WYCKOFF.

No. 405.—*Piano-Forte Action.*

I claim the peculiar manner in which the back-catch *m* and the lifter *l*, or its equivalent, are combined together, and with the key-lever, viz: by a lever *i* hinged to the key-lever, and fastened to both back-catch and lifter, the whole being substantially in manner as herein before set forth.

D. H. SHIRLEY.

No. 406.—*Improvement in Reversible Horse-Power.*

What I claim is, constructing the horse-power so that the converge-gear may be shifted to and secured upon either end of the main-shaft; so that by reversing the pulley and pinion with their shaft, and placing the converge-gear upon the proper end of the main shaft, the machine may be converted from a right to a left-hand one, or *vice versa*, without removing the main shaft.

PHILIP H. KELLS.

No. 407.—*Improved Apparatus for Heating by Gas.*

What I claim is, the combination and arrangement, substantially as described, of air and gas burners or distributors, chambers A¹ and B¹, and their flue and air-supply conductors F C C, the whole being made to operate essentially as specified.

I also claim, in combination with the gas-burner, the perforated or wire-gauze tube *g*, operating as specified.

WILLIAM F. SHAW.

No. 408.—*Improvement in Harness-Saddles.*

What is claimed in the manner of constructing harness-saddles is, making the jockey-skirts and saddle of metal cast in one piece, substantially as and for the purpose specified.

O. B. NORTH & Co.,

By O. B. NORTH, *President.*

O. B. NORTH,

SAMUEL BRACE,

JUSTUS R. MORGAN,

SAMUEL MORGAN,

A. J. JUDD.

No. 409.—*Improvement in the Machine for Cutting Shoe Pegs.*

What I claim is, the combination of the vibrating knife C, or its equivalent, with the fluted-roller O, or its equivalent, operating in the manner above described.

STEPHEN K. BALDWIN.

No. 410.—*Improvement in Sewing Machines.*

What I claim as the invention of said Swingle is, the employment of a hook in connexion with the looping-needle, and arranging said hook

so that it shall pass into the cloth or material from the same side of it on which the looping-needle works or is situated.

I further claim as of said Swingle's invention the herein above described new or improved method of arranging the feed-motion or mechanism, the feed-wheel thereof being disposed horizontally, and its teeth made to engage with those of the rack situated on the vertical side of the clamp, the whole being substantially as specified.

ELMER TOWNSEND.

No. 411.—*Improvement in Nut Machines.*

What I claim is, a combination, substantially as herein described, of tables, boxes, and punchers, the same being arranged and operated in the manner set forth, or any equivalent thereto, for the purpose specified.

ROBERT GRIFFITHS.

No. 412.—*Improvement in Curry Combs.*

I claim combining the trough-shaped bars *a a a a*, which have the comb-teeth on their edges, with the folded strips of metal *b b*, which form the transverse bars, and receive the wire through them, forming a square open or hollow-back comb, as above described.

I also claim the shank, constructed with the fastening hole *f*, made by bending the wire, which saves the welding or drilling, and combined with the comb, as herein described substantially, so as to act as transverse bars and guards to the ends of the combs.

WILLIAM BEACH.

No. 413.—*Improvement in Marble-Sawing Machines.*

I claim the particular combination and arrangement of the fender bars *J J' j j'* with the adjustable guide pieces, when the same are constructed and arranged to operate in relation to each other in the manner and for the purpose set forth.

JOSE TOLL.

No. 414.—*Improvement in Sewing Machines.*

I claim: 1st. The combination, in a single machine, of these three following elements, namely: a table, or platform, to support the material to be sewed, holding it for the action of the needle, and presenting it properly to the grasp of the feeding apparatus; a sewing machine proper, consisting of a needle and shuttle, or their equivalent; and a mechanical feed automatic and causing the cloth to progress regularly, to which the cloth is not attached, and so grasping the cloth that it may be turned

and twisted by the hand of an operator, such twisting not interfering with the regular progression of the cloth; and the whole being constructed and acting together, and in combination with each other, substantially in the manner and for the purposes herein specified.

2d. I claim moving a shuttle, so shaped and held by its race that jaws may embrace it, by means of two jaws, which are alternately in contact with the shuttle, and are constructed and move substantially in the manner herein set forth, making and breaking their contact without any aid from cams or springs, or the equivalents of such devices.

And lastly, I claim a double-pointed shuttle, substantially such as is herein specified, in combination with jaws for driving it, substantially such as are described, whereby the shuttle may be thrown alternately from opposite directions through loops, without practically disturbing the loop-thread.

ALLEN B. WILSON.

No. 415.—*Improved Magazine, Repeating, and Needle Gun.*

I claim, 1st, the application of the rack *E*, situated between the gun-barrel *A* and the cartridge-barrel *B*, and the construction of the piston *W* in connexion with said rack for the purpose of pressing the cartridge into the revolving breech-piece, substantially as described.

2d. I claim the spiral spring round the needle, together with the jointed arm *b* at the upper end of the hammer *L*, constructed as set forth, and acting upon the needle in such a manner that, after said jointed arm has pressed the needle sufficiently far into the cartridge to ignite the priming, said arm is forced upwards, allowing thereby the needle to spring suddenly back, and pass under the arm by the action of the spring, by which any heating of the needle is prevented.

3d. I claim revolving the breech-piece by the pin *V*, in the manner substantially as described: *i. e.*, when the said pin is so constructed and arranged that it will rotate after the revolution of the breech-piece, and turn over at the moment it shall have passed the spiral groove, and return to its former position inclined, as described.

4th. I claim the ramming hammer *M*, worked in the manner and for the purpose herein set forth.

EDWARD LINDNER.

No. 416.—*Improved Magazine, Repeating, and Needle Gun.*

I claim the combination of the igniting needle with the revolving cylinder or breech-piece, when constructed, arranged, and operated in such a manner that the needle can only be projected when the proper aperture is presented to it, and will always be withdrawn previous to the revolution of the cylinder, substantially as described.

EDWARD LINDNER.

No. 417.—*Improvement in Manufacturing Carpets.*

I claim the fabric substantially as herein described, produced by the double wefts, one or both of which are parti-colored, in combination with the two sets of warps; one to divide and ingrain the wefts, and the other to bind in the wefts, substantially as and for the purpose specified.

JNO. G. MACNAIR.

No. 418.—*Multiform Moulding Plane.*

I claim the combination of a separate moulding part or slide, with the handle-supporting part or body of the plane, and applied thereto by means of plates and screws, or equivalent devices, substantially as specified, and for the purpose not only of enabling it to be removed from said handle part or body, but to allow another such a slide, (provided with a plane iron or cutter,) whatever may be its pattern, to be used in the application of or in combination with such handle part or body, as circumstances may require.

THOMAS D. WORRALL.

No. 419.—*Improved Machine for Reaming and Tapping Gas-Fittings.*

I claim the combination of the tool-holder with its spindle, when the said tool-holder is armed with its complement of bits or tools, and is capable of being turned upon an axis at right angles to and independent of the axis of the spindle, so that either tool may be revolved in the axis of the spindle, substantially in the manner and for the purpose described.

2d. I claim the rotating tool-holder, as constructed and operating in combination with the revolving chuck or clamp B, for holding the fitting, the whole being arranged in the manner substantially as herein set forth for the purpose described.

HENRY A. CHAPIN.

LISTS OF DESIGNS AND CLAIMS FOR 1856.

No. 753.—*Design for Hall Pendants.*

What I claim is, the configuration and arrangement of the several parts and ornaments combined, substantially as herein set forth, and forming a new and original design for a hall pendant.

SAMUEL B. H. VANCE.

No. 754.—*Design for Hall Pendants or Chandeliers.*

What I claim is, the design, configuration, and arrangement of the several parts and ornaments, as herein set forth, forming a new and original design for a hall pendant or a chandelier with three branches and burners.

SAMUEL B. H. VANCE.

No. 755.—*Design for Perfumery Bottles.*

What I claim is, the ornamental design of bottle, substantially as represented.

A. E. WETHERILL.

No. 756.—*Design for Cooking-Stoves.*

What we claim is, the design, configuration, and arrangement of the several ornaments in bas-relief, and mouldings on the plates of stove "Premium," as herein described, and shown in annexed drawing.

GARRETTSON SMITH.

HENRY BROWN.

JOSEPH A. READ.

No. 757.—*Design for Portable Furnaces.*

What we claim is, the design, configuration, and arrangement of the several plates and ornaments thereon, as herein set forth and shown in the drawing, constituting a new design for portable furnaces.

GARRETTSON SMITH.

HENRY BROWN.

JOSEPH A. READ.

No. 758.—*Design for Portable Ranges.*

What we claim is, the design, configuration, and arrangement of the ornaments in bas-relief, and mouldings on the several plates, as described and represented in the annexed drawing.

GARRETTSON SMITH.

HENRY BROWN.

JOSEPH A. READ.

No. 759.—*Design for Gates.*

I claim it as represented on the drawing, for a gate for cemetery enclosures.

HERMANN ED. WESCHE.

No. 760.—*Design for Printing-Type.*

What I claim is, the forming on the face of printing type such figures, that the letters printed therefrom shall represent in the upper portion of each letter a colored ground with white stars, and in the lower portion alternate white and colored stripes, substantially in the manner shown.

L. JOHNSON.

No. 761.—*Design for Moulded Bricks.*

What I claim is, the shape of the brick and the ornaments that are on the brick, as represented and described in this specification and in the annexed drawings.

JAMES M. THOMPSON.

No. 762.—*Design for Gates.*

I claim the design as represented and described in this specification and in the drawing.

HERMANN ED. WESCHE.

No. 763.—*Design for Bottle Casters and Egg-Cup Stands.*

What I claim is, the ornaments B B¹ B² B³ upon the sides of the base A, the scrolls *d* on the upper and lower edges of the sockets C, the ornaments D upon the outer sides of the sockets, the beaded rims *k* and scrolls C¹ on the plates E, and the figure H and leaves *m*, which form the main portion of the handle F; the whole being arranged and combined as described, to form an ornamental design for a bottle caster and egg-cup stand.

R. GLEASON, Jr.

No. 764.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design and configuration of cooking-stove plates, such as herein described and represented in the annexed drawing.

SAMUEL PIERCE.
JAMES J. DULLEY.

No. 765.—*Design for Stove Plates.*

What I claim is, the ornamental design and configuration of stove plates, such as herein described and represented in the annexed drawings.

SANFORD BURNAM.

No. 766.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design and configuration of cooking-stove plates, such as herein described and represented in the annexed drawing.

SANFORD BURNAM.
SAMUEL PIERCE.

No. 767.—*Design for Parlor Stoves.*

What I claim is, the ornamental design of the various parts of the stove or fire-place, as above referred to and represented in the drawings herein mentioned.

WM. T. COGGESHALL.

No. 768.—*Design for Parlor Stoves.*

What I claim is, the combination of the various ornaments and mouldings on the several plates, as shown in the drawings, the whole forming an ornamental design for a parlor stove.

SAMUEL D. VOSE.

No. 769.—*Design for the Handles of Forks and Spoons.*

What I claim is, the peculiar form and figure herein described and set forth, as the design for either side of fork, spoon, ladle, and knife-handles. The said articles being manufactured of metal of any known kind.

THEODORE EVANS.

No. 770.—*Design for Elevated Oven-Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming together the ornamental design for the plates of a cooking-stove.

S. W. GIBBS.

No. 771.—*Design for Clock-Case Fronts.*

What I claim is, the female figure C, peacock D, and foliage E, when arranged and combined, as herein shown, to form an ornamental design for a clock.

NICHOLAS MULLER.

No. 772.—*Design for Parlor Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together the ornamental designs for the plates of a parlor stove.

S. H. RANSOM.

No. 773.—*Design for Six-Plate Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in and by the accompanying drawings, forming together an ornamental design for a six-plate stove.

S. H. RANSOM.

No. 774.—*Design for Stove Plates.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in and by the accompanying drawings, forming together an ornamental design for a six-plate stove.

S. H. RANSOM.

No. 775.—*Design for Cooking Stoves.*

What I claim is, the combination and arrangement of ornamental sign for a cooking-stove.

S. H. RANSOM.

No. 776.—*Design for Elevated Oven Cooking-Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for an elevated oven cooking-stove.

S. H. RANSOM.

No. 777.—*Design for Chandeliers.*

What I claim is, the design, configuration, and arrangement of the several parts and ornaments, as herein set forth, forming a new and original design for a chandelier or pendant with two branches or burners

SAM'L. B. H. VANCE.

No. 778.—*Design for Chandeliers.*

What I claim is, the design, configuration, and arrangement of the several parts and ornaments, as herein set forth, forming a new and original design for a chandelier with three branches or burners.

SAMUEL B. H. VANCE.

No. 779.—*Design for Parlor Stoves.*

What we claim is, the ornamental design and configuration of the stove plates herein described and represented in the annexed drawings.

N. S. VEDDER.

WM. L. SANDERSON.

No. 780.—*Design for Metallic Pens.*

What I claim is, the device impressed on the pen, namely, a medallion bearing a likeness of Washington.

ALBERT GRANGER.

No. 781.—*Design for Cooking-Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in and by the accompanying drawings, forming together an ornamental design for a cooking-stove.

S. H. RANSOM.

No. 782.—*Design for Gas Ovens.*

What I claim as my invention is, the design for gas ovens, as herein above illustrated and set forth.

E. J. DELANY.

783.—*Design for Summer Furnaces.*

What I claim as my invention is, the design for summer furnace, as herein above illustrated and set forth.

JACOB BEESLEY.

No. 784.—*Design for Casters.*

What I claim is, the general design and configuration of the caster.

WM. H. GREEN.

No. 785.—*Design for Stove Plates.*

What we claim is, the foregoing design and configuration, forming an ornamental design for stove plates, as illustrated by the drawings.

HARVEY SMITH.

FREDERICK A. SHELDON.

No. 786.—*Design for Clock-Case Fronts.*

What I claim is, the wreath B and figures C D D, arranged as herein shown and described, and forming a new and ornamental design for a clock-case front.

NICHOLAS MULLER.

No. 787.—*Design for Clock-Case Fronts.*

What I claim is, the female figure B reclining or sitting upon the sheaves C, as shown and described, and forming a new and ornamental design for a clock-case front.

NICHOLAS MULLER.

No. 788.—*Design for Piano-Forte Legs.*

What I claim is, the ornamental design of a piano-forte leg as constructed, substantially as represented in the drawings and in manner as above described.

ISAAC ENGEL.

No. 789.—*Design for Cooking-Stoves.*

What I claim is, the arrangement and combination of the ornaments that form the design herein above specified.

ANTHONY J. GALLAGHER.

No. 790.—*Design for Parlor Stoves.*

What we claim is, the ornamental design and configuration of parlor stove plates, such as herein described and shown in the annexed drawings.

N. S. VEDDER.
WM. L. SANDERSON.

No. 791.—*Design for the Plates of Cookin -Stoves.*

What we claim is, the ornamental design and configuration of cook-stove plates, such as herein described and represented in the annexed drawings.

WM. L. SANDERSON.
N. S. VEDDER.

No. 792.—*Design for Oven and Stove Doors.*

What I claim is, the figures a^1, b^1, c^1, d , and e^1 , cast respectively upon the panels of the doors of ovens, ranges, or stoves, substantially as set forth and described, as a new ornamental design for the same.

JOSEPH A. READ.

No. 793.—*Design for Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings or delineations, forming together the ornamental design for the plates of a hall or a parlor stove.

S. W. GIBBS.

No. 794.—*Design for Parlor Stoves.*

What I claim is, the ornamental configuration of parlor-stove plates, such as herein described and shown in the annexed drawing.

DAVID HATHAWAY.

No. 795.—*Design for Cooking-Stoves.*

I claim the ornamental design of each of the doors and side-plates, as represented in the drawings, and as above described.

THOMAS A. HERRICK.

No. 796.—*Design for Combined Match-Safes, Paper-Weights and Pin-Cushions.*

What I claim is, the new design of a combined match-safe, paper-weight and pin-cushion, substantially such as is represented in the drawings and specification herein referred to.

MICHAEL B. DYOTT.

No. 797.—*Design for Portable Ranges.*

What we claim is, the design, configuration, and arrangement of the ornaments in bas-relief, and mouldings, as herein set forth and shown in the annexed drawings, constituting a new and original stove design.

JAMES HORTON.
JOHN CURRIE.

No. 798.—*Design for Piano-forte Legs.*

What I claim is, the form and configuration of the central fluted column and the pendant or jutting device at F F F; the whole producing an ornamental design for a piano-forte leg.

ALBERT BOSWORTH.

No. 799.—*Design for Cooking-Stoves.*

I claim the design for the "Lotus" cooking-stove, substantially as described and represented.

WILLIAM RESOR.

No. 800.—*Design for Cooking-Stoves.*

I claim the design for the "Kentucky" cooking-stove, substantially as described and represented.

WILLIAM RESOR.

No. 801.—*Design for Stoves.*

What I claim is, the arrangement and combination of ornaments which form the design, above described, for a parlor oven stove.

ISAAC DILLER.

No. 802.—*Design for Cooking-Stoves.*

We claim the design, configuration, and arrangement of the several ornaments in bas-relief, as set forth, on the plates of the cook-stove designated as the "President."

GARRETTSON SMITH.
HENRY BROWN.
JOSEPH READ.

No. 803.—*Design for Air-Tight Stoves.*

We claim the design, configuration, and arrangement of the several ornaments in bas-relief and mouldings of the plates A and C, as herein set forth and represented in the drawing.

GARRETTSON SMITH.
HENRY BROWN.

No. 804.—*Design for Nine-Plate Stoves.*

We claim the design, configuration, and arrangement of the several ornaments and mouldings, and form of support of the nine-plate stove, as above set forth and represented in the drawings.

GARRETTSON SMITH.
HENRY BROWN.
JOSEPH A. READ.

No. 805.—*Design for Stoves.*

We claim the design, configuration, and arrangement of the plates and the ornaments thereon, as set forth and delineated in the drawings.

GARRETTSON SMITH.
HENRY BROWN.
JOSEPH A. READ.

No. 806.—*Design for Stoves.*

What I claim is, the combination and arrangement of the ornamental figures and forms represented in the accompanying drawings, forming together the ornamental design of a six-plate stove.

S. W. GIBBS.

No. 807.—*Design for Cooking-Stoves.*

I claim the general form and proportions combined with the mouldings, figures, and ornaments, substantially as above described.

JOHN F. ALLAN.

No. 808.—*Design for Stoves.*

What I claim is, the design and configuration of the mouldings and ornaments as herein described, forming an ornamental design for stoves.

S. W. GIBBS.

No. 809.—*Design for Stoves.*

What I claim is, the combination and arrangement of ornamental forms and figures represented in the accompanying drawings, forming altogether the ornamental design of a parlor cooking-stove.

S. F. PRATT.

No. 810.—*Design for Stoves.*

What we claim is, the design and configuration of the ornaments and mouldings as herein described, forming an ornamental design for stoves.

N. S. VEDDER.
WM. L. SANDERSON.

No. 811.—*Design for Cooking-Stoves.*

We claim the combination of the various ornaments and mouldings on the several plates and doors, as shown in the drawing, the whole forming an ornamental design for a cooking-stove.

GARRETTSON SMITH.
HENRY BROWN.
JOSEPH A. READ.

No. 812.—*Design for the Base of Clock-Case Fronts.*

What I claim is, the male figure G, dog H, stumps B B B¹, roots C C C, leaf foliage D, and blades of grass E E, when arranged and combined as shown, to form an ornamental design for a clock-case front.

NICHOLAS MULLER.

No. 813.—*Design for Clock-Case Fronts.*

What I claim is, the war trophies *a b c d e*, foliage *g g*, and eagle E, when arranged and combined as shown, to form an ornamental design for a clock-case front.

NICHOLAS MULLER.

No. 814.—*Design for Ornamental Fire-Places.*

What I claim is, the ornamental design, configuration, and arrangement of the front plate and fender of grates, as herein described in this specification and represented in the accompanying drawings.

JOHN C. MACY.

No. 815.—*Design for Parlor Ovens.*

What we claim is, the general design and configuration of the stove.

RUSSEL WHEELER.
S. A. BAILEY.

No. 816.—*Design for Box-Stove Plates.*

I claim the combination and arrangement of the ornamental figures and forms represented in the accompanying drawings, forming together the ornamental designs for a box-stove plate.

WINSLOW AMES.

No. 817.—*Design for Cooking-Stoves.*

I claim the configuration and arrangement of the ornaments herein described, the whole forming a new and original design for a cook-stove.

JOSEPH HACKETT.

No. 818.—*Design for Clock-Fronts.*

What we claim is, the combination and arrangement, as described, of the several ornaments specified and shown, for the purpose of forming a new and ornamental design for a clock-case front.

J. SHEPHERD.
R. SHEPHERD.

No. 819.—*Design for Cooking-Stoves.*

What we claim is, the form or configuration of the parts or ornaments herein described, the whole forming a new and original design for a cook-stove.

BENJAMIN WARDWELL.
EPHRAIM R. BARSTOW.

No. 820.—*Design for Drawer-Pulls.*

We claim the above described and represented new ornamental configuration or design for a drawer-pull.

PHILOS BLAKE.
ELI W. BLAKE.
JOHN A. BLAKE.

No. 821.—*Design for Stove Plates.*

What I claim is, the ornamental design and configuration of stove plates, such as herein described and shown in the annexed drawings.

N. S. VEDDER.

No. 822.—*Design for Parlor Stoves.*

What we claim is, the ornamental design and configuration of parlor stoves, the same as herein described and shown in the annexed perspective drawing.

SAMUEL PIERCE.
J. J. DULLEY.

No. 823.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design and configuration of cook-stove plates, the same as herein described and shown in the annexed perspective drawing.

SAMUEL PIERCE.
J. J. DULLEY.

No. 824.—*Design for Cooking-Stoves.*

What I claim is, the ornamental design and configuration of cook-stove plates, such as herein described and shown in the annexed perspective drawing.

N. S. VEDDER.

No. 825.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design and configuration of cook-stove plates, such as herein described and shown in the annexed perspective drawing.

N. S. VEDDER.
EZRA RIPLEY.

No. 826.—*Design for Parlor Stoves.*

What I claim is, the ornamental design and configuration of parlor stove plates, such as herein described and shown in the annexed drawings.

D. HATHAWAY.

No. 827.—*Design for Six-Plate Stoves.*

What we claim is, the ornamental design of the end and side plates of a six-plate stove, the same as herein described and represented in the annexed drawings.

N. S. VEDDER.
EZRA RIPLEY.

No. 828.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design herein described and represented in the annexed drawings for the front and side plates of a cooking-stove

N. S. VEDDER,
WM. L. SANDERSON.

No. 829.—*Design for Cooking-Stoves.*

What we claim is, the ornamental design and configuration herein specified and represented in the annexed drawings for the plates of a cooking-stove having an elevated oven.

N. S. VEDDER.
WM. L. SANDERSON.

No. 830.—*Design for Stoves.*

What we claim is, the design, configuration, and arrangement of the ornaments in bas-relief on the several plates, as herein before set

forth and shown in the drawing constituting the design of stove designated as the "Gem."

GARRETTSON SMITH.
HENRY BROWN.
JOSEPH A. READ.

No. 831.—*Design for Floor-Cloths.*

What I claim is, the arrangement of ornamental figures forming a design for floor oil-cloths or other fabrics, as shown in the aforesaid drawing.

ANTOINE GLOMINSKI.

No. 832.—*Design for Floor-Cloths.*

What I claim is, the arrangement of ornamental figures forming a design for floor oil-cloths or other fabrics, as shown in the aforesaid drawings.

ANTOINE GLOMINSKI.

No. 833.—*Design for Parlor Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together the ornamental designs for the plates of a parlor stove.

S. F. PRATT.

No. 834.—*Design for Oven-Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together the ornamental design for the plates of a Franklin stove.

S. F. PRATT.

No. 835.—*Design for Parlor Cooking-Stoves.*

What I claim is, the design, configuration, and arrangement, in bas-relief, on the ends and front of the stove, as described and shown, forming a new and original design for a cooking-stove.

DANIEL WILSON.

No. 836.—*Design for Cylindrical Coal-Stoves.*

What we claim is, the general design and configuration of the stove.

RUSSEL WHEELER.
STEPHEN A. BAILEY.

No. 837.—*Design for Cooking-Stoves.*

What I claim is, the ornamental configuration, composing a design for a cooking-stove, substantially as represented and specified.

HUDSON E. BRIDGE.

No. 838.—*Design for Busts of J. C. Fremont.*

What I claim is, a new and original design of a bust of Colonel John C. Fremont, as set forth in the above specification.

JOHN GOTT.

No. 839.—*Design for Stoves.*

What we claim is, the design and configuration of the ornamental plates, as herein described, forming an ornamental design for stoves.

N. S. VEDDER.

WM. L. SANDERSON.

No. 840.—*Design for Stoves.*

What I claim is, the design and configuration of the ornaments, as herein described, forming an ornamental design for stoves.

S. W. GIBBS.

No. 841.—*Design for Parlor Stoves.*

What we claim is, the design for parlor stove, as herein above illustrated and set forth.

JACOB BEESLEY.

E. J. DELANY.

No. 842.—*Design for Cooking-Stove Plates.*

What I claim is, the ornamental design herein described and represented in the annexed drawings for panels of plates of cooking-stoves.

N. S. VEDDER.

No. 843.—*Design for Cooking-Stoves.*

What I claim is, the use of the patterns or devices (marked *a* and *b* in the several drawings) for ornamenting the side pieces, front, and back pieces of cooking-stoves, in the manner shown in the accompanying drawings.

N. S. VEDDER.

No. 844.—*Design for Stoves.*

What we claim is, the design, configuration, and arrangement of the ornaments in bas-relief and mouldings, as herein described and shown in the drawings, constituting an ornamental stove design.

GARRETTSON SMITH.

HENRY BROWN.

JOSEPH A. READ.

No. 845.—*Design for Stoves.*

What I claim is, the configuration, composing an ornamental design for the top, base, and door of a sheet-iron, air-tight stove, substantially as represented and described.

HUDSON E. BRIDGE.

No. 846.—*Design for Cook-Stoves.*

What we claim is, the ornamental design and configuration of cook-stove plates, such as herein described and shown in the annexed drawing.

N. S. VEDDER.

WM. L. SANDERSON.

No. 847.—*Design for Statuettes of Burton, as Captain Cuttle.*

What I claim is, the design herein described and shown for a statuette of Mr. Burton as "Captain Cuttle."

C. MULLER.

No. 848.—*Design for Stoves.*

What I claim is, the ornamental design and configuration of the plates or castings for Franklin stoves, herein specified and represented in the annexed drawing.

J. J. DULLEY.

No. 849.—*Design for Parlor Stoves.*

What I claim is, the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming the ornamental design for the plates of a parlor stove, as represented in the accompanying drawings.

ELIHU SMITH.

No. 850.—*Design for Kitchen Stoves.*

I claim the design here described for the external ornament and configuration of a kitchen stove.

S. W. GIBBS.

No. 851.—*Design for Printing Types.*

I claim the design of the said type as described and shown.

GEORGE BRUCE.

No. 852.—*Design for Cooking Stoves.*

I claim the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming together the ornamental design for the plates of an elevated oven cooking stove.

S. W. GIBBS.

No. 853.—*Design for Cooking Stoves.*

I claim the combination and arrangement of ornamental figures and forms represented, forming the ornamental design for the plates of a cooking stove.

S. W. GIBBS.

No. 854.—*Design for Cooking Stoves.*

We claim the design, configuration, and arrangement of the ornaments in bas-relief on the several plates as above set forth and delineated in the drawing, constituting stove design "Young America."

G. SMITH.
HENRY BROWN.

No. 855.—*Design for Parlor Grates.*

I claim the ornamental configuration and design for a parlor-stove grate such as herein described, and shown in the annexed perspective drawing.

JOHN T. DAVY.

No. 856.—*Design for Cooking Stoves.*

I claim the ornamental configuration and design for cook-stove plates such as herein described and shown in the annexed perspective drawing.

JOHN T. DAVY.

No. 857.—*Design for Parlor Cooking Stoves.*

I claim the ornamental design and configuration of parlor cook-stove plates, such as herein described and shown in the annexed drawings.

JOHN T. DAVY.

No. 858.—*Design for Metallic Bedsteads.*

I claim the ornamental design of the post, leg, and head-board of the bedstead, as described and represented.

JOHN B. WICKERSHAM.

No. 859.—*Design for Floor Cloths.*

What I claim is the arrangement of ornamental figures forming a design for floor oil-cloths or other fabrics as shown in the aforesaid drawings.

ANTOINE GLOMINSKI.

ADDITIONAL IMPROVEMENTS.

No. 131, to original Letters Patent No. 10,942.—*Improvement in Hydraulic Heaters.*

What we claim is, the use of the radial ribs *d d* in combination with tubes *F F*¹, irrespective of form of said tubes, for the purposes set forth substantially in the foregoing specification.

LEWIS W. LEEDS.
R. MORRIS SMITH.

No. 132, to original Letters Patent, No. 13,018.—*Improvement in the Manufacture of Ornamental Felt-Cloth.*

What I claim is, the manufacturing of ornamental felt fabrics by placing loose, woven, or knit felting or shrinking fabrics, of any color or design, upon the surface of a sheet of batting composed of any felting or shrinking substance; and shrinking the same ornamenting fabric or fabrics into the body of the felt in the manner substantially as described, to form an ornamental felt fabric of the character and quality described, for the purpose set forth.

O. B. TOMLINSON.

No. 133, to original Letters Patent No. 14,074.—*Improvement in Candlesticks.*

What I claim is:

1st. Securing the lip A to the stem D, and within the slide E F, as described, whereby I am enabled to use a solid lip and avoid all leakage.

2d. I claim the open slide as described, for avoiding damage, as set forth.

ABNER WHITELEY.

No. 134, to original Letters Patent No. 9,611.—*Improvement in Daguerreotype Cases.*

What I claim is, the combination and arrangement of a series of leaves of any suitable material containing photographic or other pictorial representations, (interspersed or not with blank or printed leaves) with the supplementary lid or adjustable flap, containing a lens or lenses, as described; the same being united or bound together so as to form a book, substantially in the manner and for the purposes described.

J. F. MASCHER.

No. 135, to original Letters Patent No. 12,181. Re-issue 347.—*Improvement in Grinding Mills.*

What I claim is, in combination with the cylinder, concave and spiral ribs, the cracking or crushing apparatus preceding the grinding surfaces, for the purpose of adapting the mill to the grinding of corn and the cobs or other similar material, substantially as set forth.

AMORY FELTON.

No. 136, to original Letters Patent No. 14,068.—*Improvement in Excavating Machines.*

What I claim is, the adjustable brace A¹ or its mechanical equivalent, in combination with the oscillating connecting arms H H, the combination being substantially in the manner and for the purposes as herein fully set forth.

The adjusting guide B¹ or its mechanical equivalent, constructed and operating substantially in the manner and for the purposes as herein fully described.

The tipping scoop X, having a stationary back firmly bolted and braced to the scoop staff, which back forms a rest or shoulder for giving firm support to the scoop in its excavating operation, the scoop being constructed and affixed to the staff, and operating in the manner and for the purposes substantially as herein fully specified.

J. J. SAVAGE.

No. 137, to original Letters Patent No. 12,205.—*Improvement in Mash Machines.*

What I claim is, the construction, application, and use of the inclined curved teeth A and B, substantially and for the purpose as set forth and described.

ADOLPH HAMMER.

No. 138, to original Letters Patent No. 13,130.—*Improvement in Gas Burners.*

I claim extending up into the gas distributor and purifier, and among the wires of the latter, as specified, a cone, having at its apex the inlet opening for the passage of gas into the purifier, the same serving to attain advantages as herein before explained.

CHARLES H. JOHNSON.

No. 139, to original Letters Patent No. 11,268.—*Improvement in Ventilating Railroad Cars.*

What I claim is, a small door that may be opened or shut in connexion with and as part of a car window, that may be raised or opened in the usual way, as above described.

GEORGE F. FOOTE.

No. 140, to original Letters Patent No. 14,036.—*Improvement in Grain Binders for Harvesters.*

What I claim is:

1st. The long lever *m*, operated by projections *b*² *b*³ and spring *p*, for the purposes herein above set forth.

2d. The arrangement and combination with the cams for operating the compressor, the lever *d*, bevel gearing *j*, *i* *i*¹, and pulley wheel *e* on the pinion shaft, all arranged and operating for the purposes herein above set forth.

3d. The guards *t* *t*, for the purposes substantially as herein set forth.

G. W. N. YOST.

No. 141, to original Letters Patent No. 11,155.—*Improvement in Grass Harvesters.*

What I claim is, connecting the projections A, which are on alternate sections of the sickle, to the bar L, so that the said bar may be on top of said sections, as herein set forth.

GEORGE ESTERLY.

No. 142, to original Letters Patent No. 14,429.—*Improved Faucet.*

What I claim is, the combination of the screw, or its mechanical equivalent, with a hollow cylinder valve, constructed as specified, and the spring, when the latter is placed behind the valve, substantially as set forth.

MOSES WOODBURY.

No. 143, to original Letters Patent No. 12,275.—*Improvement in Means for Holding Window Blinds.*

What I claim is, the improved manner of hanging the brace D so that it will operate freely by its own weight; and casting or swaging the notches or their equivalent, so as to retain the blind in any desirable position.

HENRY A. FROST.

No. 144, to original Letters Patent No. 11,668.—*Improved Coupling for Carriages.*

What I claim is, arranging, above the threaded bolt and with respect to the guard from which it extends, as described, a seat or connexion for the spring or other part of a carriage, as specified.

I also claim arranging in the threaded bolt, and so as to pass up through it and its rest, a socket or passage for the reception of a screw-bolt, serving not only to confine a spring or bar down upon the seat, but for the specific purpose of preventing accident in case of breakage of the threaded bolt at its neck, as specified.

ABRAM J. GIBSON.

No. 145, to original Letters Patent No. 11,198.—*Improvement in Breech-Loading Fire-Arms.*

What I claim is: 1st. A swivel jointed cylindrical breech-pin D, the rear portion of which is armed with lugs *b b* and studs *c d e*, and an inclined plain *f*, all operating in the manner and for the purpose as herein specified.

2d. The locking of the cylindrical breech-pin D by means of lugs *b b* on said breech-pin, rotating on slightly inclined planes, said planes formed within the barrel, on opposite sides, and at the rear of the mortise C, or their equivalents, substantially as set forth.

3d. The peculiar combination and arrangement of the four parts or pieces of an ordinary gun lock, to wit: the hammer, main-spring, tumbler, and feather spring, making one plain, simple piece, operating as above represented.

4th. I claim the slotted thumb-lever E in combination with the studs

c d e, whereby the swivelled breech is caused to rotate from left to right and from right to left in locking and unlocking said breech, and whereby the breech is also moved back and forth, substantially as above described.

ABNER N. NEWTON.

No. 146, to original Letters Patent No. 10,174.—*Improved Protecting Bulwarks for War Vessels.*

What I claim is, the panels E and stanchions D, as arranged in relation to the promenade deck C and bulwarks of the vessel, substantially in mode of construction and for the purposes set forth.

WM. BALLARD.

No. 147, to original Letters Patent No. 13,724.—*Improvement in Looms.*

What I claim is, the employment of two sets of cams, four in each set, constructed, shaped, and arranged in reference to each other as shown in the drawings; the same being movable to the right and left without changing their intervals, and in either position producing a tubular cloth. One set being arranged in reference to the other, so that the shift of the cams shall make the harness shift the warp; instantly carrying that part forming the upper web downward, and that forming the lower web upward, making at their crossing a firm single joint.

JAS. ORN LEACH.

No. 148, to original Letters Patent No. 14,626.—*Improved Method of Regulating Pumps by Wind Wheels.*

What we claim is: 1st. Constructing the wind wheel so that the shaft *c c* will turn with it, together with the manner of breaking or stopping the wheel when the water cistern is filled with water by means of the hydrostatic bellows H (fig. 1) and the lever K K¹ and the brake-blocks O O, constructed in the manner described.

2d. The construction of the friction-wheel D in combination with the friction-wheel E and the brake K, (see fig. 2,) constructed in the manner described or any other substantially the same and which will produce the same results.

JACOB W. GOODWIN,
MOSES C. HAWKINS.

No. 149, to original Letters Patent No. 12,267.—*Improved Gas Heater.*

I claim the arrangement therein in manner as described of a separate or boiling chamber G, that is, to or between the flue-pipe E and the

reverberating dome or space F, substantially as described, in order that the apparatus may be made to perform functions as stated.

WILLIAM F. SHAW.

No. 150, to original Letters Patent, No. 14,735.—*Improved Apparatus for Raising and Lowering Carriage Tops.*

What I claim is the box B pawl or catch D, in combination.

ALANSON QUIGLEY.

No. 151, to original Letters Patent No. 15,005.—*Improvement in Rotary Brick Machines.*

(For engravings see Additional Improvement 151.)

What I claim is:

1st. The substitution of the single square-toothed ratchet wheel D and the pendulous lever E, with its spring e in the "apparatus," described in my former specification, "for rotating and stopping the cylinders of rotary brick machines;" the said square-toothed ratchet-wheel, lever and spring being constructed, applied, and operating substantially as set forth and described herein.

2d. A single cylinder A with two series of moulds in the same, when the said cylinder is constructed as described; that is to say, with the partition b in the middle and open at each end, the movable bottoms of the moulds thereof being supported at each of their ends by the rims e e' which are partially supported by the rollers t t', whilst the roller k and its bearings i i' operate between the said two rims, when the above parts are constructed, arranged, and operated substantially in the manner and for the purpose set forth.

GEORGE CRANGLE.

No. 152, to original Letters Patent No. 15,521.—*Improved Fire-Arm.*

What I claim is, the placing of the hammer and trigger with their springs within the arm D.

The cocking of the hammer by the movement of the arm D and the aid of stud S, or its equivalent.

The placing of the tape-priming under the barrel and in front of the cone, the same to be brought properly on to the cone by the movement of the arm D.

The placing of the tape-priming and operating the same as described, in combination with the arm D.

F. D. NEWBURY.

No. 153, to original Letters Patent No. 15,362.—*Improvement in Fenders for Fire-places.*

I claim the construction of a fire-place wherein recesses D D² are formed in the jambs thereof, with hinged folding and expanding wings or flaps A A and F² attached thereto, forming a fender and a screen with the springs E E together with the double-sliding panels F F, fig. 1, and G G, fig. 3, substantially as described.

JNO. W. TRUSLOW.

No. 154, to original Letters Patent No. 15,005; Additional Improvements, No. 151.—*Improvement in Rotary Brick Machines.*

What I claim is, the application of the cut-off slides E E so as to slide up and down in contact with the plungers B B respectively, as described, and so as to produce in combination with the lower guide-piece C the alternately open and close chambers beneath the plungers, substantially in the manner and for the purpose set forth and described.

GEORGE CRANGLE.

No. 155, to original Letters Patent No. 3,803.—*Improvement in Harvesting Machines.*

What I claim is, the method of constructing the arm of the axle A, in combination with the metallic box z z, and the socket and yoke b¹, as shown at fig. 3 and No. 1, whereby the adjusting apparatus is placed beneath the body of the carriage, the whole being substantially combined and arranged as set forth in the above specification.

GEORGE ESTERLY.

No. 156, to original Letters Patent No. 14,294.—*Improvement in Hubs for Carriages.*

I claim the combination of the boxes c c, cylinder d, band k, with the rollers i i i i, all arranged substantially as described, and for the purposes set forth.

JOSEPH SMITH.

No. 157, to original Letters Patent No. 11,198; Additional Improvements No. 145.—*Improvement in Breech-Loading Fire Arms.*

I claim: 1st. The combination of the lever E with the breech-pin, substantially in the manner and for the purposes herein set forth.

2d. I claim one or more lips *l* in combination with the breech-pin, substantially as described.

3d. I claim cocking the gun by the backward movement of the breech-pin, as set forth.

4th. I claim cocking the gun by the tension lever *J*, as herein described.

5th. I claim forcing the part *m*, or its equivalent, between the main-spring and the barrel for the purpose of imparting tension to the main-spring.

6th. I claim relaxing the main-spring by removing the part *m*.

7th. I claim attaching the main-spring *H* to the barrel.

8th. I claim the combination of the hammer *F* with the barrel by means of supports *G*, as delineated.

9th. I claim sliding the breech-pin *L* wholly within the barrel, as shown.

ABNER N. NEWTON.

DISCLAIMERS.

Letters Patent No. 12,762.—*Improvement in Looms.*

Your petitioners, therefore, hereby enter their disclaimer to that part of the claim in the aforementioned specification, which is in the following words, to wit: "For the purpose of operating the shuttle boxes of looms, through the intervention of a straight rack;" which disclaimer is to operate to the extent of the interest of said letters patent vested in your petitioners, who have paid ten dollars into the treasury of the United States, agreeably to the requirements of the act of Congress in that case made and provided.

JOHN G. MELVILLE,
WILLIAM BRAYSHAW.

Letters Patent No. 2,658.—*Improvements in Lamps.*

Your petitioner, therefore, hereby enters his disclaimer of that part of the claim in the aforementioned specification which is in the following words, to wit:

"Third. I claim the mode of regulating the light by raising or lowering the burner and outside regulating cone combined; the centre plate, letter *O*, being at the time stationary, substantially as above described."

Your petitioner having paid ten dollars into the treasury of the

United States, agreeably to the act of Congress in that case made and provided.

MICHAEL B. DYOTT.

EXTENSIONS.

Letters Patent No. 2,455. Re-issue No. 335.—*Improvement in Spark Arresters.*

I claim the combination of the central chamber *C*, the series of tangential openings *E E*, the larger circular chamber *A*, furnished with a series of vertical openings *J J*, leading into exterior chambers or channels, for separating sparks and other particles of matter from the gaseous current discharged from locomotive or other chimneys, substantially in the manner set forth.

WM. C. GRIMES.

Letters Patent No. 2,467. Re-issue No. 342.—*Improvement in Machines for Threshing and Winnowing Grain.*

I claim, first, the peculiar construction of the chaff-screen *Q*¹, which consists of a thin plate of metal punched with a semi-circular instrument, for the purpose of producing semi-circular apertures, and at the same time leaving the parts of the metal thus partly punched from said plate overhanging said apertures, at an angle of 30 or 40 degrees, or at any suitable angle greater than that of the plate, for the purpose of allowing the grain to pass through said apertures, and at the same time prevent the chaff and straw entering them, and thereby preventing choking.

And, secondly, the combination of the system of screens, the blower, and the elevators *X*, for cleaning and conveying the cleaned grain to the granary or other place of deposit, substantially as herein set forth and represented.

ANDREW RALSTON.

Letters Patent No. 2,488.—*Improvement in Reaping Machines.*

I claim the construction of the vibrating cutters with serrated edges, whether said cutters be connected together so as to form a vibrating bar, or be placed separately on a bar of this kind, as set forth, in combination with the stationary teeth or blades serrated in a similar manner, and arranged below the former, as described.

I also claim the mode of constructing the rake and combining it with the bed of the machine, by forming it with pointed fingers on the ends of the arms, and arranging the fingers in spaces formed in the bed, as set forth.

I also claim the manner of discharging the grain from the bed by means of said rake and in the manner already described.

JONATHAN READ.

Letters Patent No. 2,507.—Re-issue No. 65.—*Improvement in the Method of Constructing Presses for Pressing Hay, Cotton, &c.*

I claim the manner in which I have constructed the press as shown by the combination of the segment-wheel A with the pinion B and its shaft B¹; the axis or fulcrum of the segment A being at the jointed part of the arms or other analogous devices that will allow of the axis or fulcrum moving from an acute angle to a straight line with the point on which the arms rest, and the line on which the gudgeon H moves, and *vice versa*. In other words, I claim the invention or discovery of moving the axis or fulcrum of a wheel or lever in the simple act of operation of said lever or wheel, the axis or fulcrum of which is at the movable joint E, so as to produce a direct force against the object to be moved, with all the advantages of the progressive power of the toggle joint operated upon by an extended lever, the whole being combined and operating substantially in the manner herein set forth.

S. W. BULLOCK.

Letters Patent No. 2,538.—*Improvement in the Construction of Heating Stoves.*

I claim the manner in which I have arranged the four descending flues K K, the space F under the false bottom E, and the exit-flue H, in combination with the opening N into the space F, so as to co-operate with the other parts of said stove in regulating the heat and determining the amount of the draught; and this I claim whether combined with the oven B or not. The sliding-door L, the drop-door C, and other parts of this stove, do not differ from such as have been previously known and used; and I do not, therefore, make any claim to these, or in fact to any part of the stove taken individually, but I limit my claim to the special combination and arrangement substantially as above set forth and made known.

ZEPHANIAH BOSWORTH.

Letters Patent No. 2,577.—*Improvement in Water Wheels.*

We claim the placing of the buckets between two plates so formed that the parts in which they are contained shall constitute the frustums of cones; the lower or outer plate or plates being left open for a central discharge between the buckets; said buckets also being so arranged as that their planes shall form a tangent, or nearly so, with the circle of said opening; such wheel or wheels being likewise furnished with a neck or collar, running truly within or against a metallic plate; and the respective parts of said wheel and its appendages being combined together and arranged substantially as above set forth.

LEMUEL W. BLAKE.
GEORGE W. BLAKE.

Letters Patent No. 2,609.—*Improvement in the Manner of Constructing Shielded Pins for Securing Shawls, Diapers, &c.*

I claim the combining of a concave-convex shield, which is bent or recurved at its ends, with a pin that is secured thereto by an eye or loop at one end, and the point of which is to pass into and be retained by the hollow in the recurved part of the opposite end, in the manner and for the purpose herein fully set forth.

THOMAS WOODWARD.

Letters Patent No. 2,648.—*Improvement in Machines for Ruling Paper.*

I claim the two cylinders A and B, arranged so that the lowest edge or part of the upper shall be situated at a distance from the upper edge of the lower cylinder, equal or a little greater than the length of the sheets to be ruled, (said length being taken in the direction in which the sheets move, and said edges of said cylinders being in or about in a horizontal plane, and so that the cylinder B shall have a velocity double that of the cylinder A,) in combination with the systems of rollers and cords, whereby the sheets are received from an endless feeding apron, upon which they are placed, so as to lap over each other, and from thence are caused to pass around the first cylinder, and be ruled thereon upon one half of one of their sides, and from thence to pass around the second cylinder and be ruled over the whole of their opposite sides, as herein set forth, the whole being arranged and operating substantially in the manner described.

GEORGE L. WRIGHT.

Letters Patent No. 2,651.—*Improvement in the Manner of Constructing Brushes for Dressing Warps.*

I claim securing the bristles in position, and preventing their displacement by the action of water or other external cause, by saturating said bristles when inserted in the block with paint or a mixture of white-lead or other suitable substance, and linseed or other proper oil, in combination with the mode above set forth of confining their upper ends by cementing them in an inverted trapezoidal groove; the whole process being substantially as above described, so that when a brush for dressing warps has its bristles arranged and confined, as set forth, in long grooves, or in any manner similar thereto, said brush will apply paste or sizing matter more perfectly upon the threads of the warp, and be more durable than brushes as generally constructed, as heretofore explained.

SAMUEL TAYLOR.

Letters Patent No. 2,646.—*Improvement in Felting for Coats, Hats, &c.*

I claim the making of gloves, coats, hose, or other articles of wearing apparel, of which wool, hair, or fur is the only material, by uniting, by

any process of felting, the bats of which any such article is composed, in a flat or projecting seam, and by cutting away the superfluous parts, after such seam is formed by felting, as above described, and without the folding or turning over of the edges or margins of the bats, which is used in the ordinary process of making hats.

MARMADUKE OSBORNE.

Letters Patent No. 2,656.—*Improvement in Machinery for Grinding and Polishing Metallic Surfaces, particularly Saw-Plates.*

I claim the combining with the reciprocating beds or tables, or with the revolving disk or face plate, the cylindrical lap herein described, which is made to traverse back and forth upon its axis, and which may be borne up with any required degree of force against the article to be ground or polished, in the manner set forth; the face or periphery of said cylindrical lap being composed of a number of separate and distinct plates of metal, which are to constitute the grinding and polishing surfaces, and which are to be held in place by a screw or screws, and by being confined between rims, or in other suitable modes, substantially the same; the distinguishing feature of the said lap being the dividing of its periphery into separate plates, and combining the same together, as herein set forth.

RICHARD M. HOB.

Letters Patent No. 2,658.—*Improvement in Lamps for Essential Oils, &c.*

1st. I claim the air regulator, substantially as above described.

2d. I claim the combination of the two horizontal plates, the one above, and the other below or even with the top of the wick, to regulate the interior draught of the lamp, substantially as above set forth.

3d. I claim the mode of regulating the light by raising or lowering the burner and outside regulating-cone combined, the centre-plate O being at the time stationary, substantially as above described.

4th. I claim the mode of constructing a wick-tube, (see figs. 5 and 6,) its upper end being conical, or enlarged, so as to admit of a feeder being placed under the wick without enlarging it in diameter, substantially as above set forth.

MICHAEL B. DYOT.

Letters Patent No. 2,708.—*Improvement in Water-Wheels.*

I claim the combination of the wheel, constructed as hereinbefore described, with the spiral conductor D and tube F, so as to get the full pressure of the water, while the wheel is relieved of its weight, in the manner and for the purpose set forth.

REUBEN RICH.

Letters Patent No. 2,725.—*Improvement in the Machine for Cutting Shoe-Pegs.*

I claim the method of feeding the bolt by the combination of the fluted roller, ratchet-wheel, and reaching-arm, and adjustable lever connected with the vibrating knife, as before described.

STEPHEN K. BALDWIN.

Letters Patent No. 3,124.—*Improvements in the Machine for Sweeping and Cleaning Streets.*

I claim: 1st. The manner of counterbalancing any desired portion of the weight on the carrier-plate, the endless chain of brooms, and their appendages, by means of the weight or weights Y, through the intermedium of the chains, pulleys, and segments, arranged and operating substantially as set forth, so as to relieve and regulate the pressure of the brooms, &c., on the ground, or to raise them up entirely, when desired.

2d. I claim the manner of widening out the cart at its rear end on the near side, as shown at No. 15, (figs. 7, 8 and 9,) so as to allow the brooms, &c., to operate near the curb-stone, at that part.

3d. I claim the manner of forming the cart in two parts, w and x, and of attaching and suspending the lower part by means of the chains 2 2, and the grooved pulleys 5 5, attached to the axle z, and otherwise connected and arranged, as set forth.

4th. I claim the manner of forming the brooms or scrapers into endless chains by means of open and closed links, as described.

5th. The so combining rotating brooms with an incline or carrier-plate, that the incline or carrier-plate, and the framing which carries the brooms, may be adjusted as the brooms wear away, the same being effected by an arrangement of parts the same with that described.

JOS. WHITWORTH.

Letters Patent No. 2,754. Reissue, No. 165; Re-reissue, No. 371.—*Machine for Cutting the Threads of Wood-Screws.*

What is claimed is:

1st. In combination with the shaft, or mandrel, which gives the rotary motion to the screw-blank, the employment of the rotating wedge-formed cam, or the equivalent thereof, for determining the pitch of the thread and for permitting the return motion to repeat the operation, substantially as described.

2d. Causing the chaser, or cutter, at each successive cut to approach nearer to the axis of the screw-blank by means of a revolving conical cam, which, at each successive operation, acts by a greater radius, substantially as described.

3d. Governing the motions of the chaser, or cutter, to make the core

or body of the screw of a conical or tapered form along the whole or any part of its length, by combining therewith a cam of gradually enlarged diameter, substantially as described, the form of such cam depending on the form intended to be given to the core or body of the screw.

4th. Combining the cam which determines the form of the core or body of the screw (to make it tapering or conical in whole or in part) with the chaser, or cutter, by means of a rock-shaft and adjusting-lever, substantially as herein described; the said adjusting-lever being interposed between one of the arms of the rock-shaft and the face of the cam, so that, by the use of a set-screw or other analogous device, the cutter, or chaser, may be readily set, as described.

5th. Shifting the cam which determines each successive cut of the chaser, or cutter, by combining therewith a ratchet movement, operated by an eccentric or cam, the wheel of the ratchet being provided with pins, which operate a lever connected with the cam to shift, substantially as described.

6th. Disconnecting the shaft, or mandrel, from the driving-power at the end of each complete operation of the machine, by combining the clutch, or the equivalent thereof, with the ratchet by means of an index-wheel, or perforated rim, which, at the required periods, liberates or acts upon the connexions of the clutch to disengage it, substantially as described.

7th. Making the chaser, or cutter, for chasing or cutting the threads of wood screws by machinery with a groove of the form of the thread in its cutting face, and in the direction of its length, substantially as described, whereby the said chaser can be sharpened by simply grinding off at the end, and without changing the form of the groove, and whereby also the said chaser cuts on both sides of the thread, and finally on the edge thereof, as described.

8th. The combination of the screw-driver for holding and rotating the screw-blank with the tubular rest open at the side to support the shank of the blank while being threaded, substantially as described.

CULLEN WHIPPLE.

Patent dated October 4, 1830. Extended under act of Congress to March 2, 1864.—*Improvements in the Printing Machine called the Power Printing Press.*

I claim the combination of stationary fly-frames, with points for getting register by on them, with printing presses. The object of these fly frames is to enable the person who lays on the paper to point one sheet while the sheet previously put on is receiving the impression, and by that means save the time which would be lost in waiting for the frisket to come out.

Furthermore, I claim the apparatus described in the foregoing specification for giving a periodical movement to the rollers and friskets;

that is, I do not claim the parts separately, but merely that combination of parts to produce the effect, as set forth in the specification.

And furthermore, I claim as my invention the application of the declension lever, set forth and described in the foregoing specification.

ISAAC ADAMS.

Patent dated March 2, 1836. Re-issue No. 116. Extended under act of Congress to March 2, 1864.—*Improvement in the Power Printing Press.*

1st. I claim the mechanical combination by which the motion produced by the crank and pitman is so modified and communicated to the toggle-joints as to produce the impressions, and so as to give the said toggle-joints the necessary intervals of rest and reciprocating motion, the same consisting of the alternator q^1 and a connecting-rod or pitman w^1 , in combination with said crank f^2 (figure 7) and said toggle-joints, or any other mechanical equivalent, acting substantially as specified, the said toggles having a roller r^1 , or any mechanical substitute therefor.

2d. And I also claim the mechanical combination employed to operate the frisket-carriage, or impart to it with the inking rollers and nippers their peculiar intervals of rest and reciprocating motions towards and from the form of types, as described; the same consisting, first, of the alternator q^2 ; second, the lever or arm, or arms, W^1 W^1 , their rocking-shaft Z^1 , and roller i^2 , connected with the alternator and frisket-carriage; third, the rocking shaft c^2 , arm d^2 , connecting-rod c^2 , and the crank h , or any mechanical equivalent or equivalents therefor; the whole being made, arranged, and operated together, substantially in the manner as herein before specified.

3d. And in combination with the alternator q^3 and pitman w^3 , I claim the slide d^6 , operated by the treadle in the manner substantially as described; whereby the pressman, at any time while the said alternator is in motion, is enabled to prevent it from being thrown or moved against the toggles (or rollers thereof) sufficiently to straighten or move the said toggles into line with each other, and thereby produce an impression from the form of types.

4th. I also claim the combination of mechanism (or an equivalent or equivalents) by which the nippers, seen in figure 1, are operated; the same consisting of the rod s^3 and its arm a^4 , the springs t^3 , the catches u^3 and v^3 , and the grooves l^4 , and the stops e^4 d^4 , and the rotating cam named in the description.

5th. Also, the combination of the said nippers with the frisket-carriage, operated as above set forth; the same being for the purposes and constructed substantially as aforesaid.

6th. I also claim the mechanical combination (or an equivalent or equivalents) constituting the means for making or obtaining register; the same consisting of the movable stocks x^2 , the points π^2 , and the levers v^2 , w^2 , and e^2 , and mechanism consisting of the cams i^2 and q^3

and the spring h^3 which operates them, the same being applied and constructed and operating substantially as hereinbefore described.

7th. I also claim the manner above described of changing the position of the register points so as to range with each other across the feed-board and the sheet, either in one direction or the other, in order to enable the pressman to turn the sheet and point its second side in another direction; all as set forth.

8th. I also claim the method above described of securing greater certainty of accurate register; that is to say, causing the nippers to rest from their horizontal motion (or from that motion by which they are carried towards the sheets of paper) while they are being closed on the said sheets of paper, and while the carriage or part from which they receive said motion continues its movement, substantially in the manner set forth.

9th. I also claim the above described manner of constructing the nippers; that is to say, the making the upper blades somewhat longer than the lower blades thereof, whereby the said upper blades are made to project beyond the said lower blades, in order that they, the said upper blades, may be pressed down upon the edge of the sheet of paper on the tympan or feed-board, so as to hold the paper still thereon, while the said lower blades are being brought up to secure said paper in the nippers; the same being of importance for the security of good register.

10th. And for the additional security of good register, I claim withdrawing the register points from the paper after it has been seized by the nippers, but previously to its being started from the place in which it has been adjusted or pointed; the same being necessary to secure good register and prevent any enlargement of the point-holes, or tearing of the paper at the point-holes made through it.

11th. And I also claim altering the width of the tympan to make it correspond with sheets of various widths, of nippers of various lengths, while the register points in the meantime are still preserved in their central position.

12th. I also claim the delivering bands W^7 and A^8 , and also the delivering rollers U^7 , V^7 , Y^7 and Z^7 , operating substantially as aforesaid, or mechanical equivalents for either or all of them, in combination with the frisket, or any equivalent therefor; the same being for the purpose of receiving a sheet of paper from said frisket and delivering it upon a fly-frame, or any other contrivance destined to receive it.

13th. I also claim the combination of a bellows, or other equivalent, with the frisket, or support of the sheet of paper, and the two series of receiving and delivering endless-bands or tapes, the same being arranged and made to operate substantially in the manner as specified.

14th. I also claim the delivering fly-frame, or its equivalent, in combination with the delivering bands W^7 and A^8 .

15th. And also with the delivering rollers U^7 , V^7 , Y^7 and Z^7 , and also with the shaft e^8 and the pulleys b^8 , b^8 , b^8 , &c., operating substantially as aforesaid, or any equivalent or equivalents for either or all of them.

16th. I also claim the employment of the fly, or its equivalent, for receiving and piling the sheets.

17th. I also claim the arranging and operating the fly-frame in such manner that its motions may be in directions perpendicular, or thereabouts, to the side of the press; the same enabling me to deposite the unprinted paper in a heap close to or directly by the side of the pressman, and thus afford him the opportunity of more readily examining each sheet after it is printed than he would enjoy if the fly-frame operated in any other direction.

18th. I also claim the manner set forth of operating the nippers, and which is also exhibited in figures 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23, and hereinbefore described.

19th. I also claim the combination constituting the mechanism employed to convey the printed sheets from the delivering rollers and bands (or an equivalent) to the pile or table provided to receive them; the same consisting, first, of the delivering fly-frame, or a substitute operating substantially the same; second, the mechanism (or a substitute therefor, operating substantially the same,) employed to give said fly its proper motions and intervals of rest, the same consisting of the cam z^8 , the lever a^9 , the rack b^9 , the pinion p^8 , and the spring o^8 ; and, third, the devices (or substitutes operating substantially the same) employed for the adjustment and government of the motions of said fly and its intervals of rest, with respect to extent and time; the same being done by making the cam Z^8 , the spring o^8 , and the fulcrum of the lever a^9 adjustable.

20th. I also claim the manner of constructing and arranging the delivering fly-frame, by which it may be depressed below the bands, rollers, and pulleys, by means of which the sheets of paper are successively presented to the action of the said fly in such manner that said fly shall not itself obstruct its reception of the said sheets preparatory to delivering them on the pile.

21st. I also claim the detached or independent manner of arranging the delivering bands, pulleys, and rollers, by which I am enabled to give any required velocity to them or any of them, and in that way to govern the time of the final delivery of the sheets, successively with reference to the times of action of other parts of the machine, and thus to gain a saving of time which could not be gained were the velocities of said bands, rollers, and pulleys arbitrarily governed by the motion of the frisket or frisket-carriage, or any other part of a flat surface press, or by the velocity of the cylinder or any other part of a cylinder press, the same being done by altering the relative diameters of the pulleys k^8 and l^8 , or any equivalent method.

22d. I also claim the constructing one or more of the distribution cylinders so as to make it capable of receiving and containing steam or hot or cold water, by which its temperature, as well as that of the ink upon it, and which is to be imparted to the rollers, may be governed.

ISAAC ADAMS.

Letters Patent No. 2,759.—*Improvements in the manner of constructing Locomotive Steam Engines, by which they adapt themselves to the curve and undulations of the road.*

I claim principally the manner in which I connect the four truck-wheels with each other, so as to enable them to vibrate and to adapt themselves to the curves and undulations of the road, by the combined action of the pins or pivots A, the vibrating bars C, with the box B, and the boxes and plummer blocks of the axles, with their cylindrical fittings; the whole being constructed, combined, and arranged substantially in the manner herein set forth, the respective parts co-operating with each other upon the principle or in the manner above made known and described.

I do not intend to claim, nor do I claim, either of the parts above described, taken separately or individually.

MATTHIAS W. BALDWIN.

Letters Patent No. 2,768.—*Improvement in the Construction of the Brick Press.*

I claim the segment slides c^5 acted on by springs, in combination with the platen and hopper, constructed and arranged as herein set forth.

I further claim the combination of the carriage E, suspended at its rear end, with the connecting rods c^4 and shaft c^5 for freeing the machine from obstructions, substantially as before specified.

Lastly, I claim the construction of the carriage E so as to free itself from dirt; that is to say, the pivots and studs for steadying the carriage, the slatted top and railway set off from the carriage, &c., and in combination therewith the movable carriage F, constructed and operated as herein described.

ALFRED HALL

Letters Patent No. 2,776.—*Improvement in Window-Blind Hinges and Fastenings.*

I claim the connecting the window-blind fastening with the hinge, either by the use of the latch, made as a double fastening, that is, to fasten the blind both when closed and when open, or when made to fasten the blind when open only; or by the use of the hook on the back of the hinge, for fastening the blind open, as the same are above set forth and described.

WILLIAM BAKER.

Letters Patent No. 9,525.—*Improvement in Printing Presses.*

I claim: 1st. The application of notches or grooves, and beads or projections, on the shafts of type, tapered to the radii of a circle for the

purpose of locking said type together, and securing it in place on a cylinder, substantially as described and shown.

2d. The mode described and shown of forming column lines, rules, rings, and blocking, so that they are adapted to the cylinder and to the type, with notches and projections to lock into the type and cylinders, substantially as described and shown.

3d. The mode described and shown of constructing the type-cylinder with heads, the one head having a bead or projection, the other with a notch or groove around in its face near the edge, for the purpose of receiving and securing the type or other parts composed on the surface of said cylinders, such heads being fitted with means to compress and hold the type and parts in a cylindrical form for the purpose of printing by a rotary movement, substantially as described and shown.

4th. The mode of constructing the compositors' stick in the form of a part of a cylinder with flanches, having beads or grooves, so as to hold the type in segments of a circle while composing or setting up, preparatory to the placing of the same in the galley or proof-cylinder, substantially as described and shown.

5th. The mode of constructing and applying the galley or proof-cylinder so that it shall receive and hold the type in circular form from the composing stick, and retain the type and the needful parts in place for correction and proof, and for transferring the same to the type cylinder; the parts being constructed and operating substantially as described and shown.

6th. The mode of forming and constructing the type-holder or grab to enclose, take hold of, and securely lift, a mass of type from the galley or proof-cylinder, and transfer the mass either to the cylinder or to a stack for future use, or to reverse or vary either of these operations as may be needed; the instrument being constructed and operating in the manner and with the effects described and shown.

7th. The application and arrangement of the pulleys, bands, and guide plates, so placed and moving so as to carry the sheet of paper from the press in lines diverging vertically, and conveying horizontally under, between, and over the guide plates, thereby presenting the paper in a folded form to the compressing rollers, substantially in the manner and with the effects described and shown.

8th. The application of the press rollers to compress the folded paper and lead that out of the folding apparatus, and the combination of the standing roller w , revolving shear y , standing shear x , valve z , and cam 42, to effect the cutting of the folded paper as it issues from the rollers, and guide the fresh cut edge clear of the standing shear; the whole of the parts being constructed, arranged, combined, and operating substantially as described and shown.

JEPHTHA A. WILKINSON.

Letters Patent No. 2,797.—*Improvements in the Steering Apparatus for Vessels.*

We claim the machine or combination consisting of the cog-wheel on the rudder head, the sliding racks with the hollow nuts and screws, the

shaft with the right-and-left-hand screws; and the steering wheel; the whole combined as before described and for the purpose aforesaid.

G. O. W. ROBINSON.

E. B. ROBINSON.

Letters Patent No. 2,801.—*Improvement in Pumps and Fire Engines.*

We claim the application of air chambers B B to the supply pipe of pumps or engines, together with the manner in which the pump is cast, as herein before described.

BENJAMIN T. BABBITT.

SHULER C. HIGBEE.

PETER W. PLANTZ.

Letters Patent No. 2,886; Re-issue No. 201; Re-issue No. 401.—*Improvement in Door-Locks.*

I claim making the cases of door-locks and latches doubled-faced, or so finished that either side may be used for the outside, in order that the same lock or cased fastening may answer for a right or left hand door, substantially as described.

I also claim the peculiar construction and double action (upon an inclined and horizontal track or way) of the locking-car B, as herein before described, and the combination of the locking-car B and safety-cars G G² with one another, and with the connecting or vibrating-bar and bolt A, as within described, so as to fasten the bolt C securely and prevent its being picked.

I also claim so constructing the bolt, as hereinbefore described, that by simply turning it over in the lock case, it is adapted to a right or left hand door

JOHN P. SHERWOOD.

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FOR THE YEAR 1856.

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U. S. Patent Office

VOLUME III.

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IN THE HOUSE OF REPRESENTATIVES,

February 17, 1857.

Resolved, That there be printed, of the Mechanical portion of the Patent Office Report for the year 1856, sixty thousand copies; fifty thousand for the use of the House, and ten thousand for the use of the Patent Office.

Attest:

WM. CULLOM, *Clerk*.

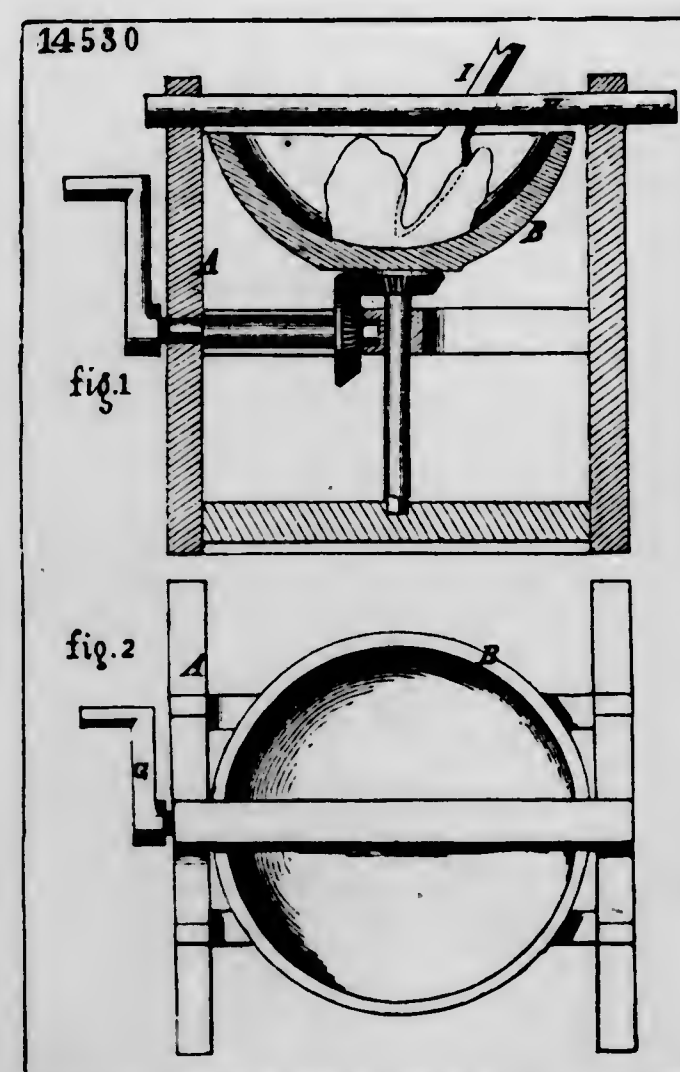
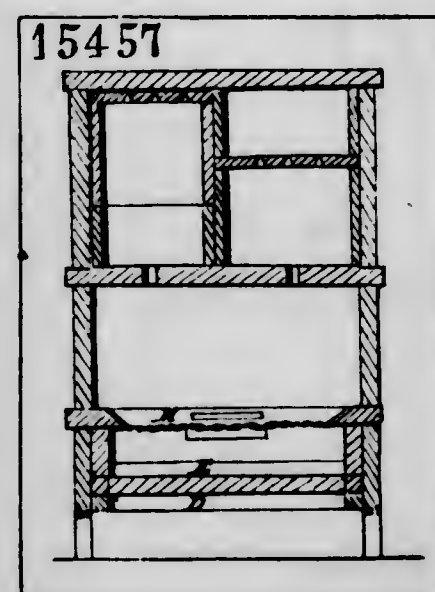
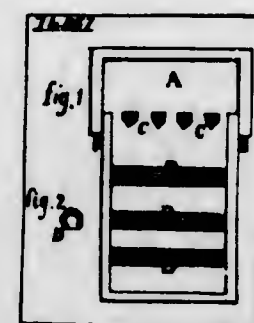
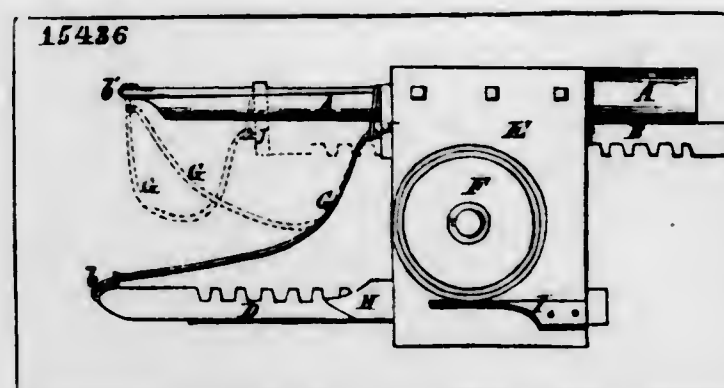
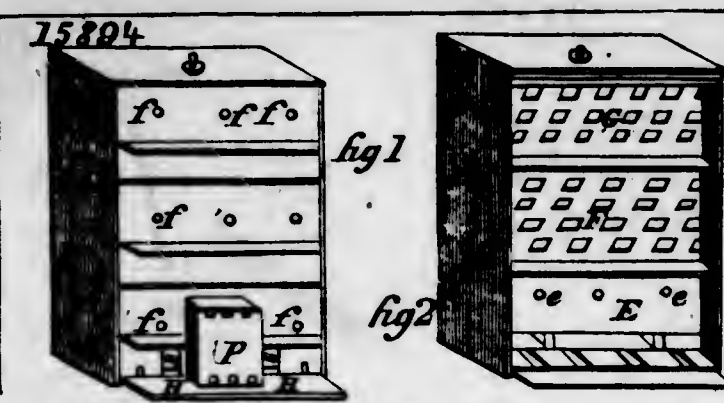
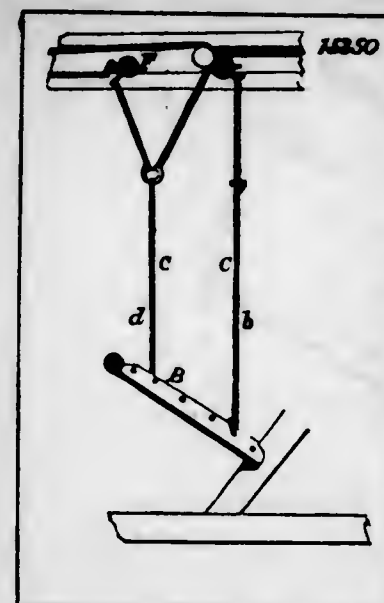
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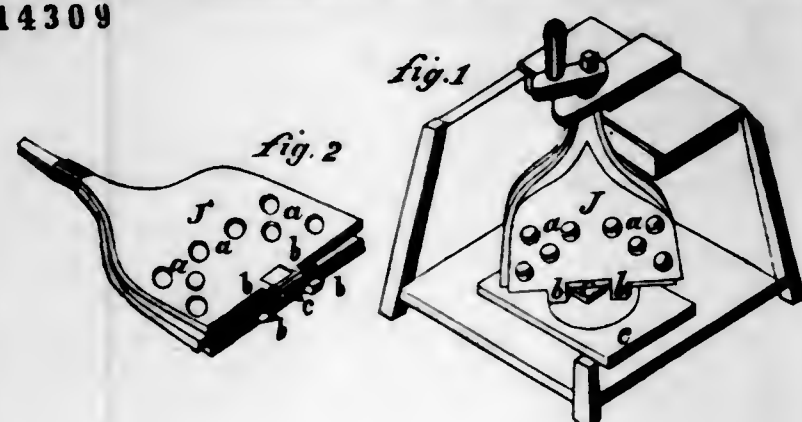
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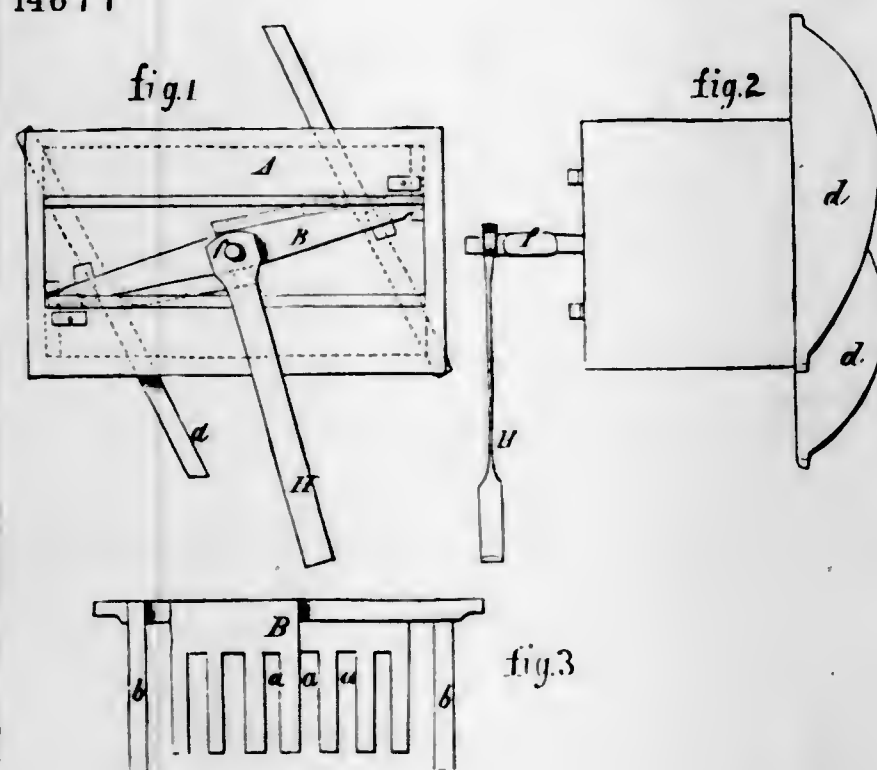
	Page.
I.—Agriculture, including implements and operations.....	1
II.—Metallurgy and manufacture of metals.....	71
III.—Manufacture of fibrous and textile substances.....	123
IV.—Chemical processes, manufactures, and compounds.....	166
V.—Calorifics, comprising lamps, stoves, &c.....	181
VI.—Steam and gas engines.....	207
VII.—Navigation and maritime implements.....	232
VIII.—Mathematical, philosophical, and optical instruments.....	245
IX.—Civil engineering and architecture.....	257
X.—Land conveyance.....	286
XI.—Hydraulics and pneumatics.....	312
XII.—Lever, screw, and other mechanical power.....	339
XIII.—Grinding-mills and mill-gearing.....	346
XIV.—Lumber, including machines and tools for preparing and manufacturing.....	356
XV.—Stone and clay manufactures.....	411
XVI.—Leather, including tanning, dressing, and manufacture.....	438
XVII.—Household furniture, machines and implements for domestic purposes.....	450
XVIII.—Arts polite, fine, and ornamental.....	475
XIX.—Fire-arms and implements of war.....	511
XX.—Surgical and medical instruments.....	528
XXI.—Wearing apparel, including implements for manufacturing.....	533
XXII.—Miscellaneous.....	536
XXIII.—Additional improvements.....	548



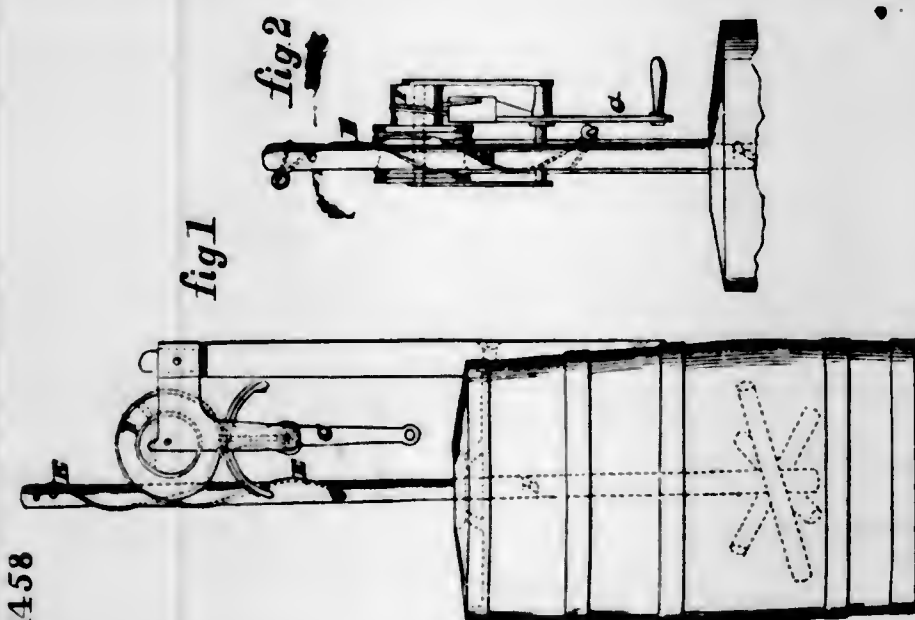
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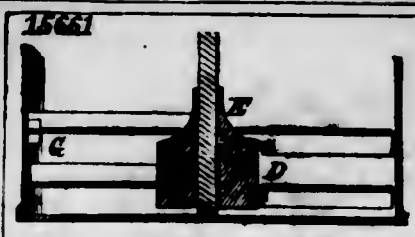
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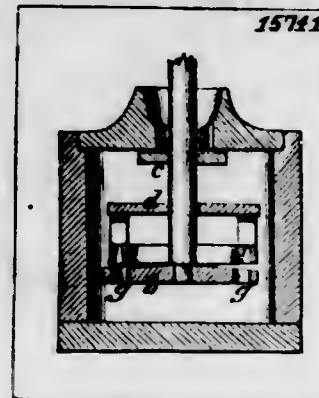
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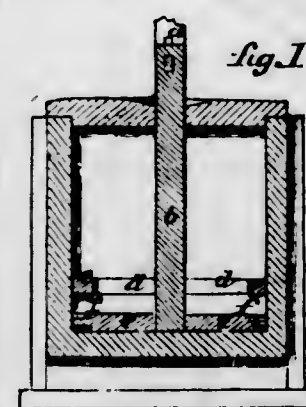


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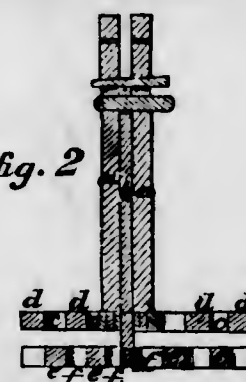


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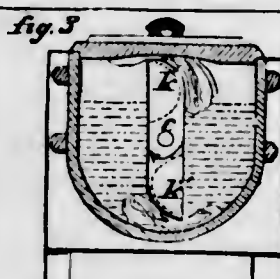
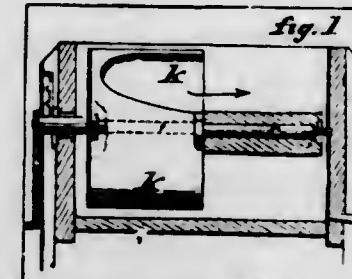
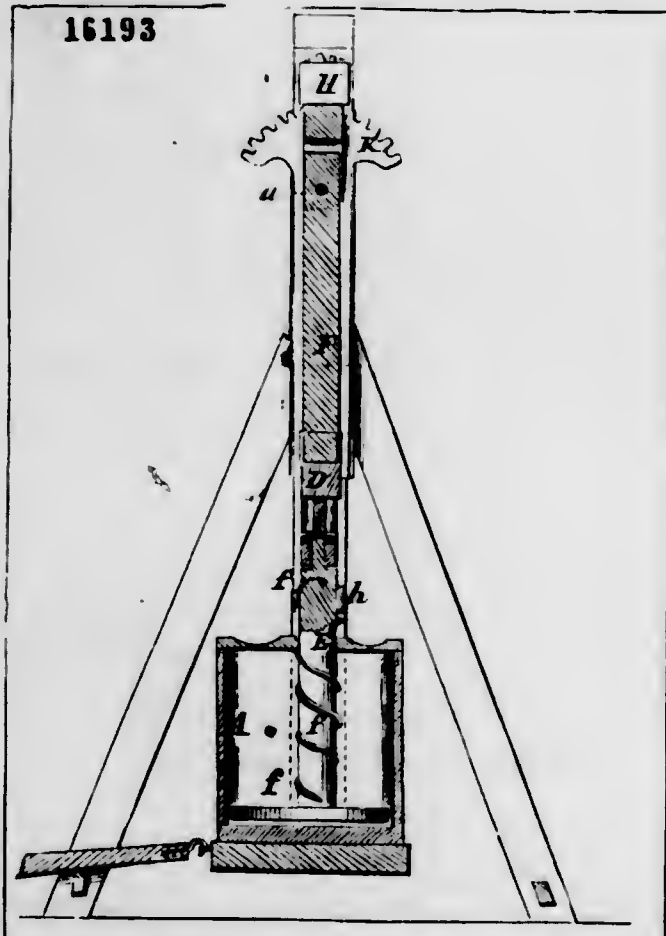


fig. 2

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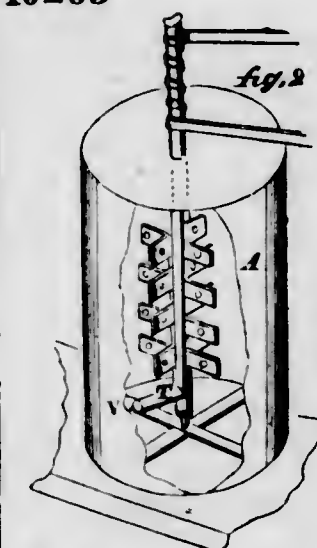
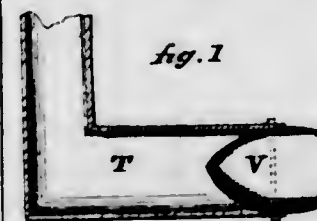


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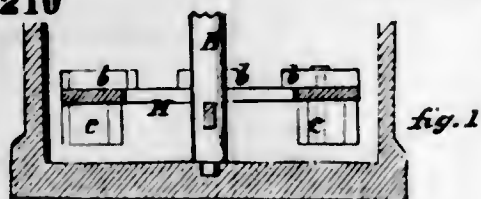


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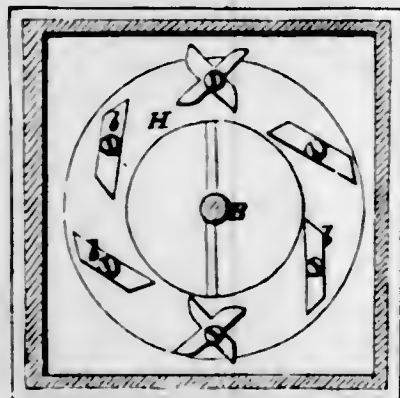


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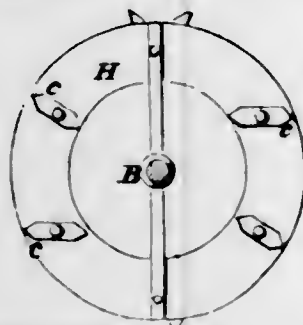


fig. 3

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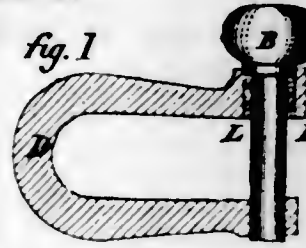


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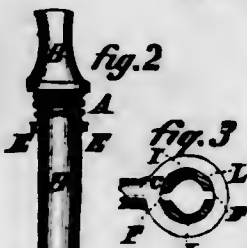


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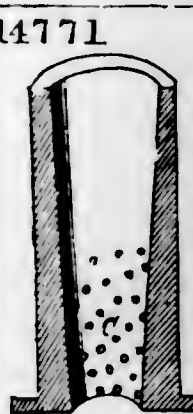
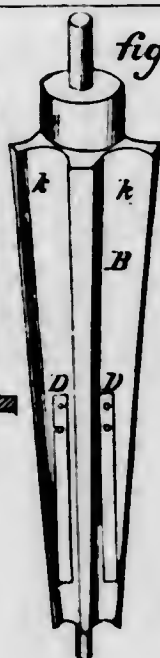


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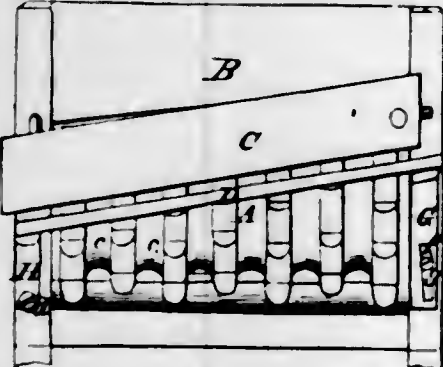
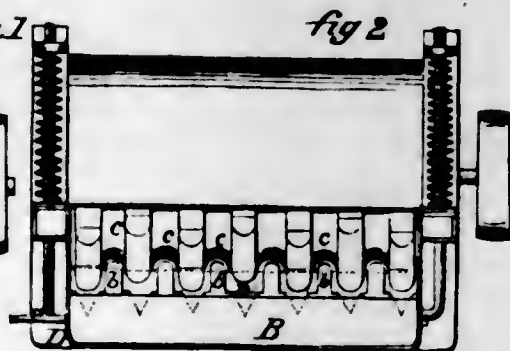
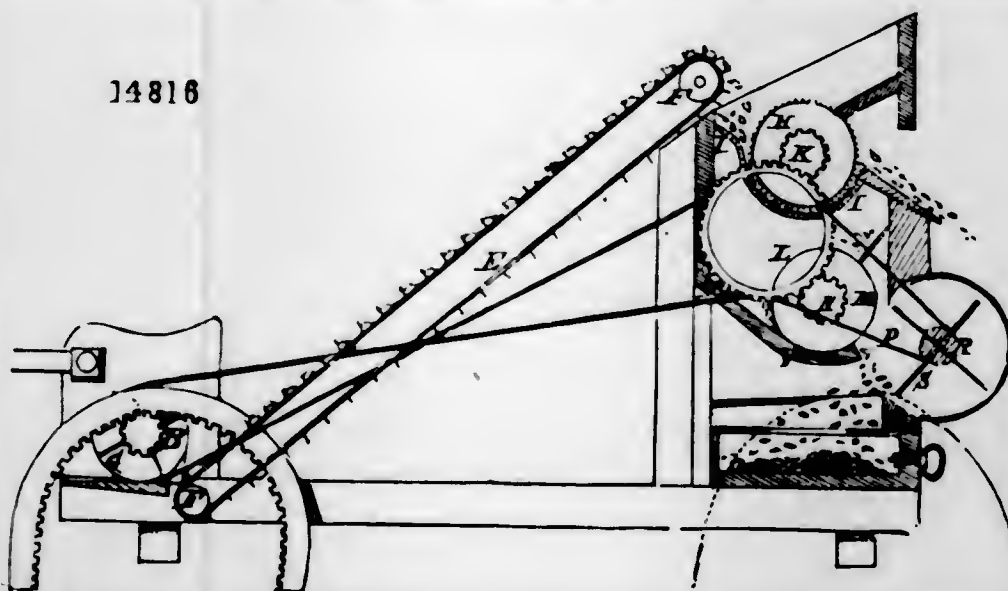


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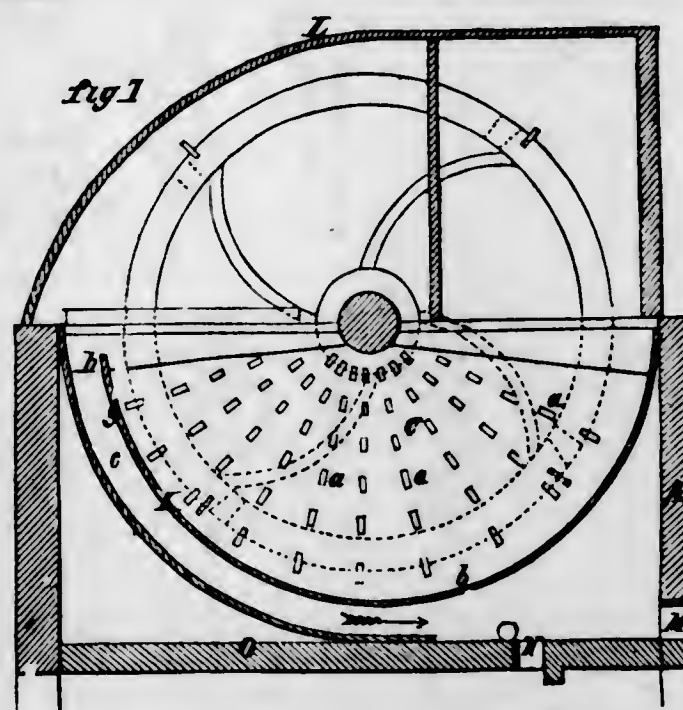


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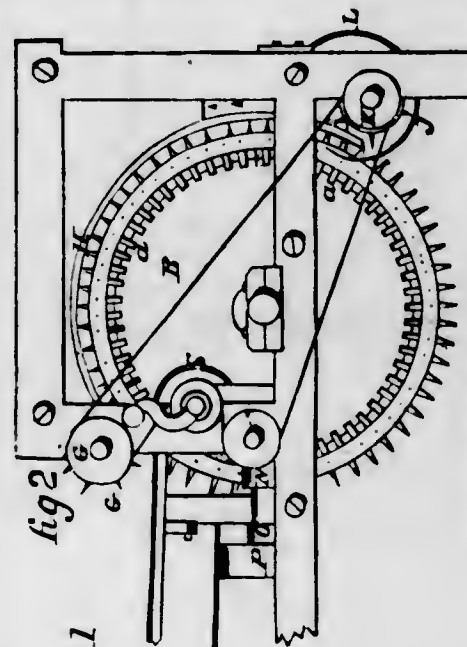
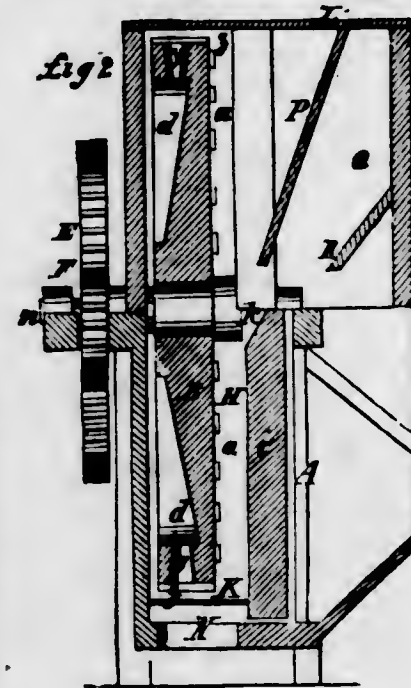
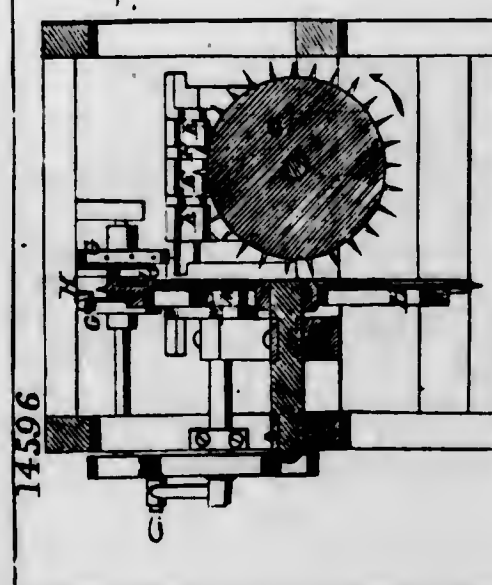
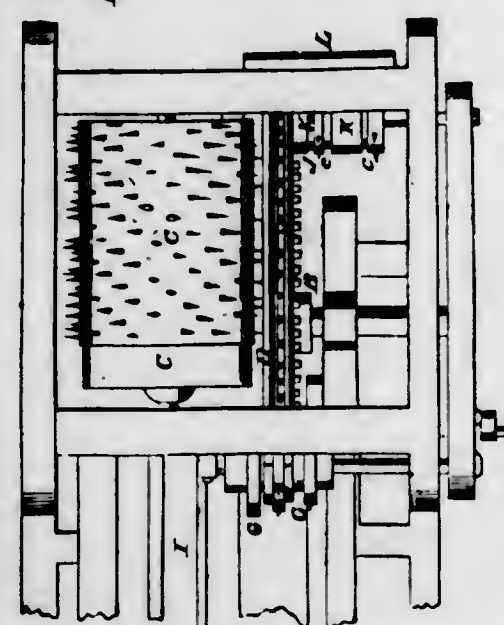


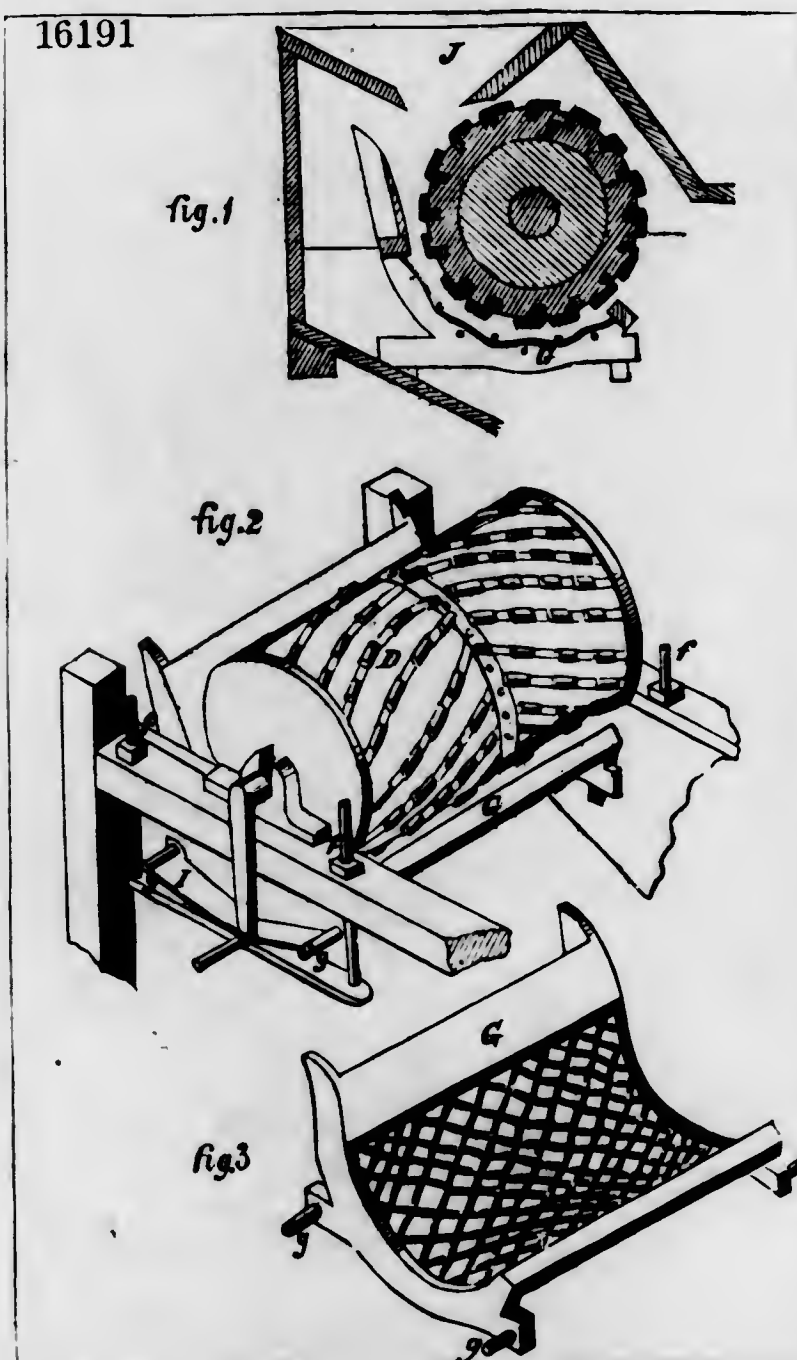
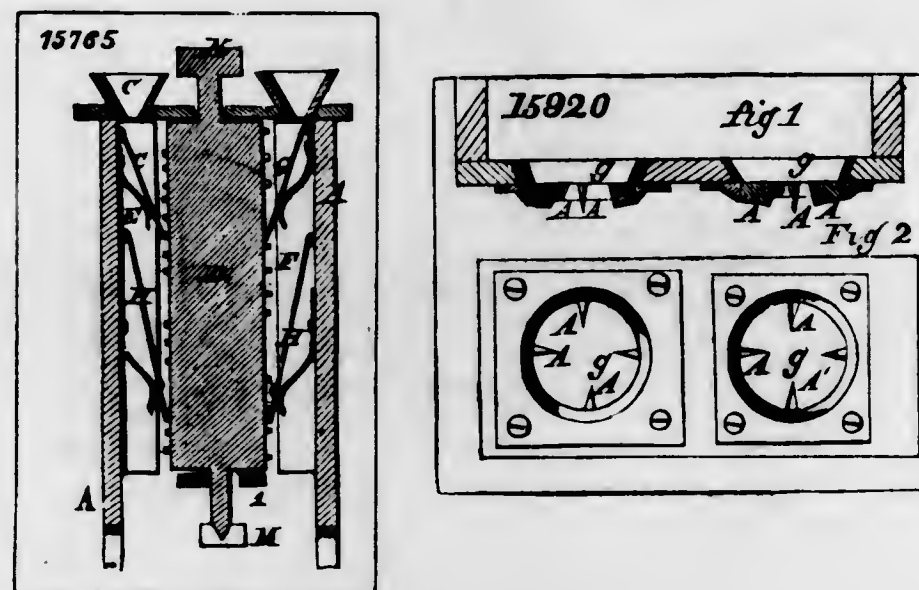
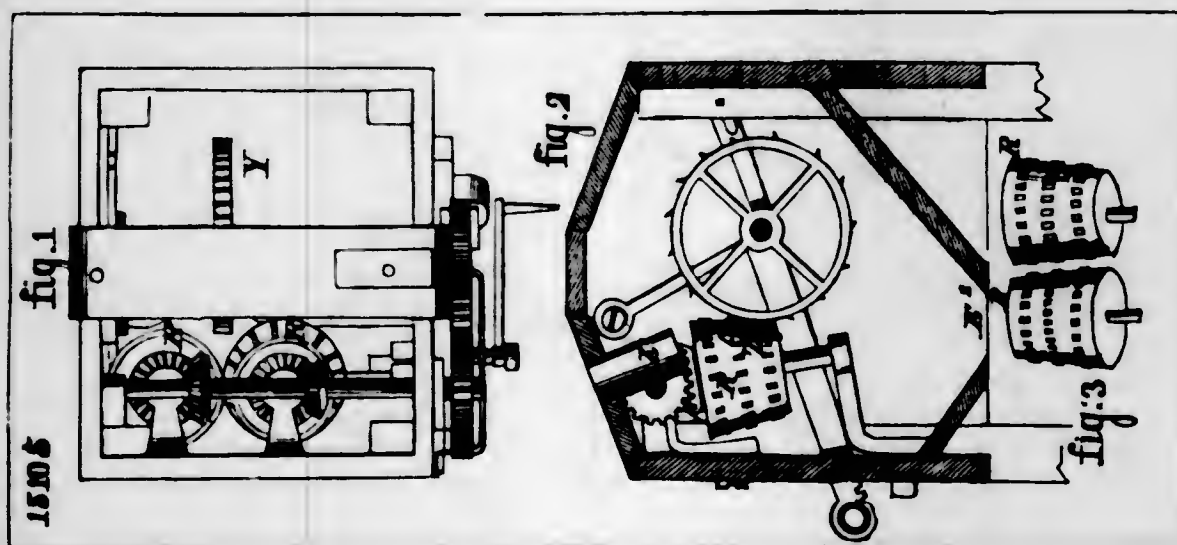
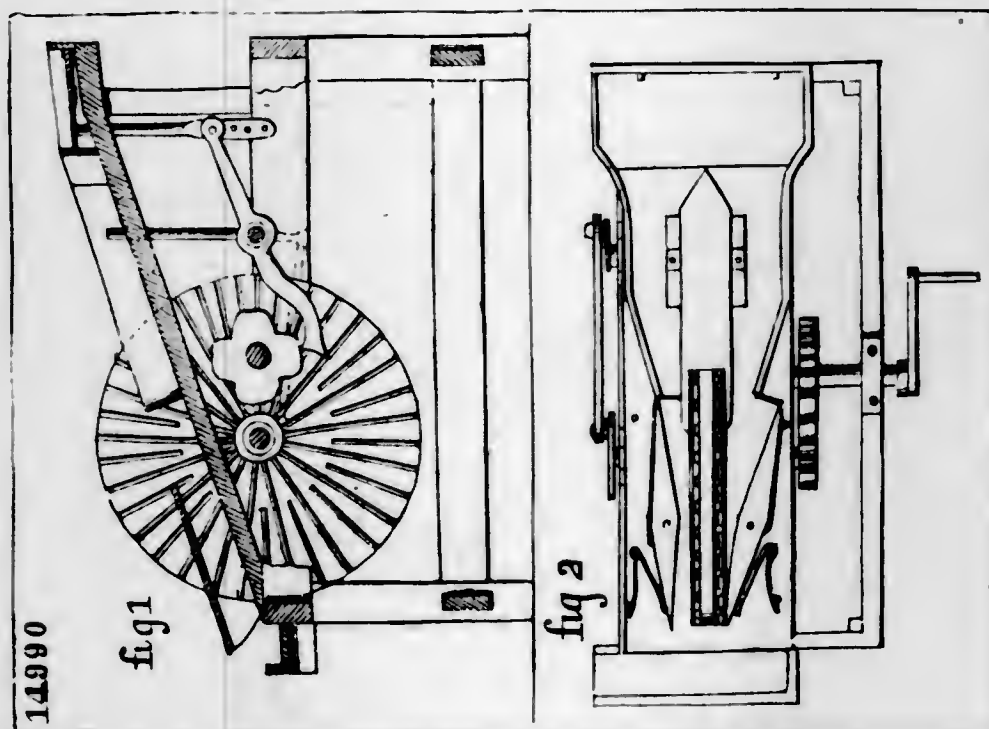
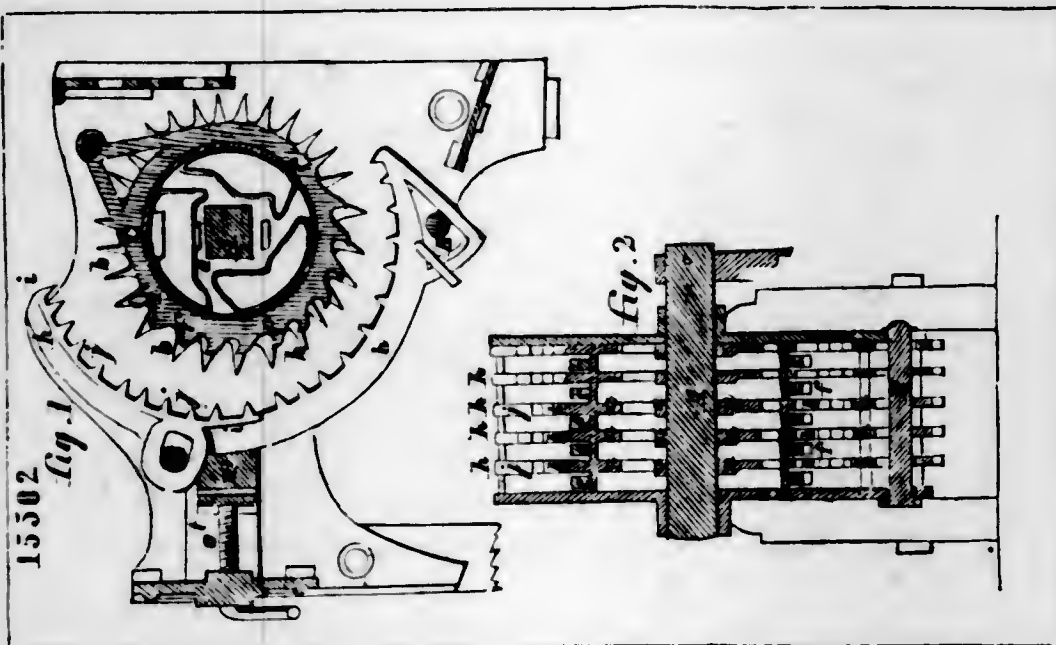
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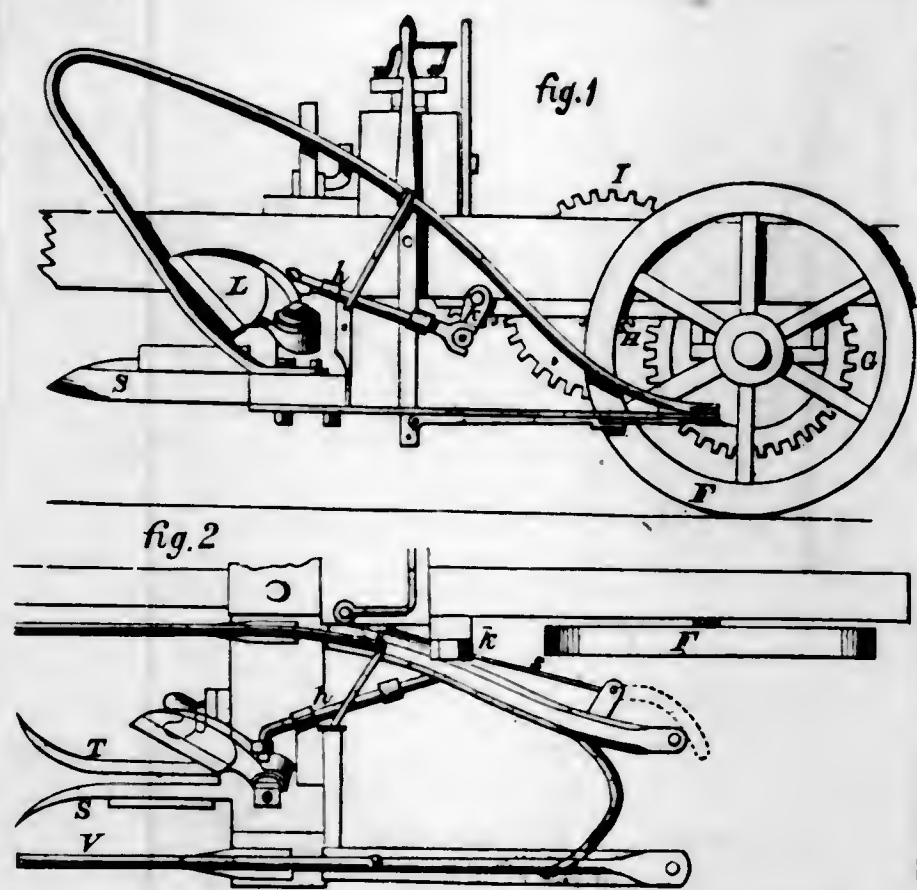
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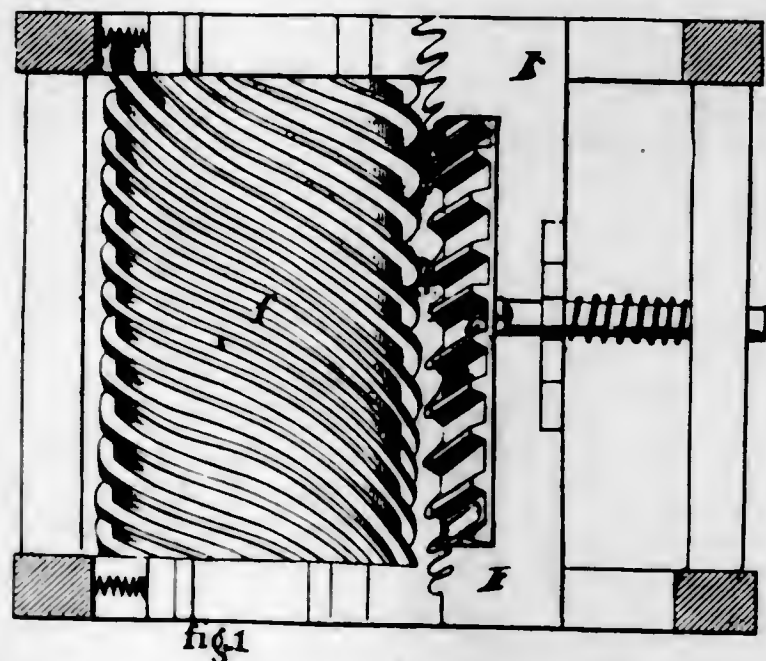
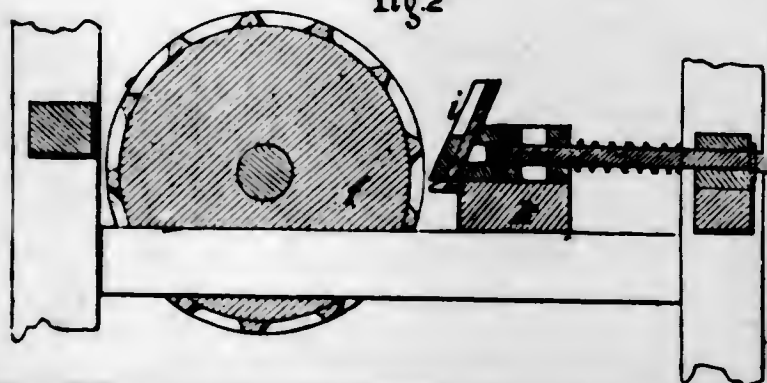
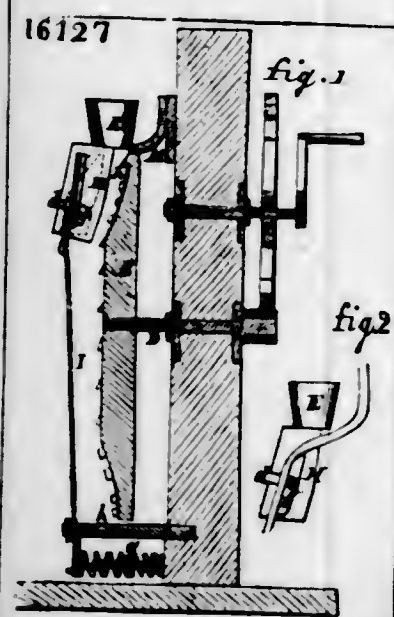


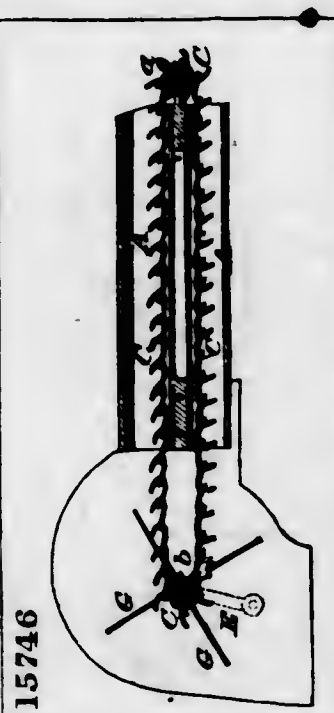
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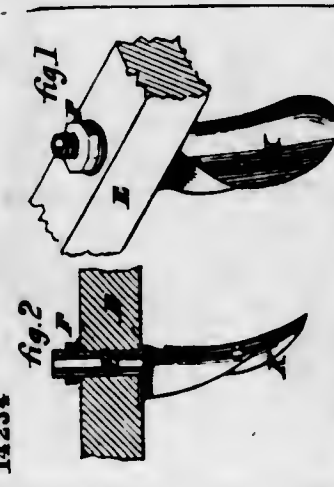
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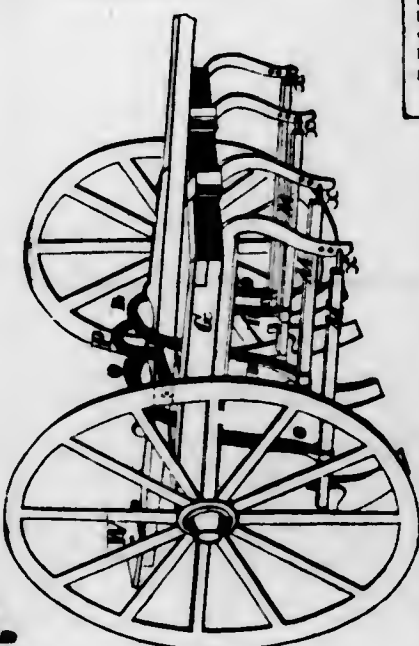
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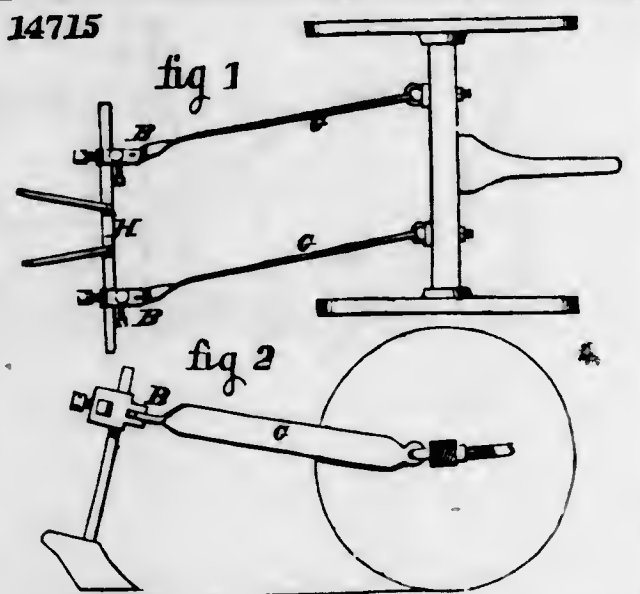
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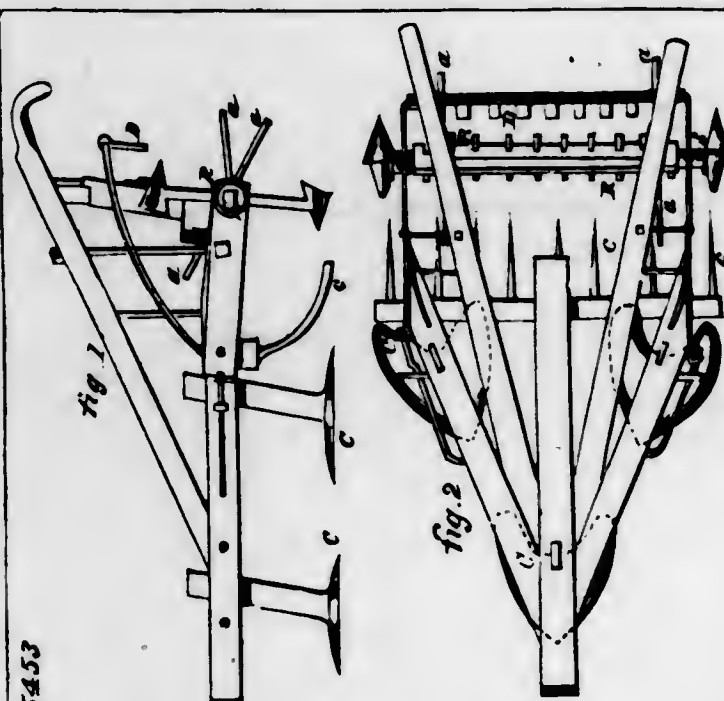
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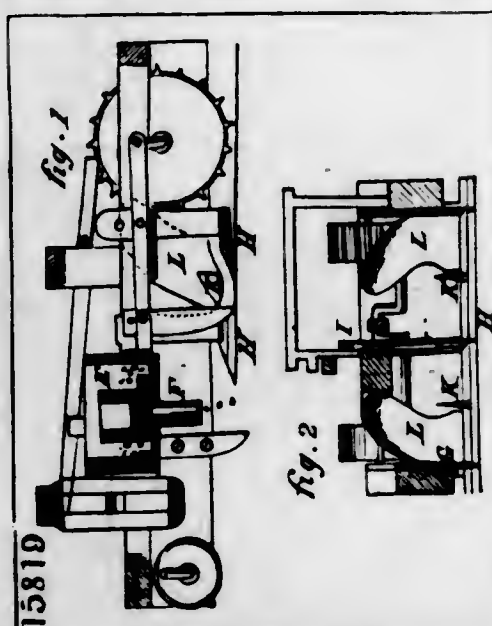
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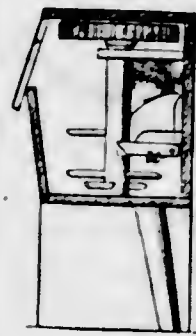
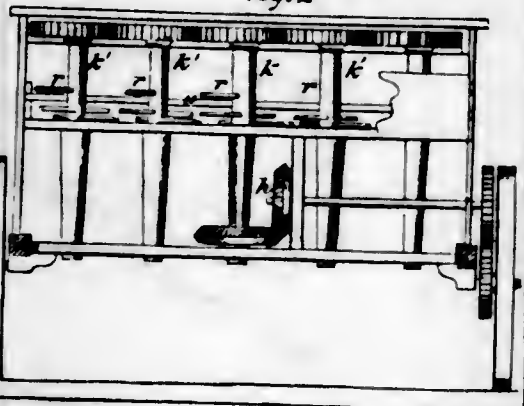
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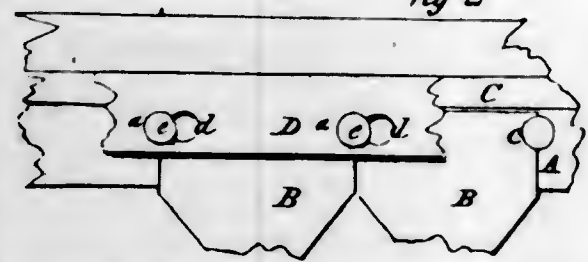


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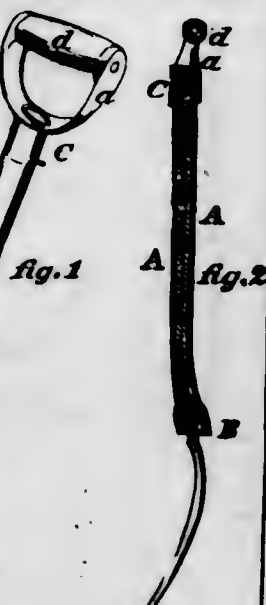
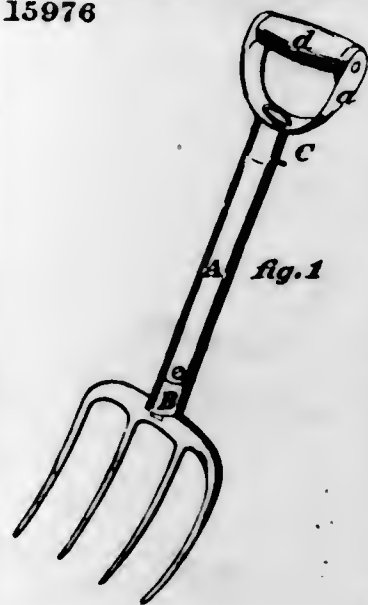
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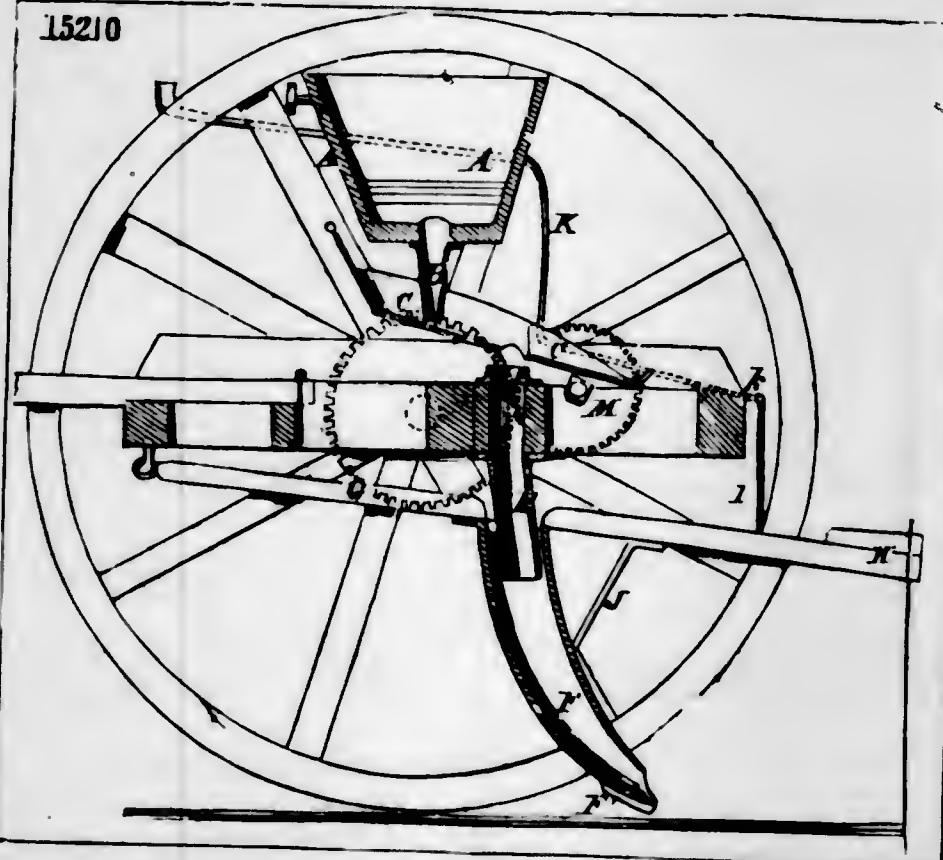
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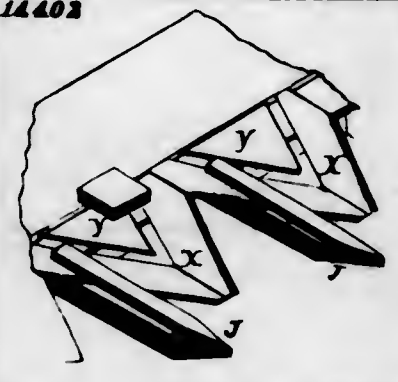
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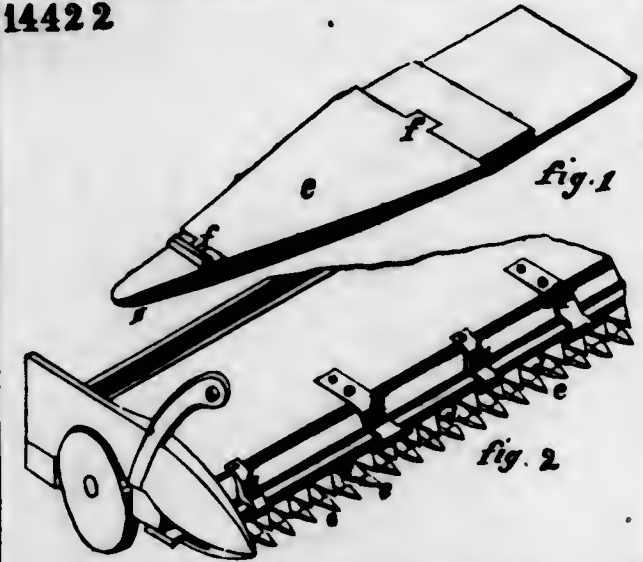
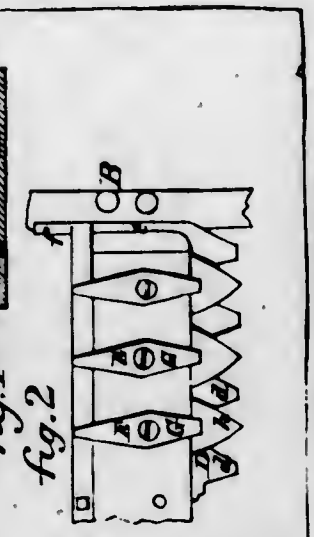
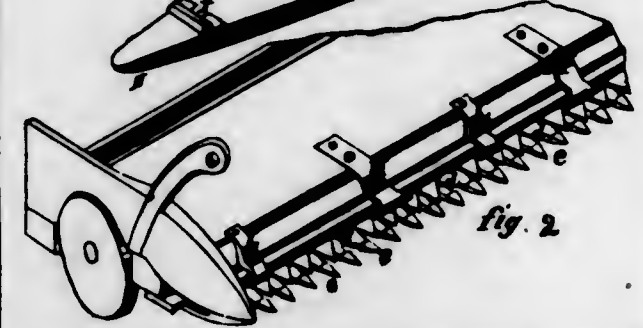


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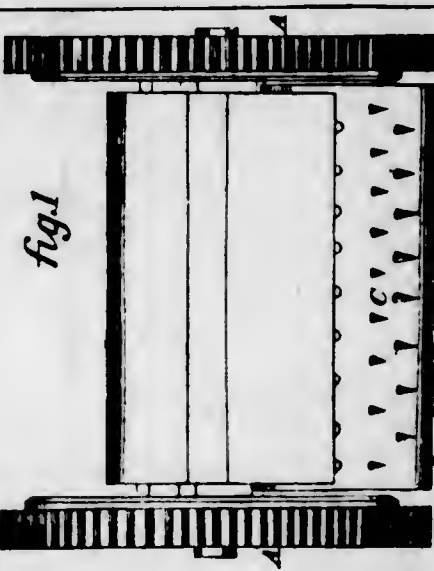


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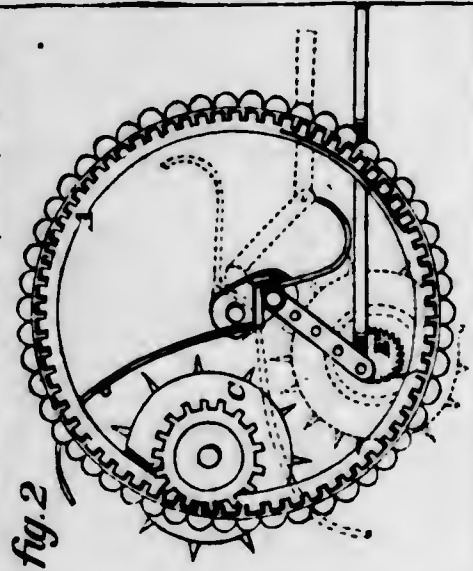
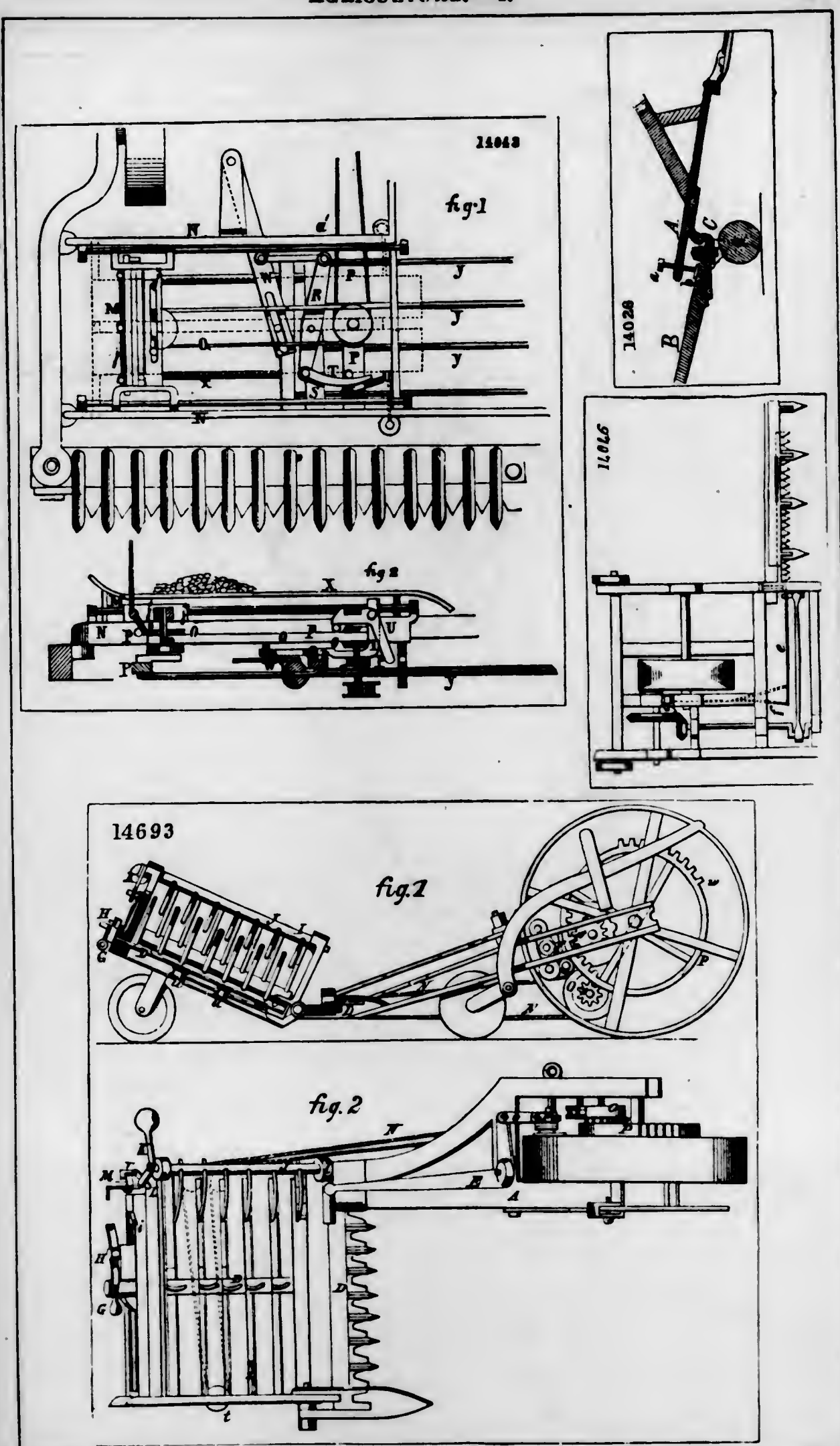
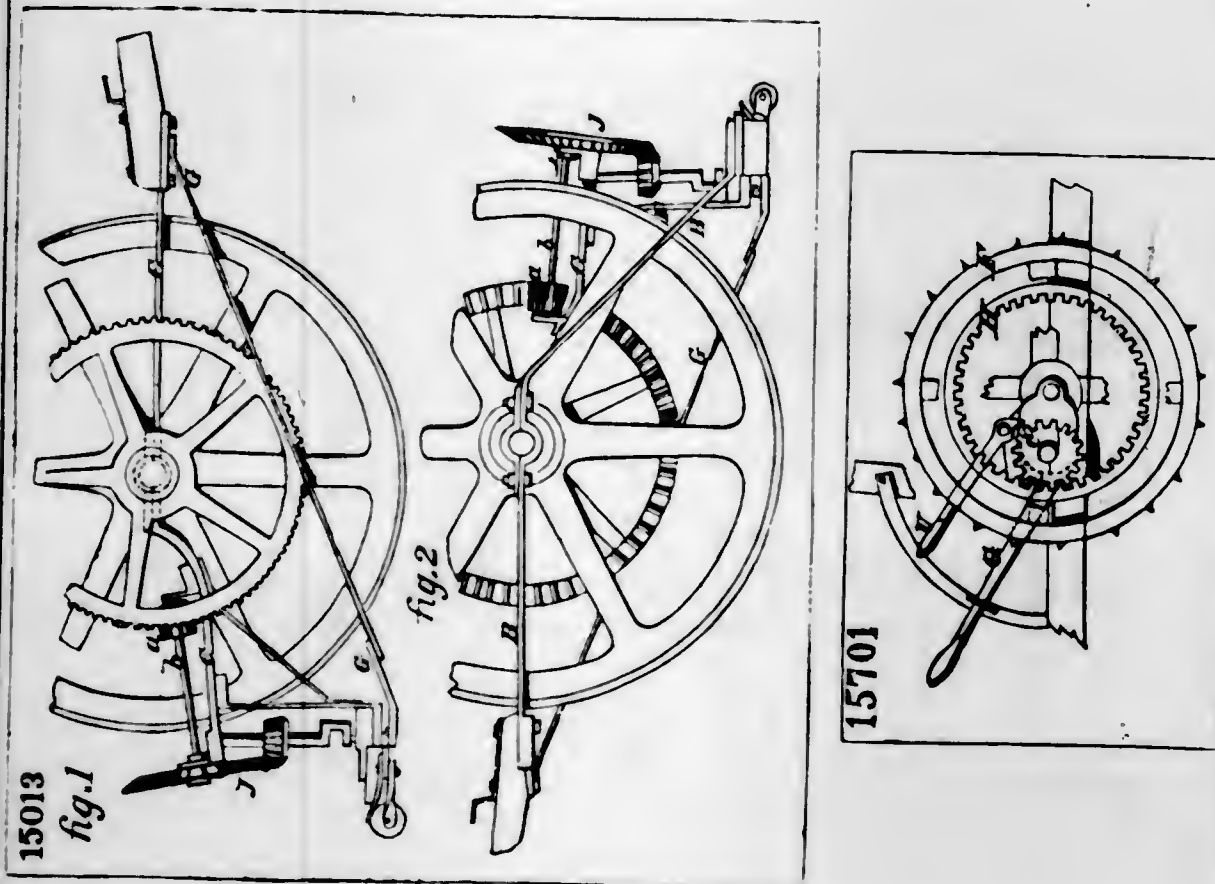
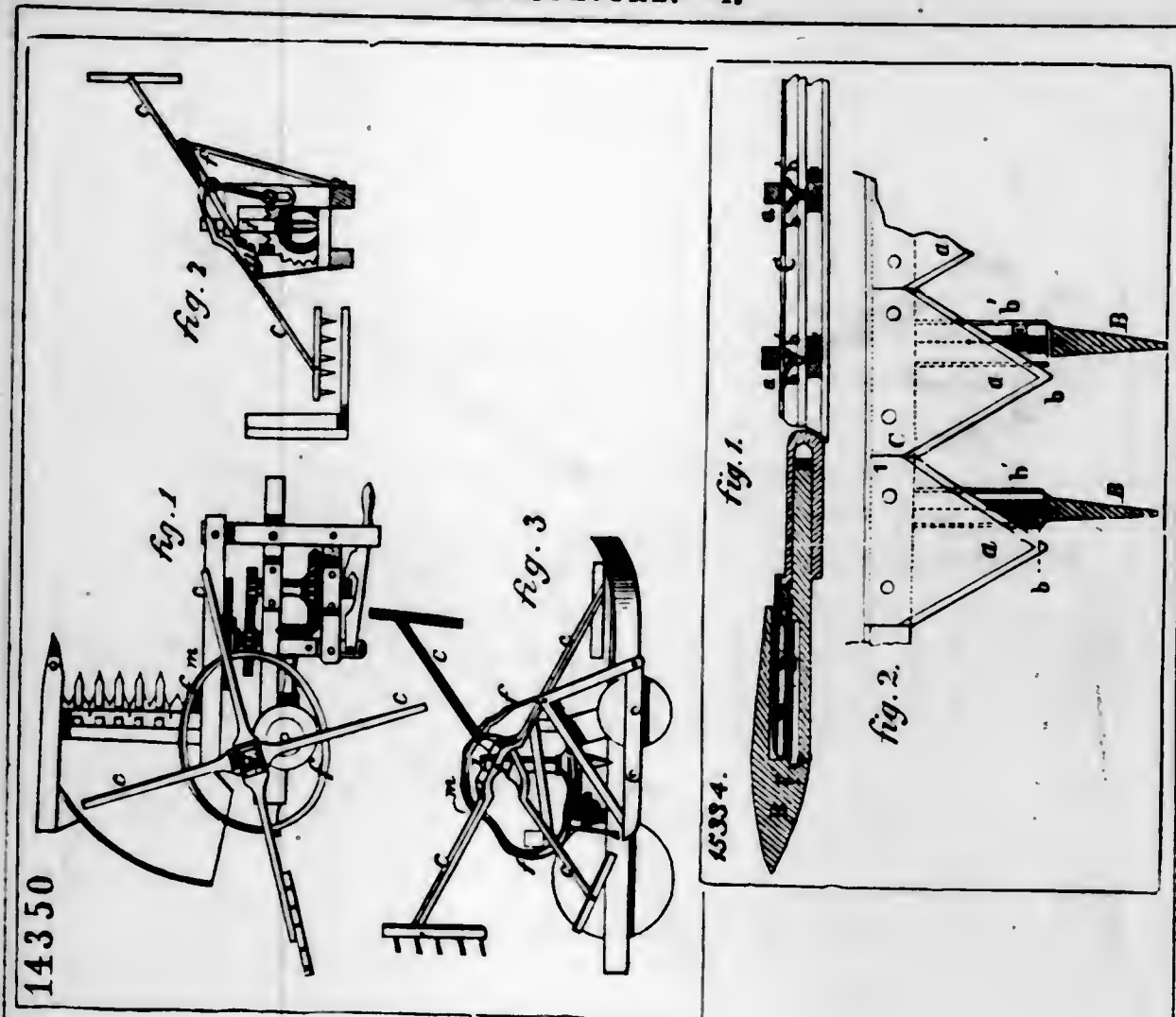
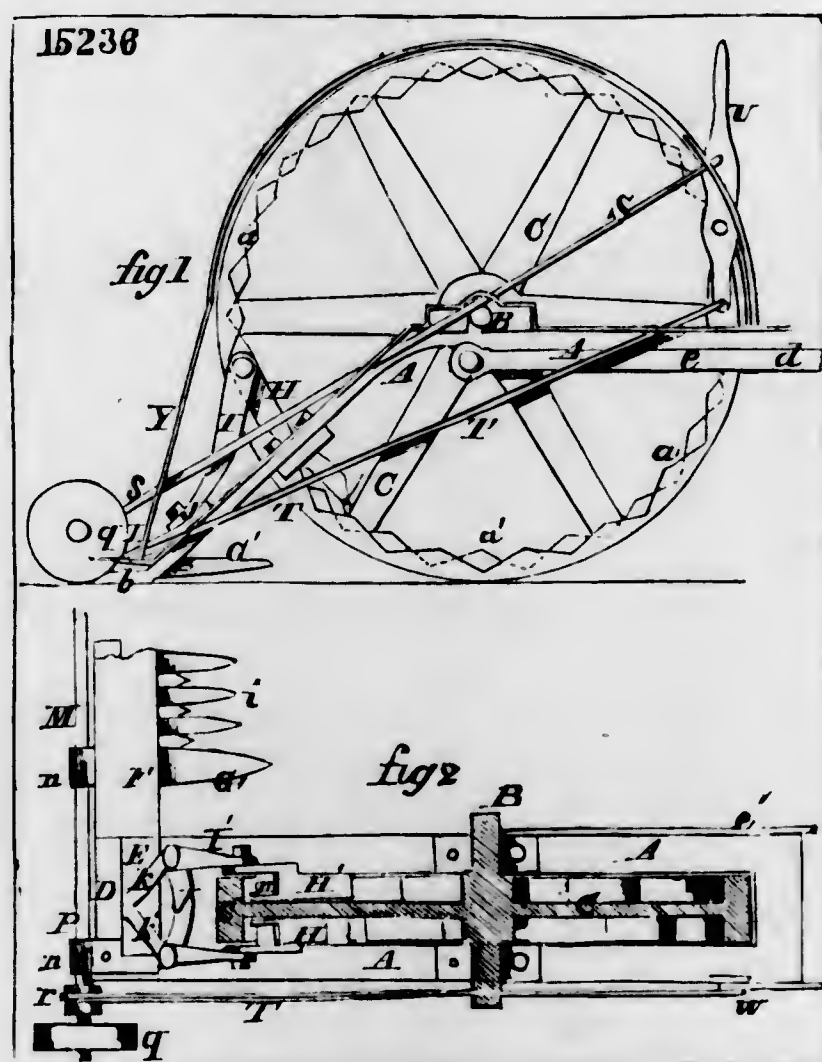
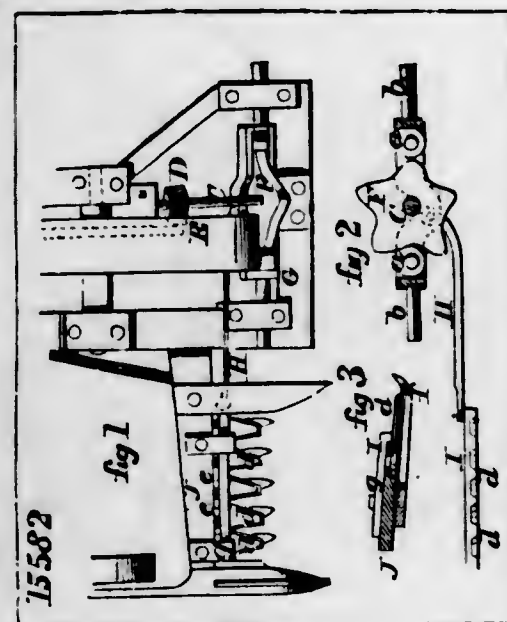
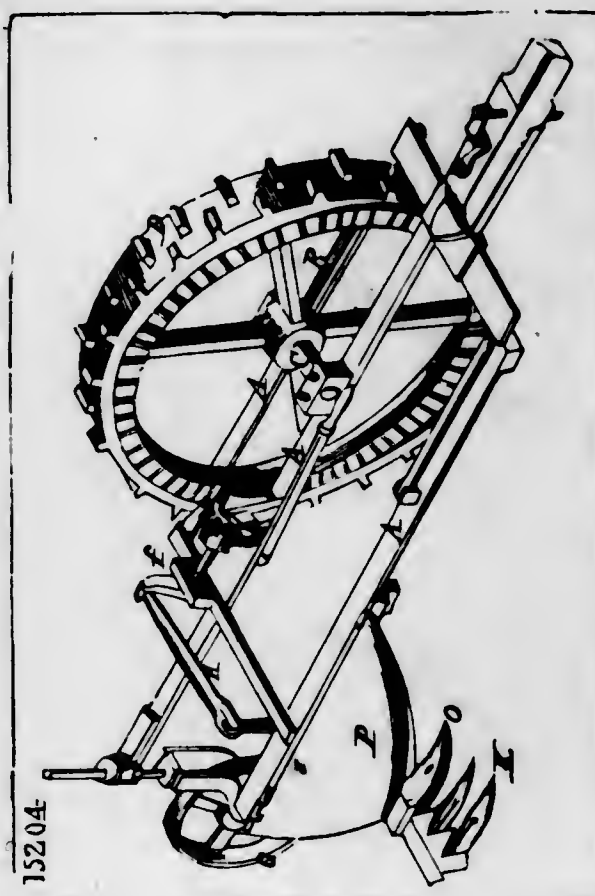
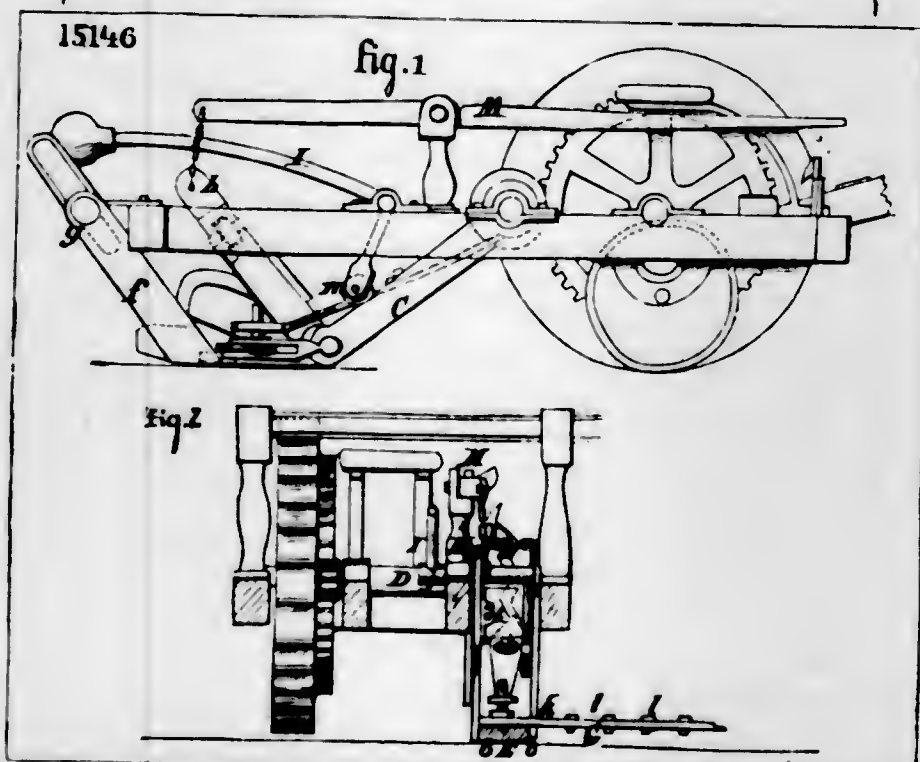
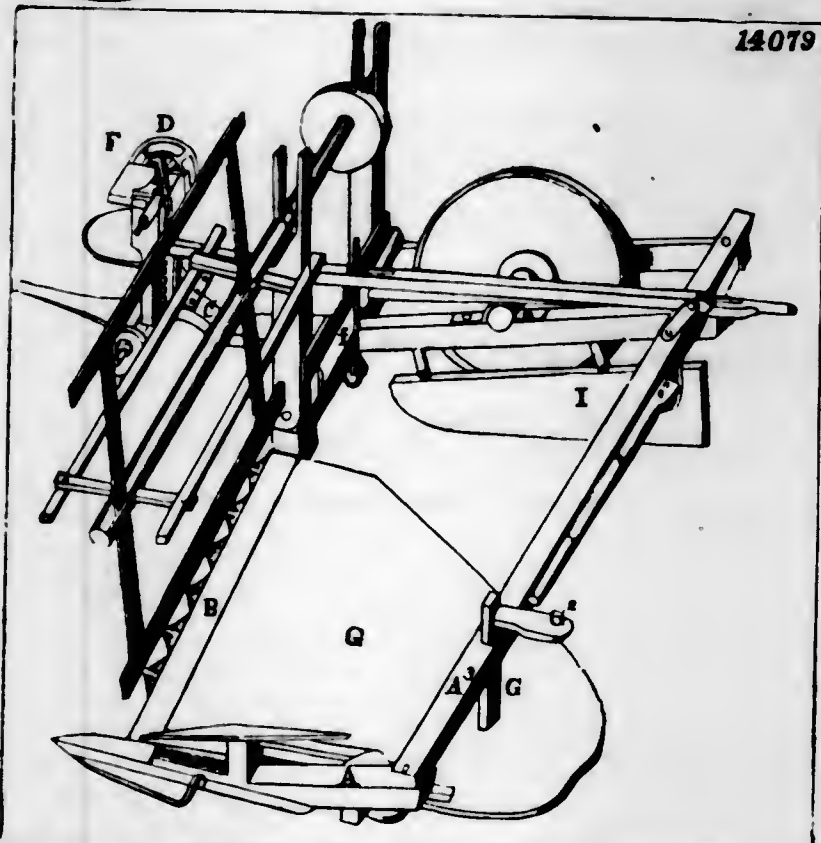
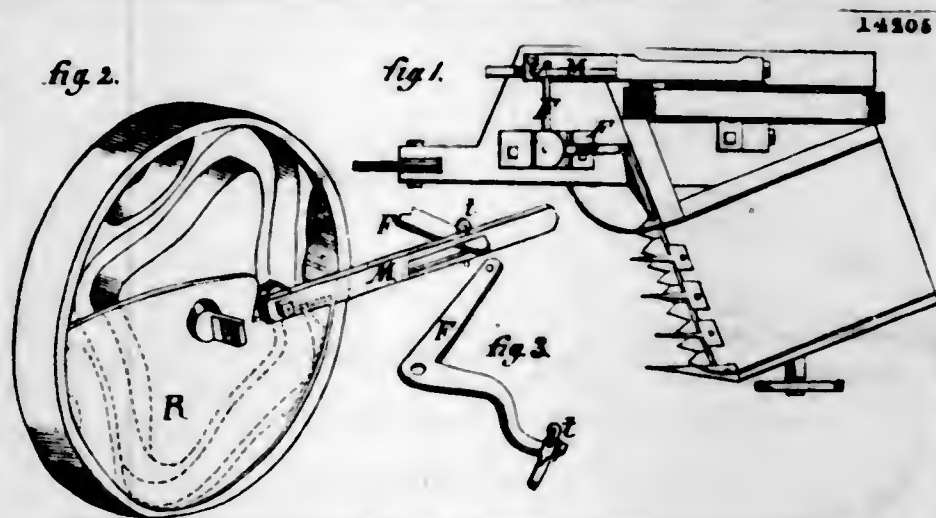


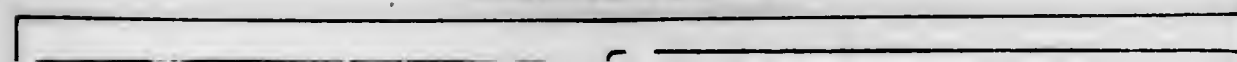
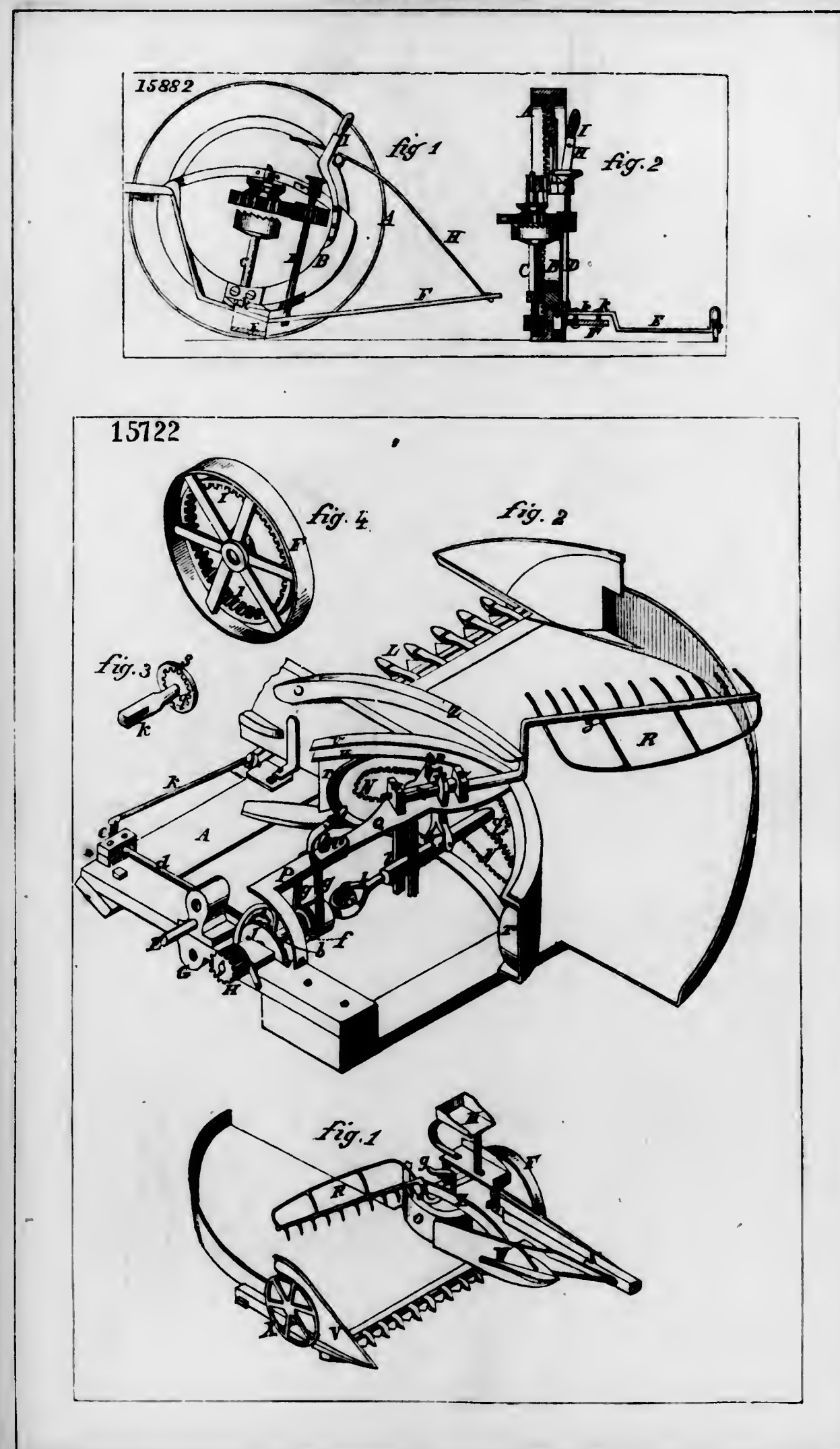
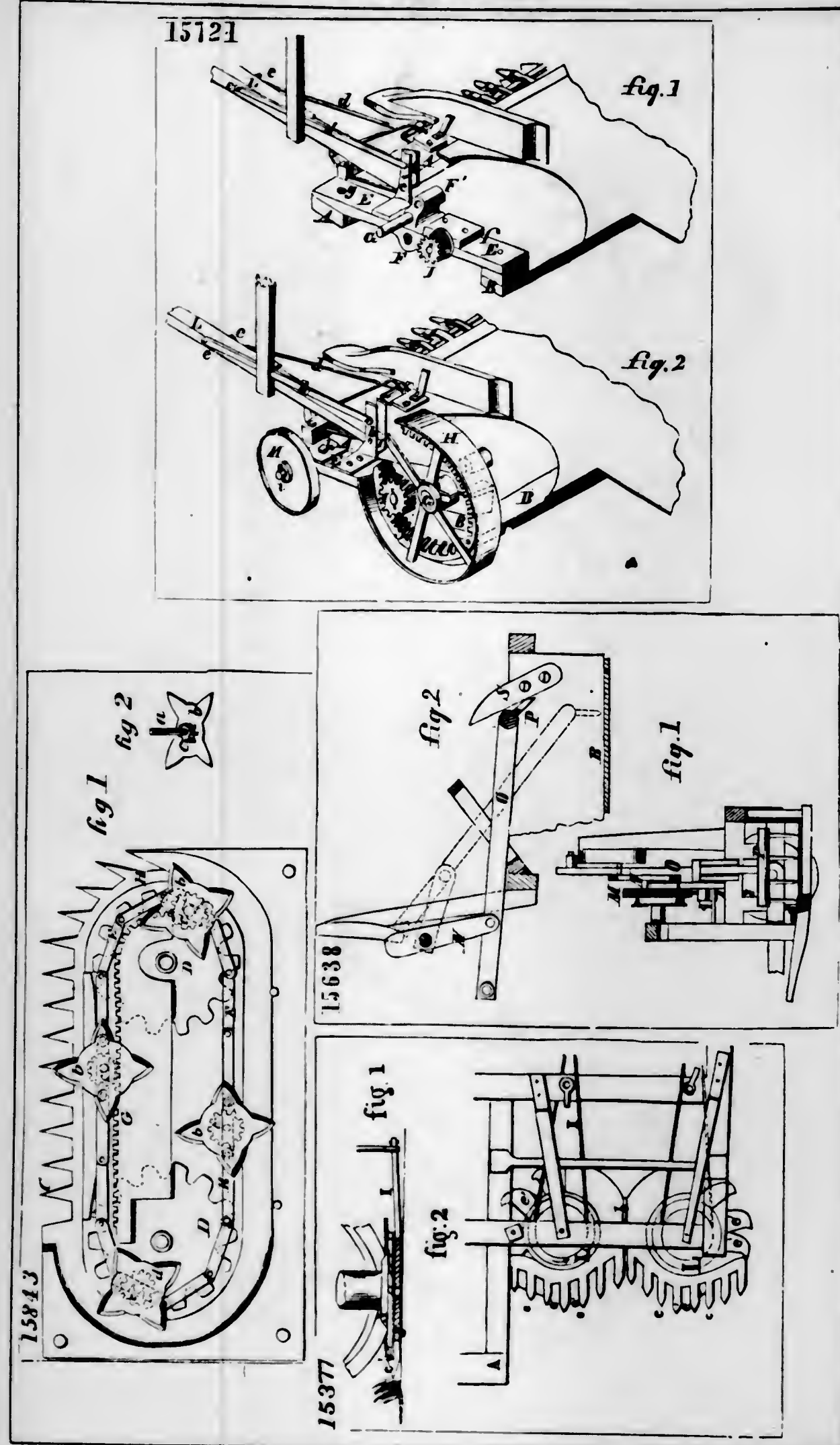
fig. 2

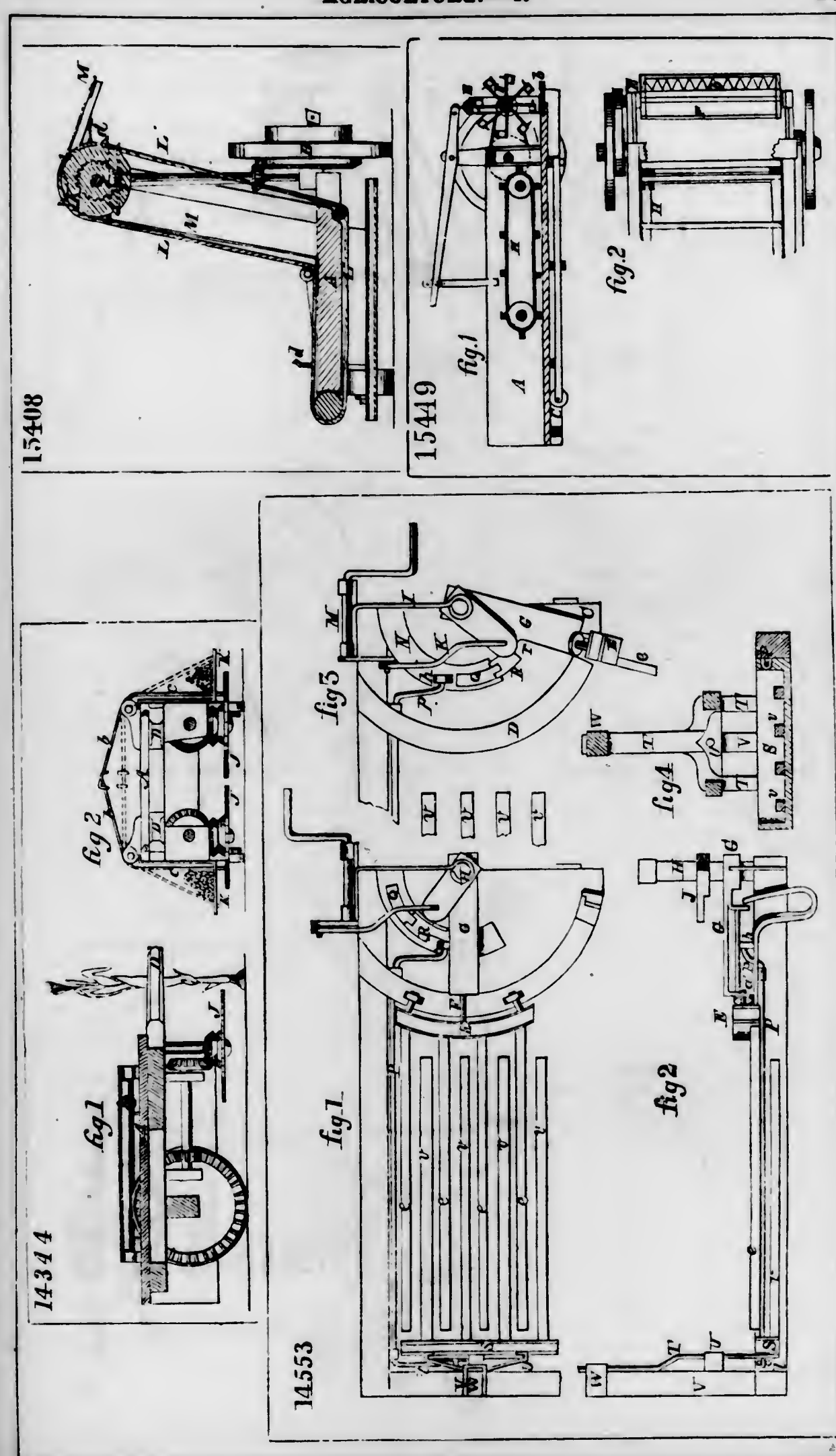
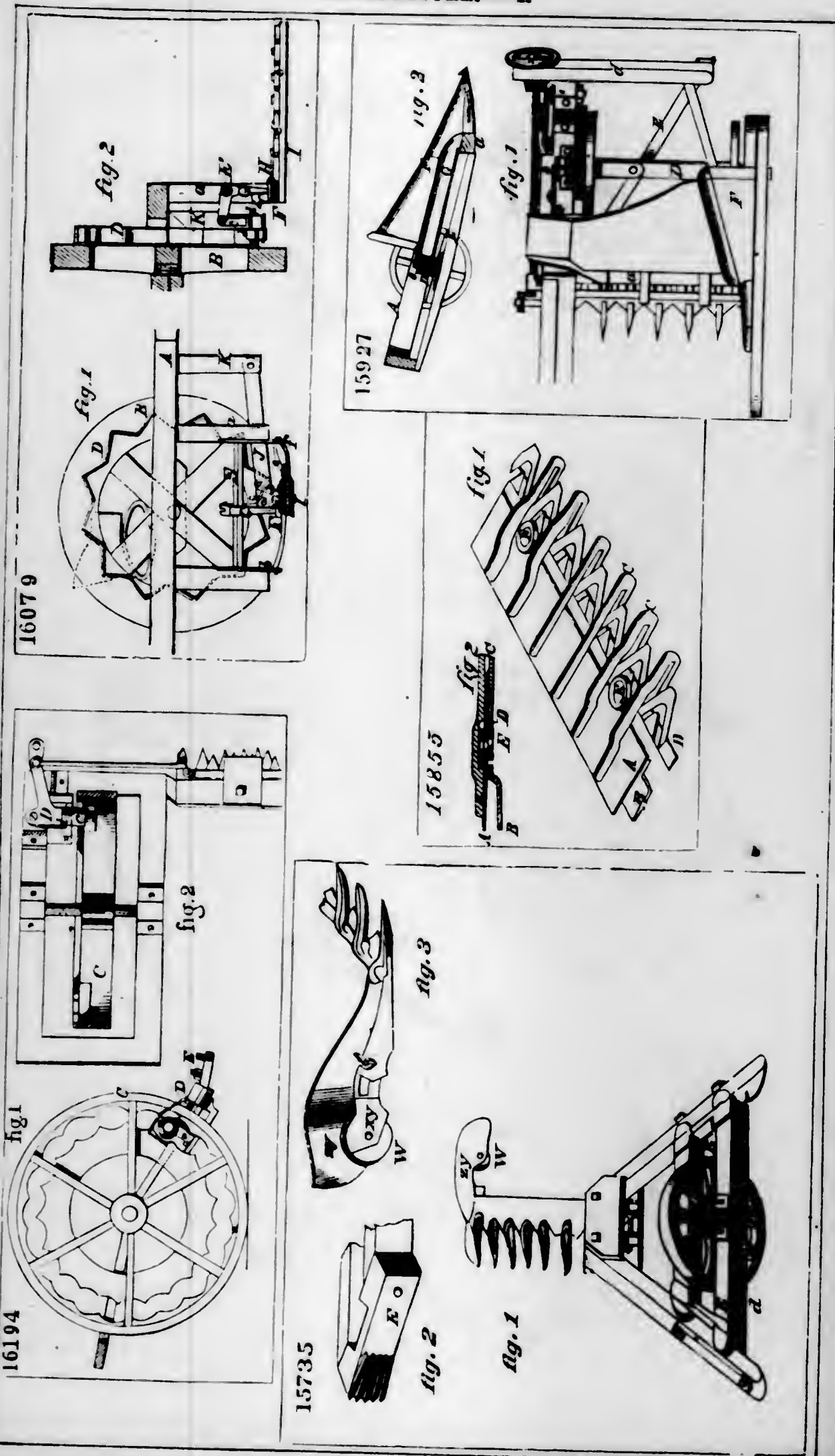


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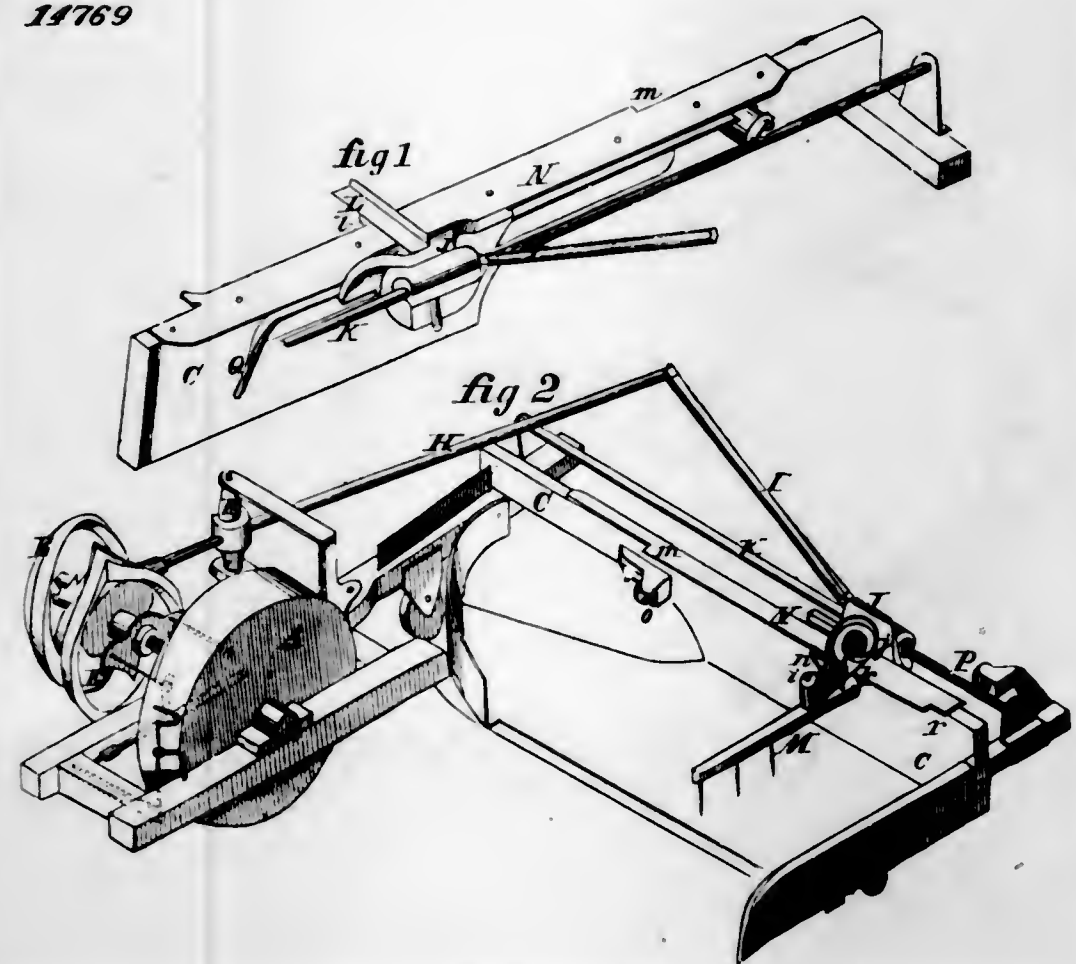




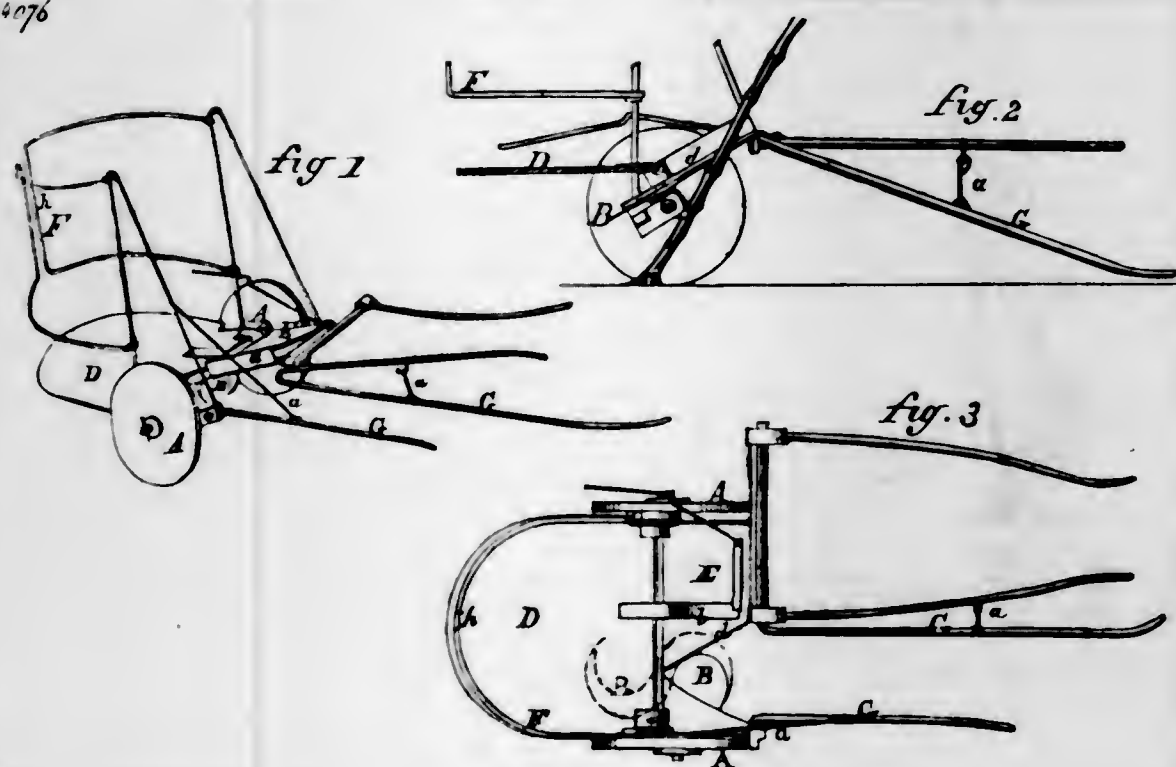




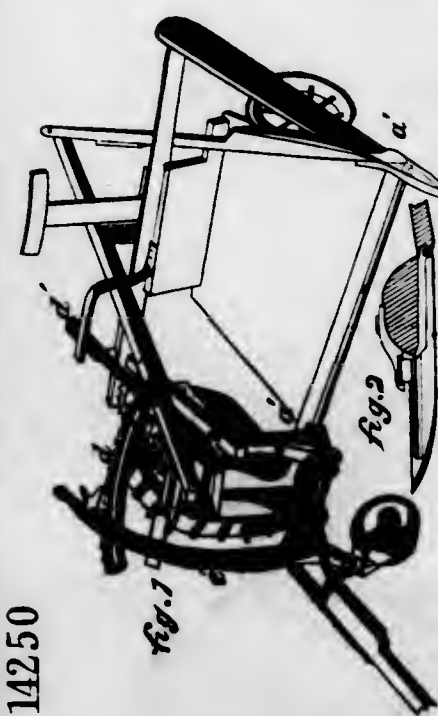
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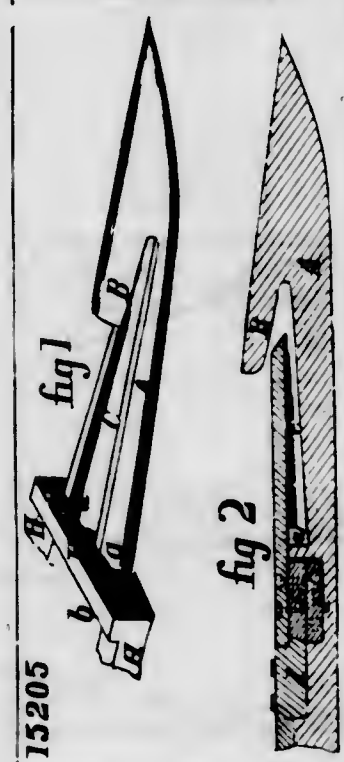
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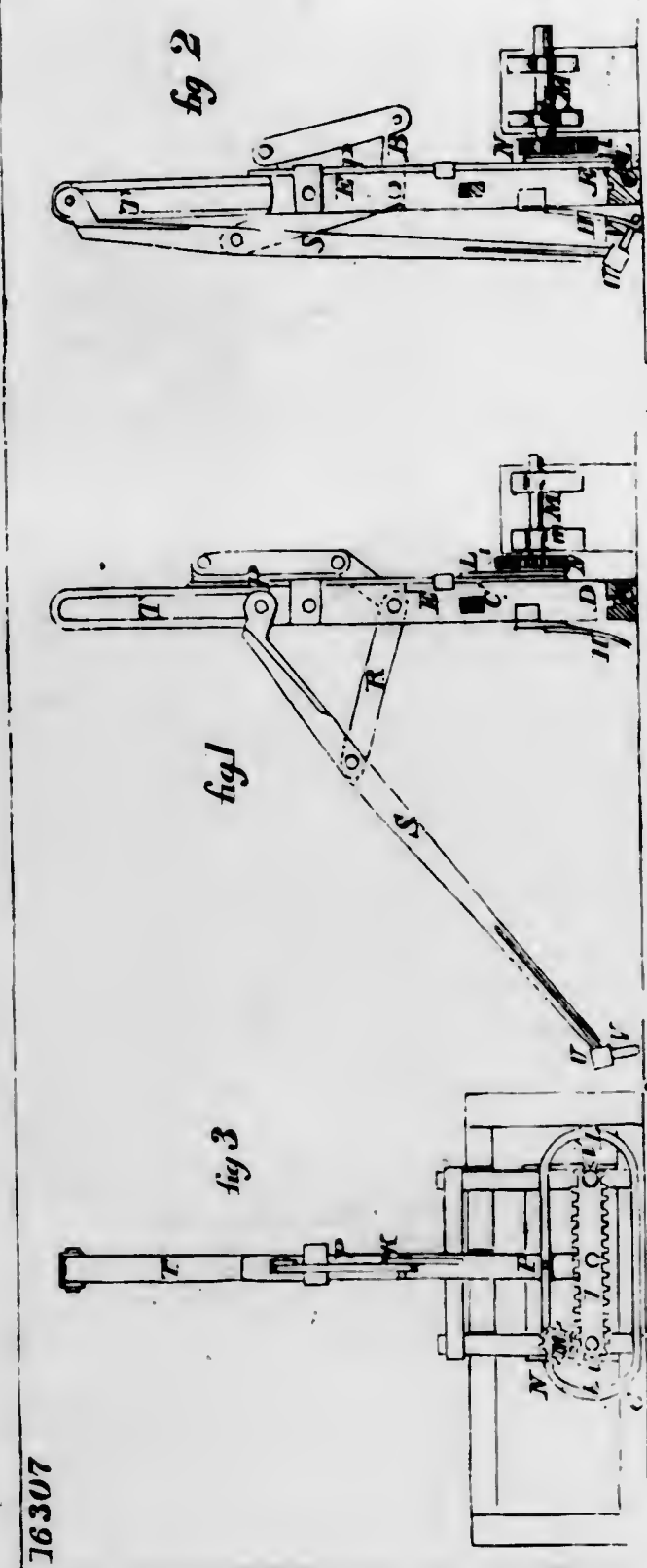
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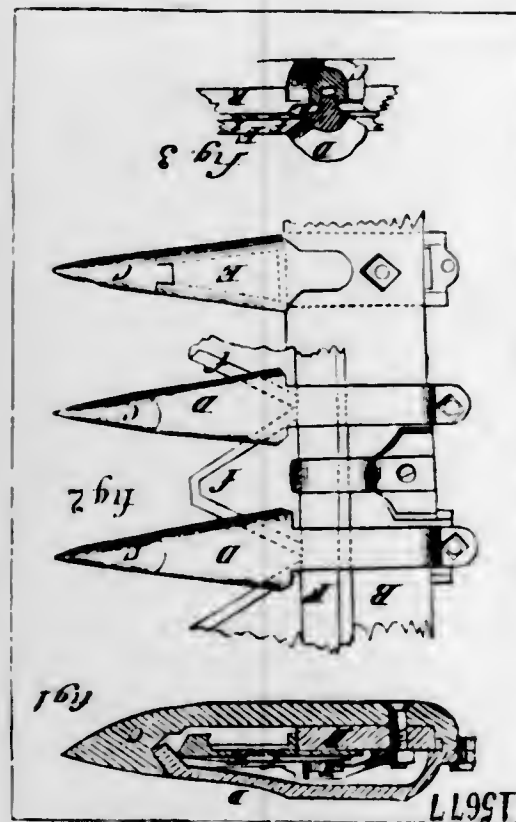
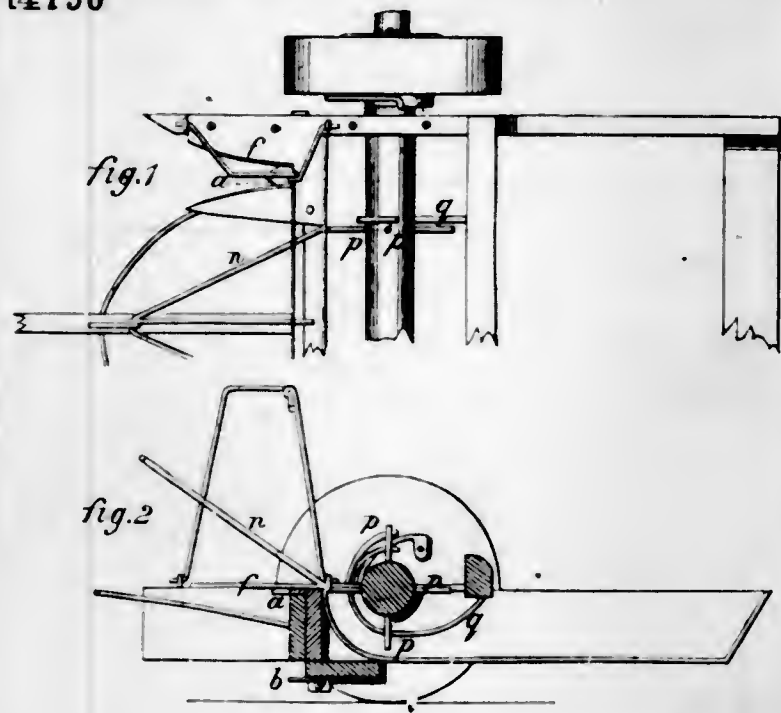
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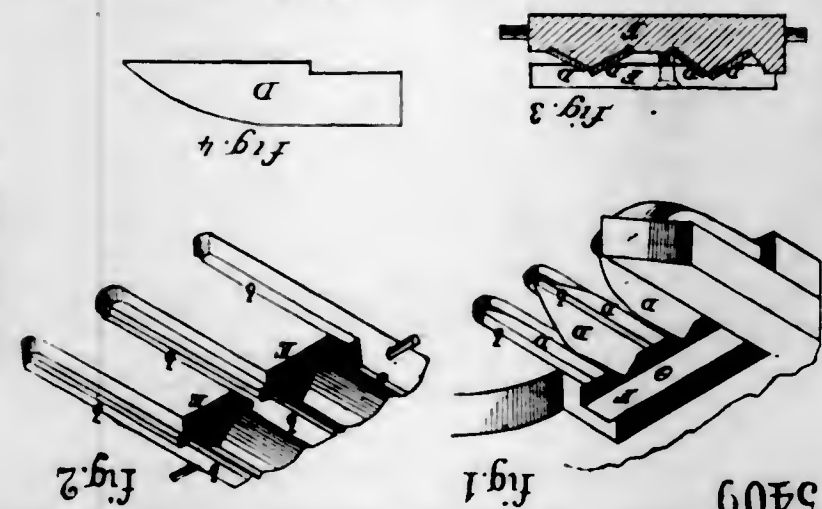
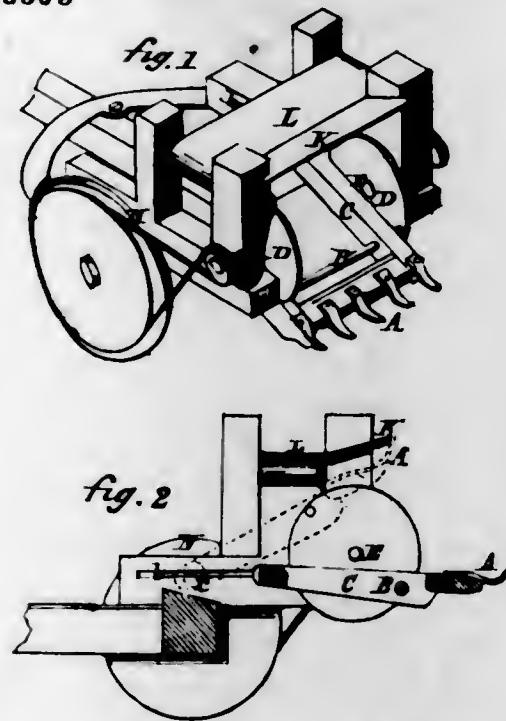
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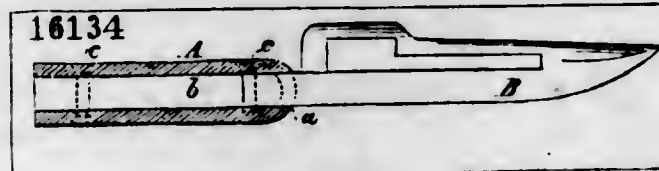
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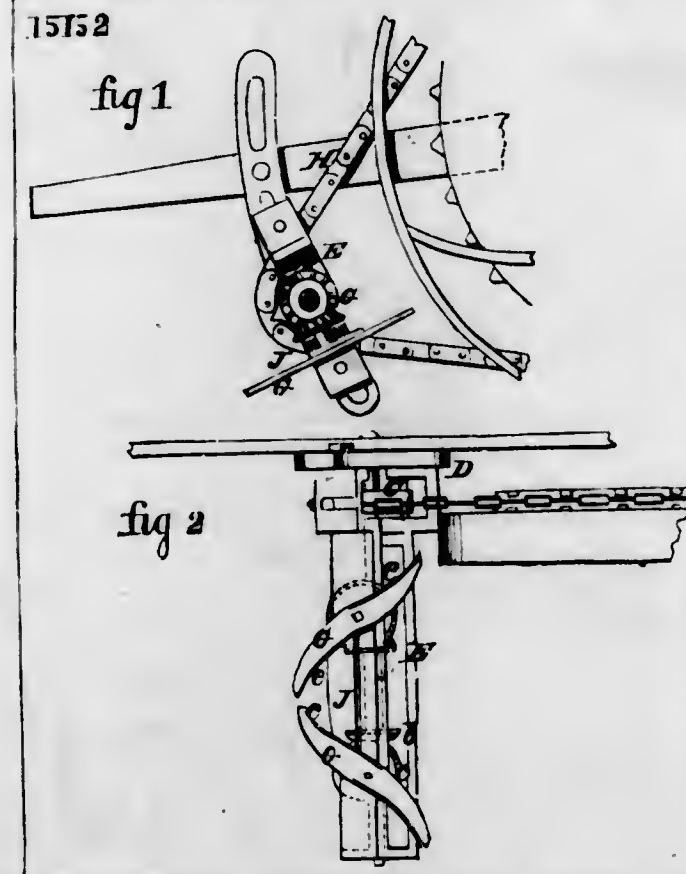
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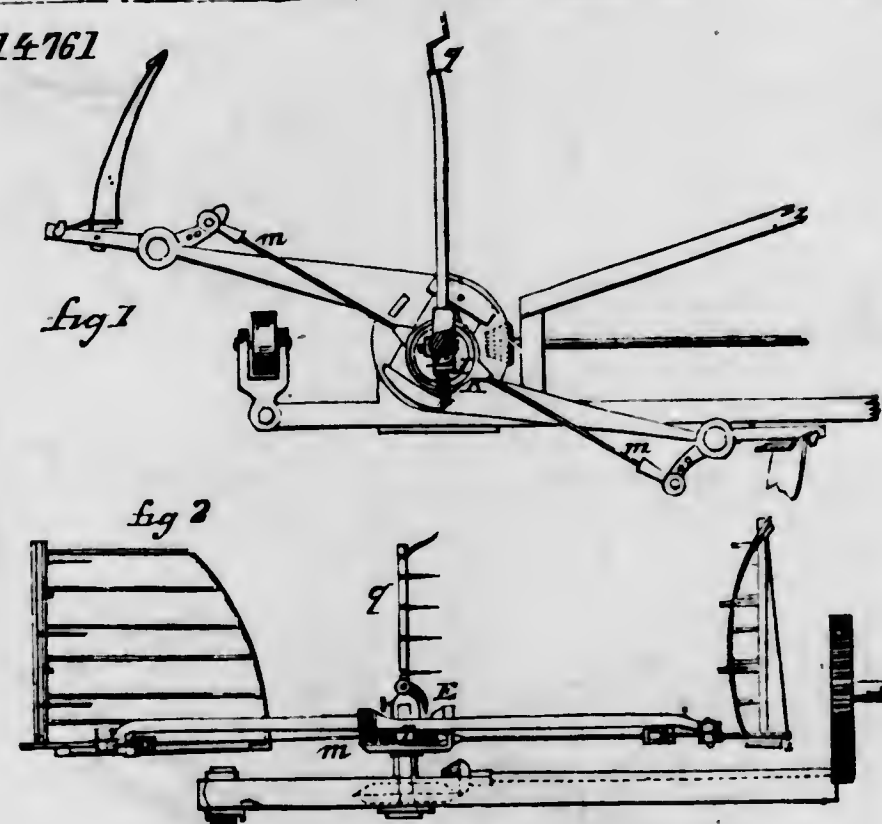
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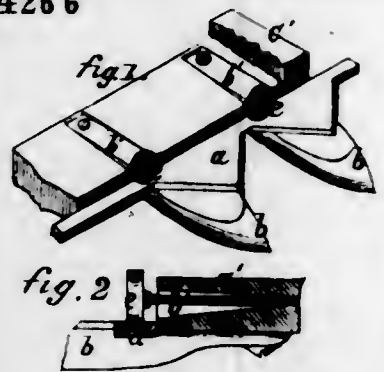
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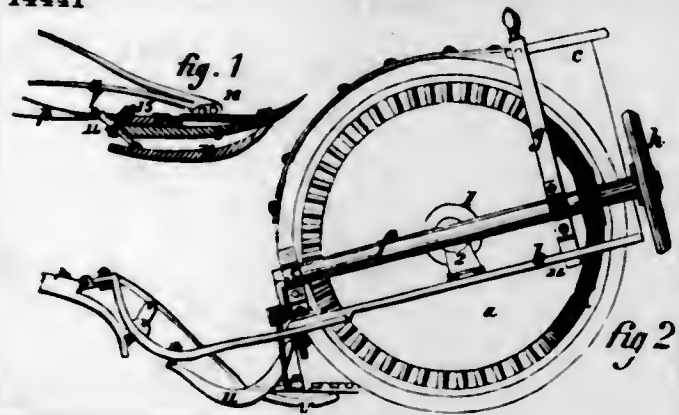
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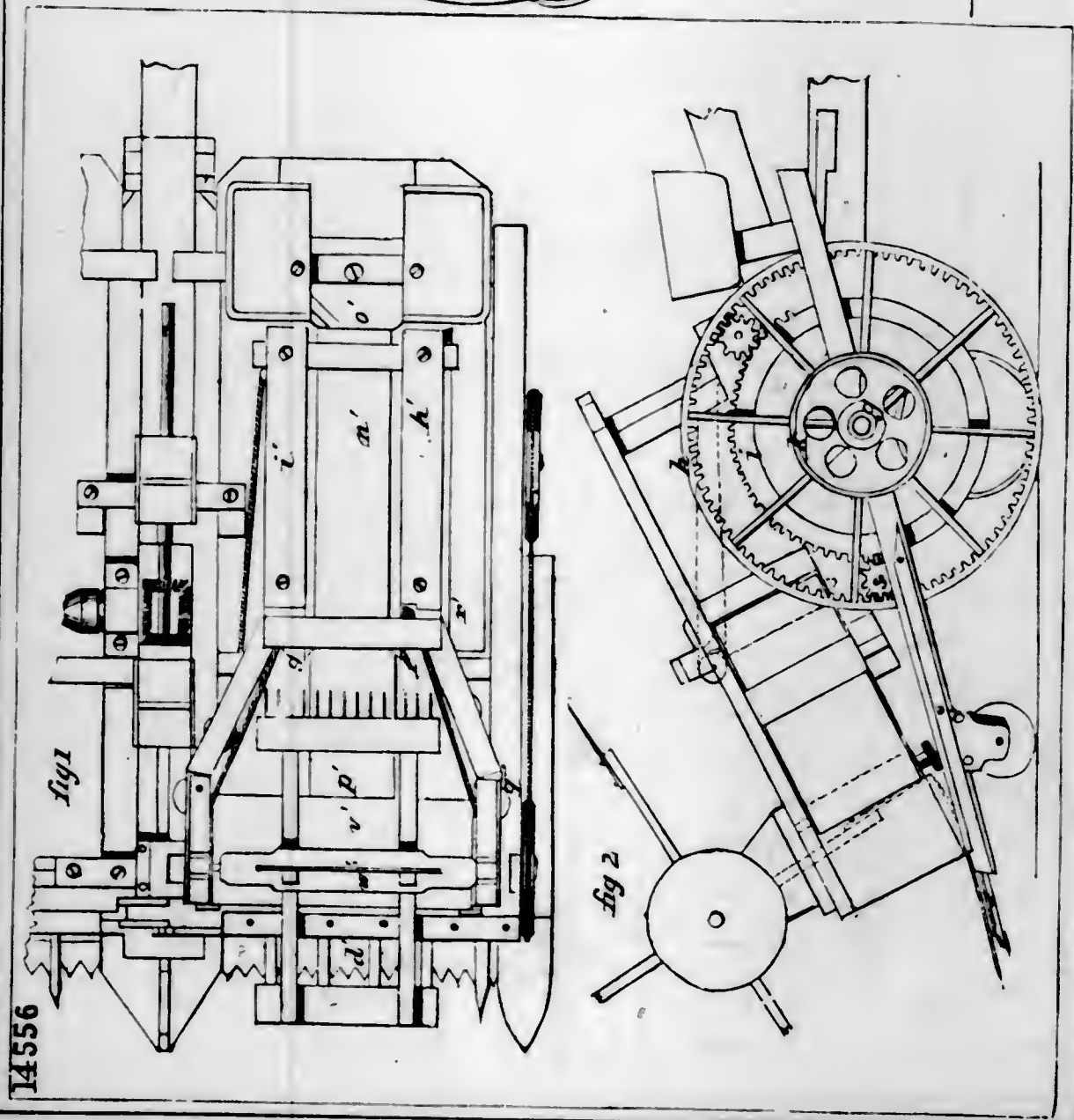
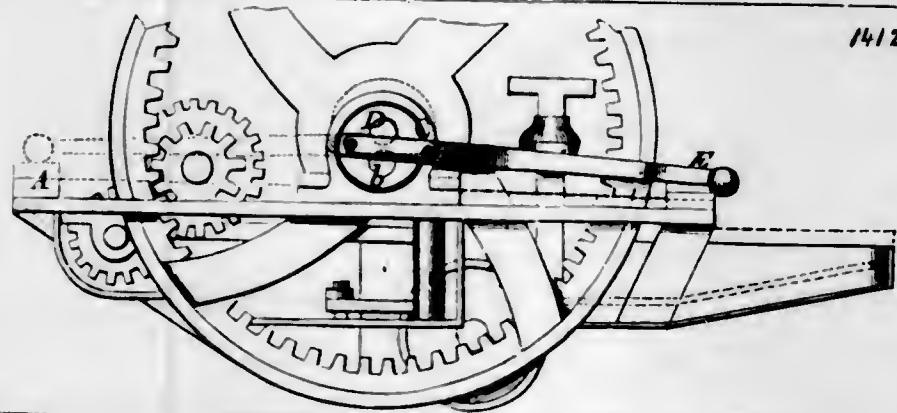
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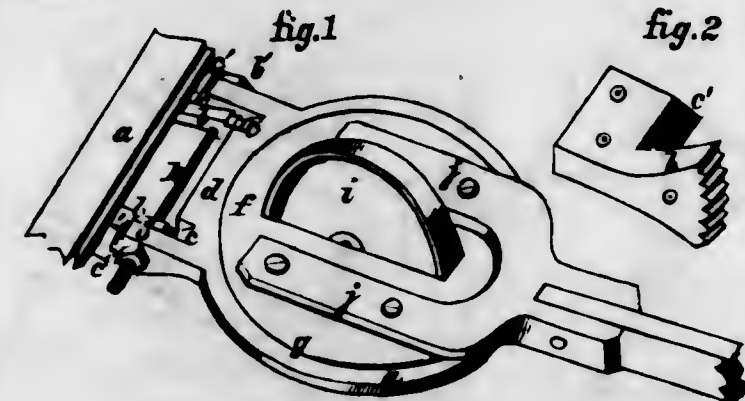
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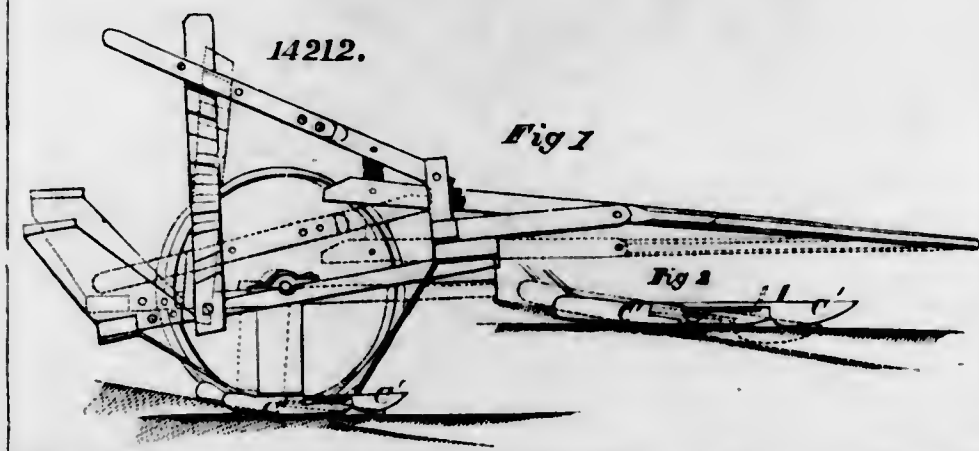
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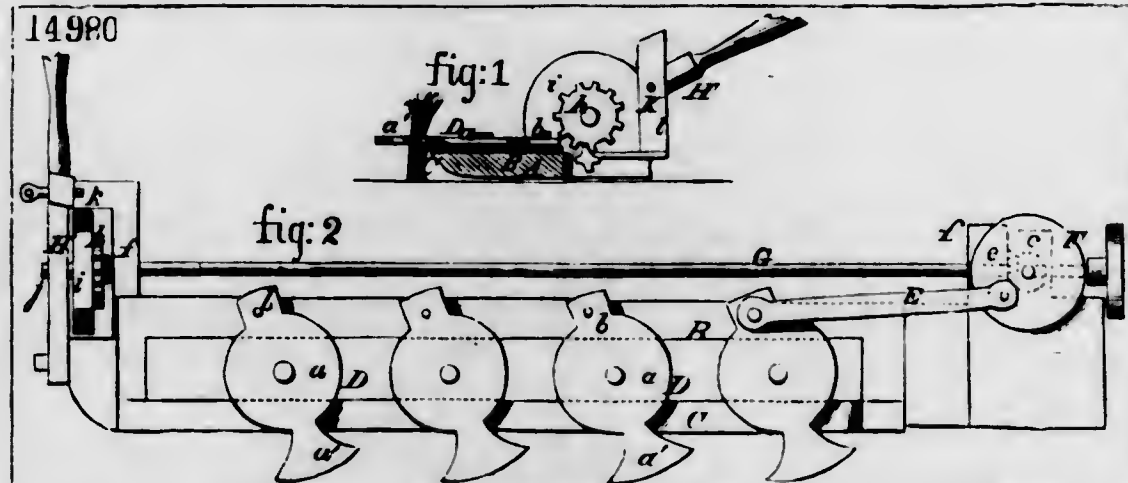
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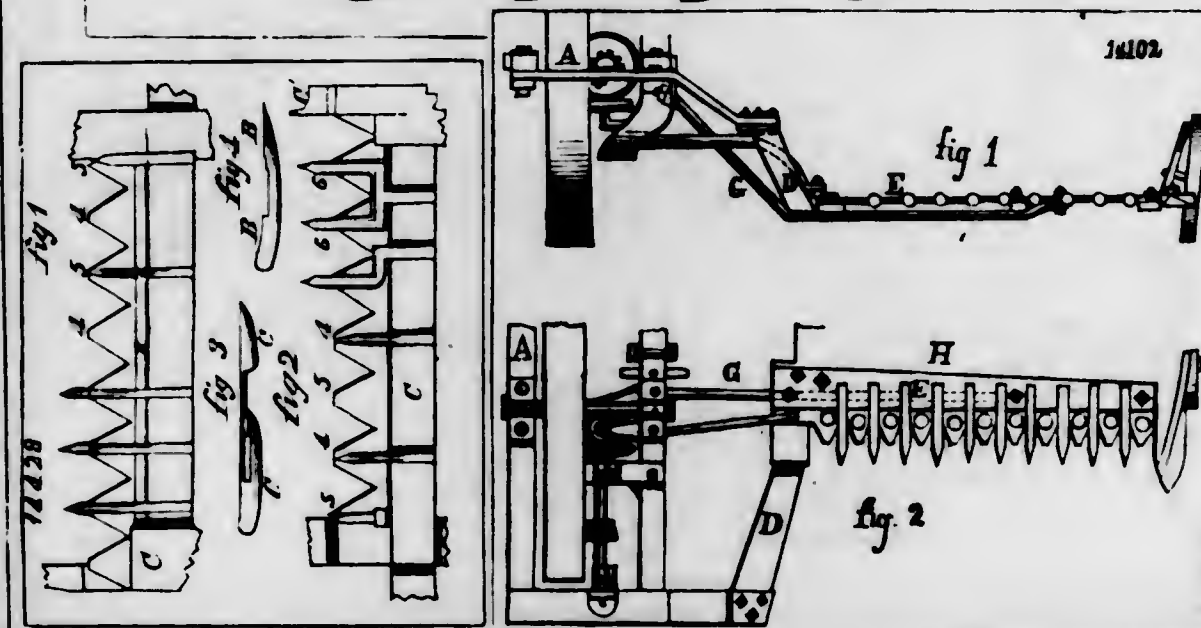
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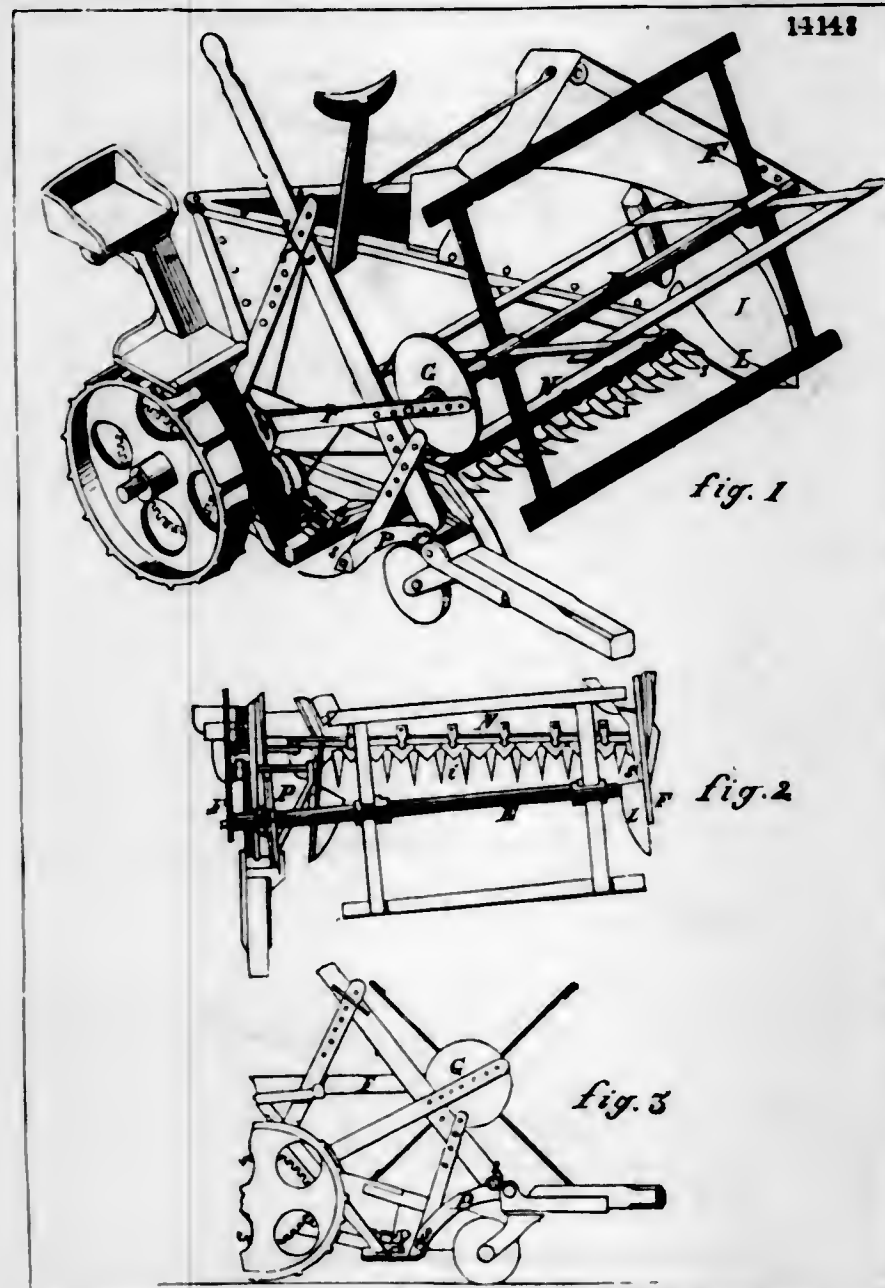


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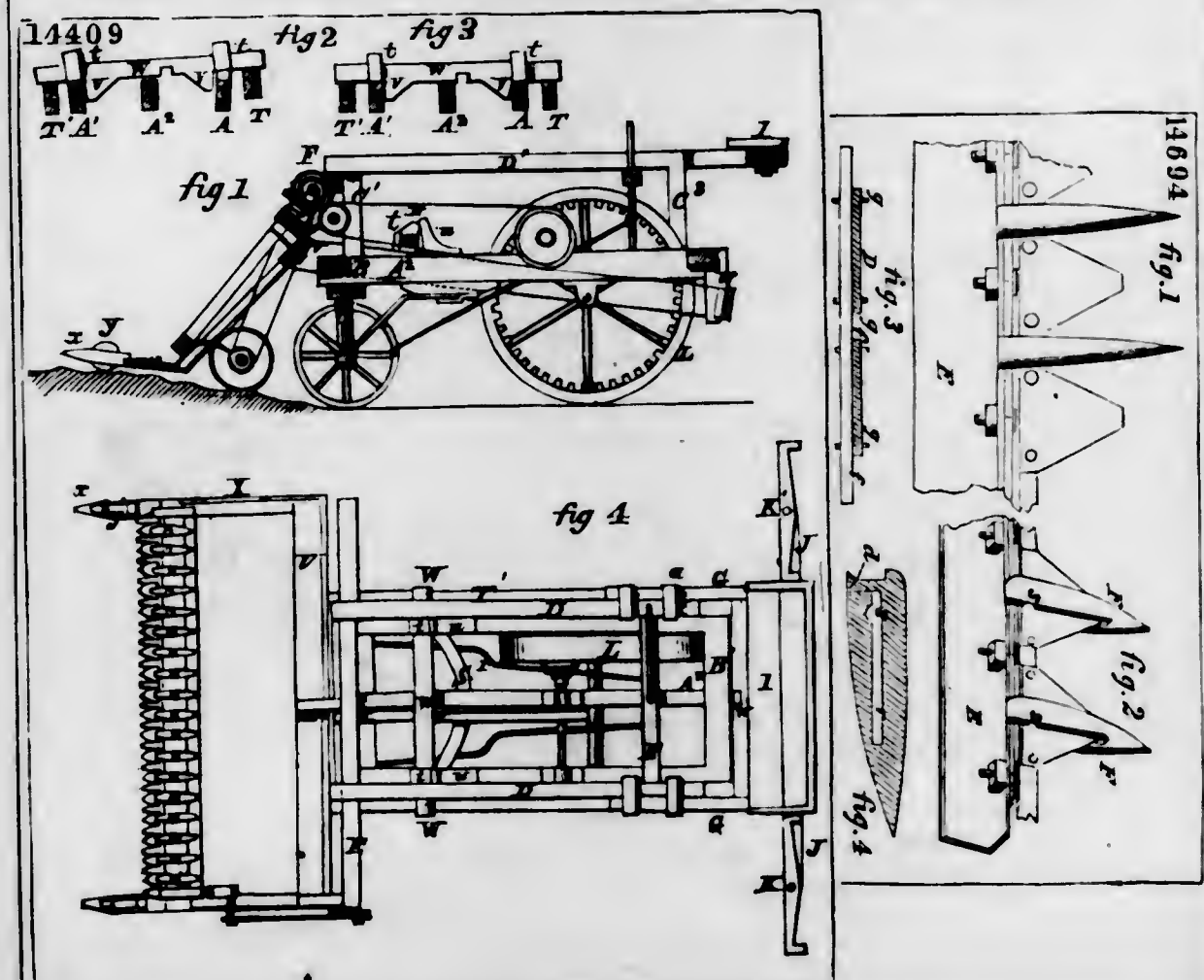
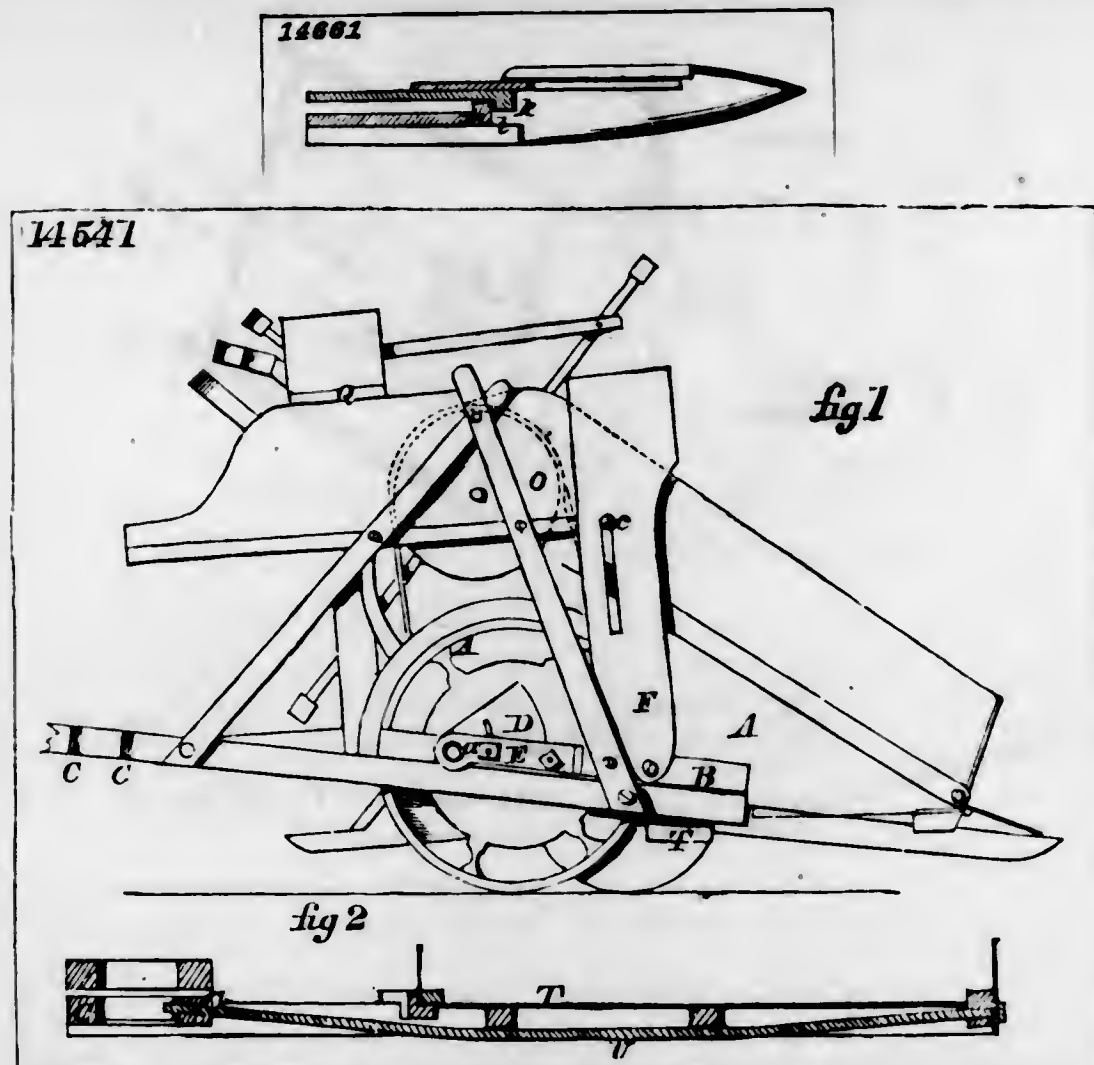
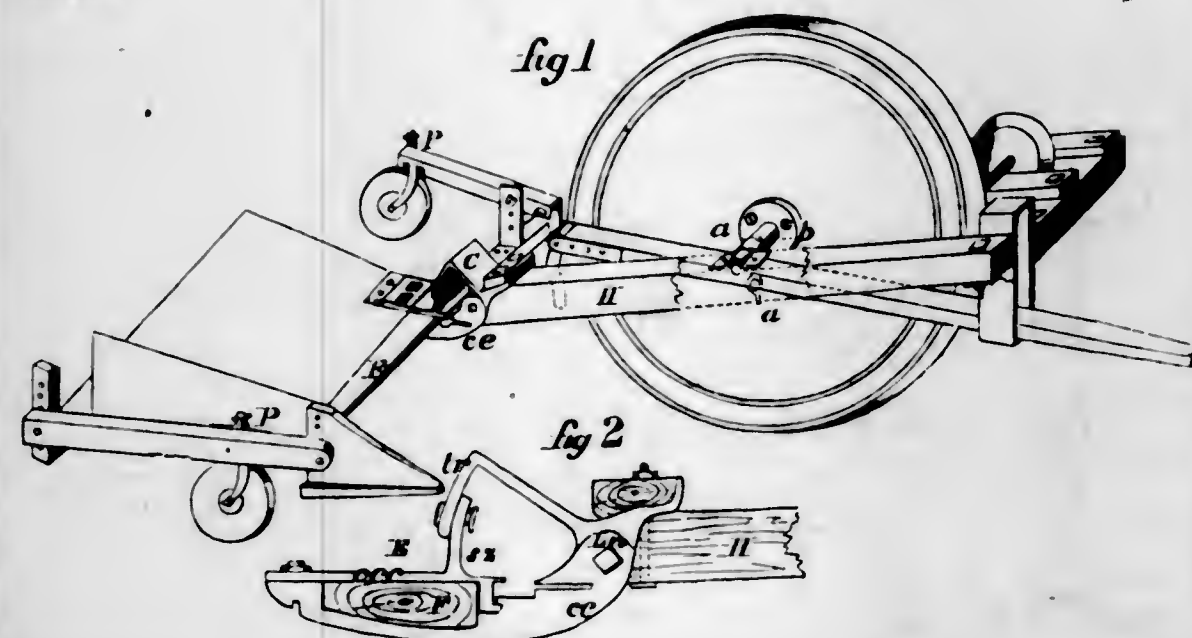


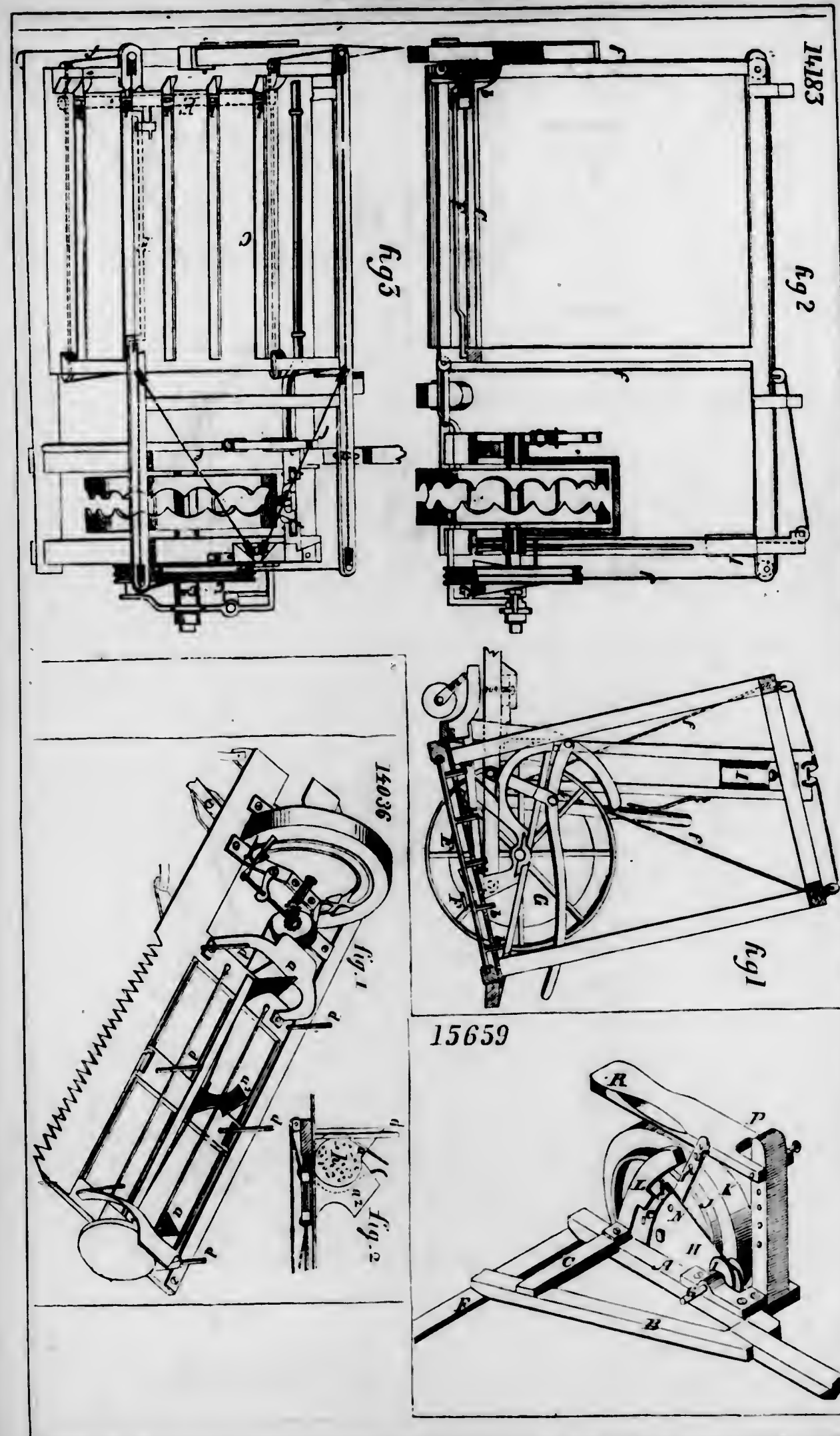
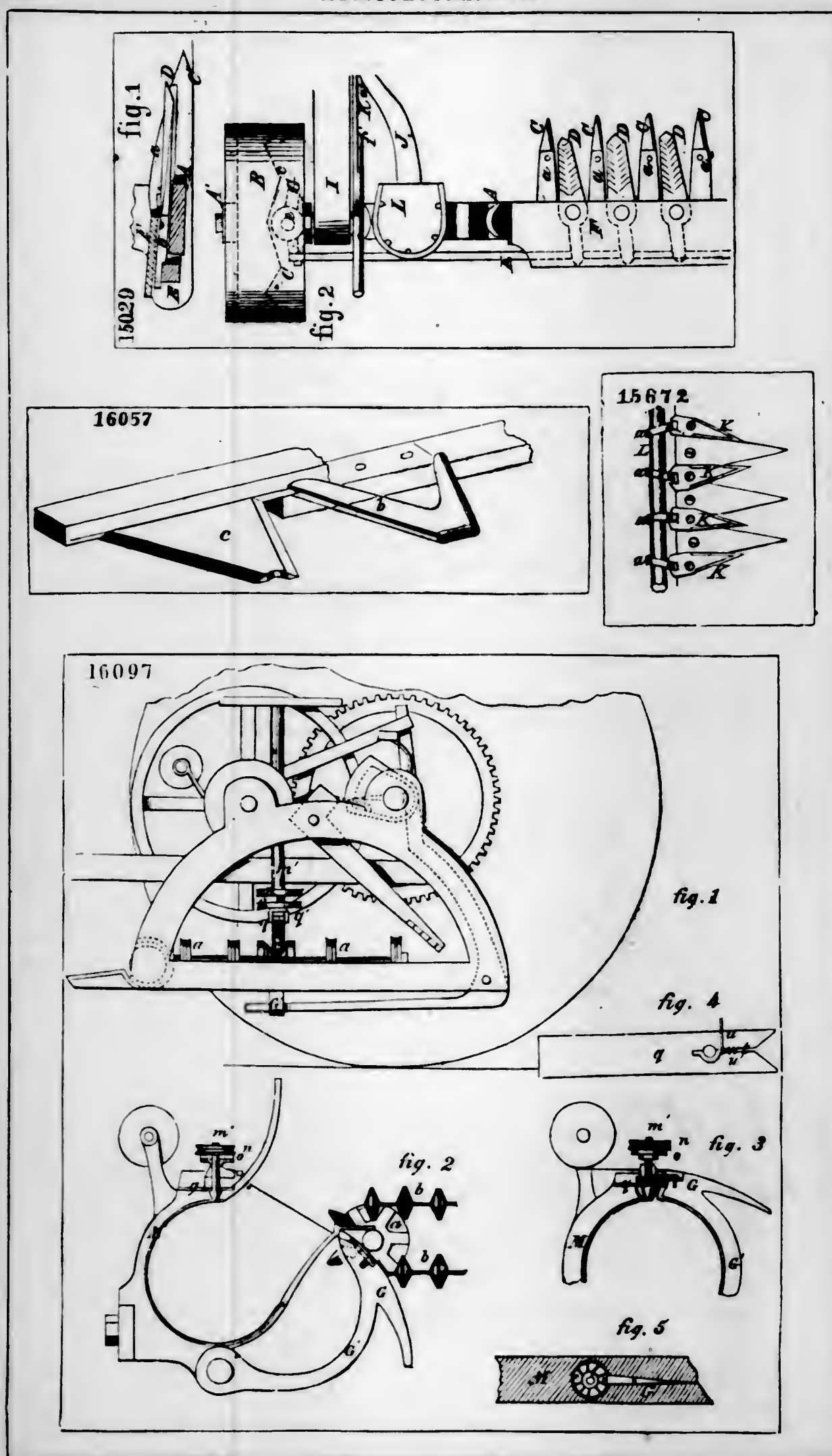
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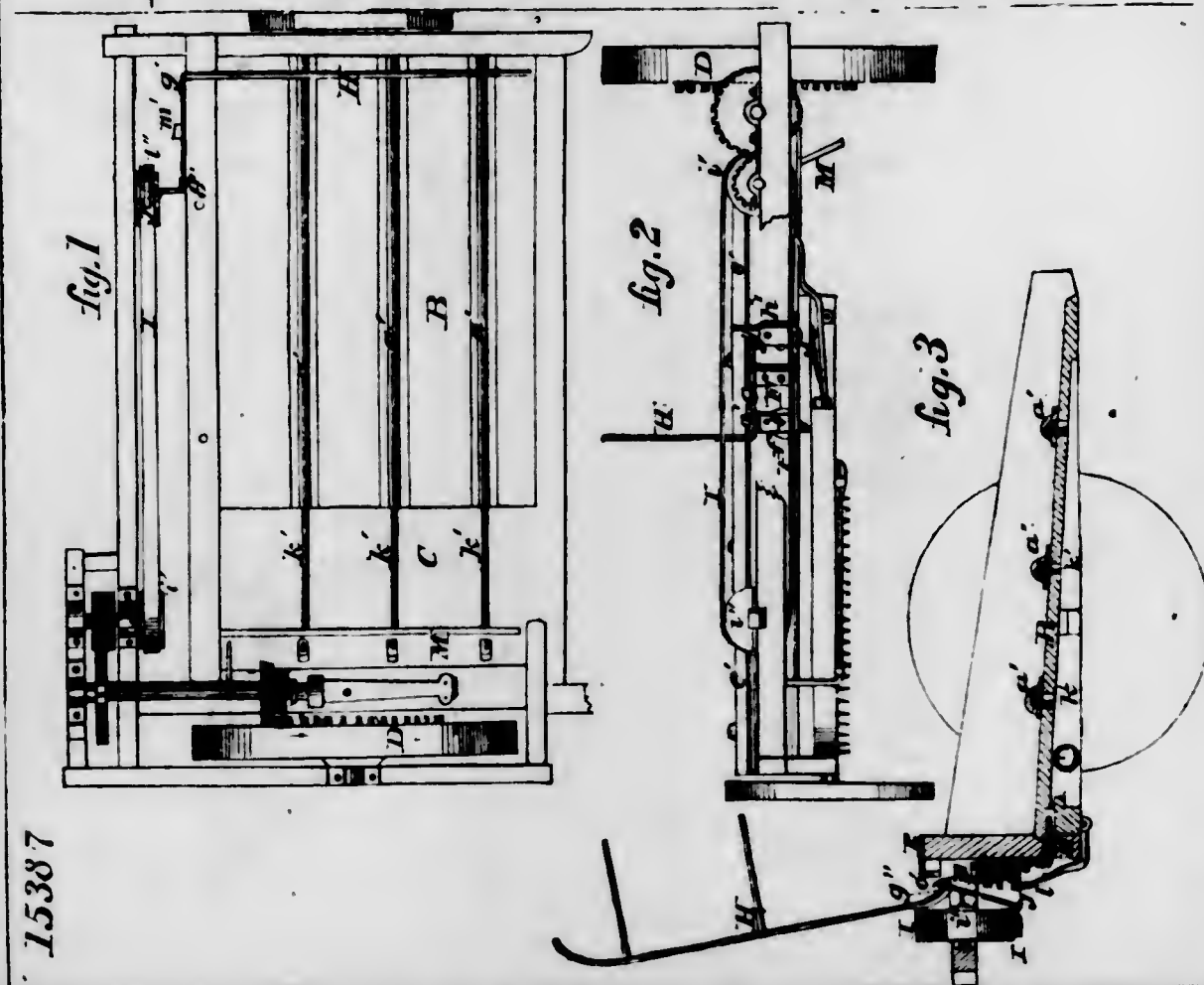
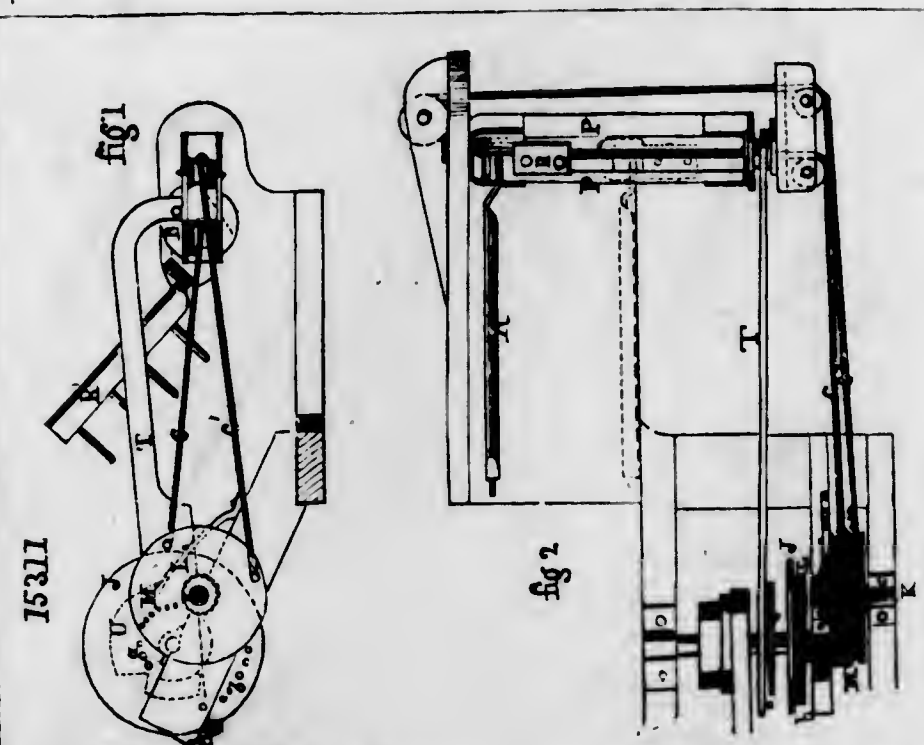
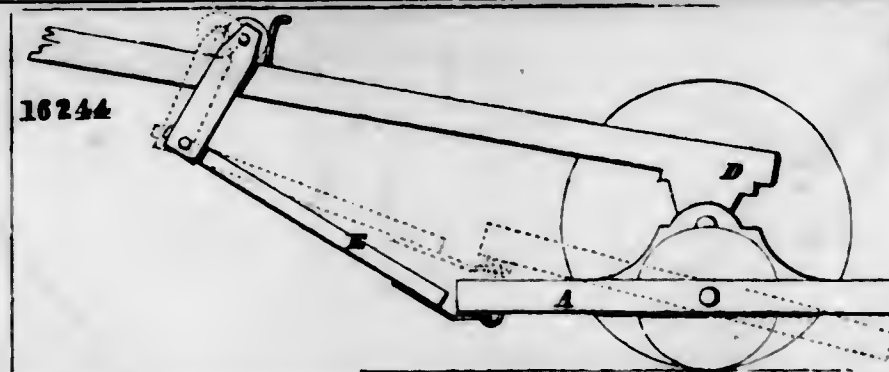
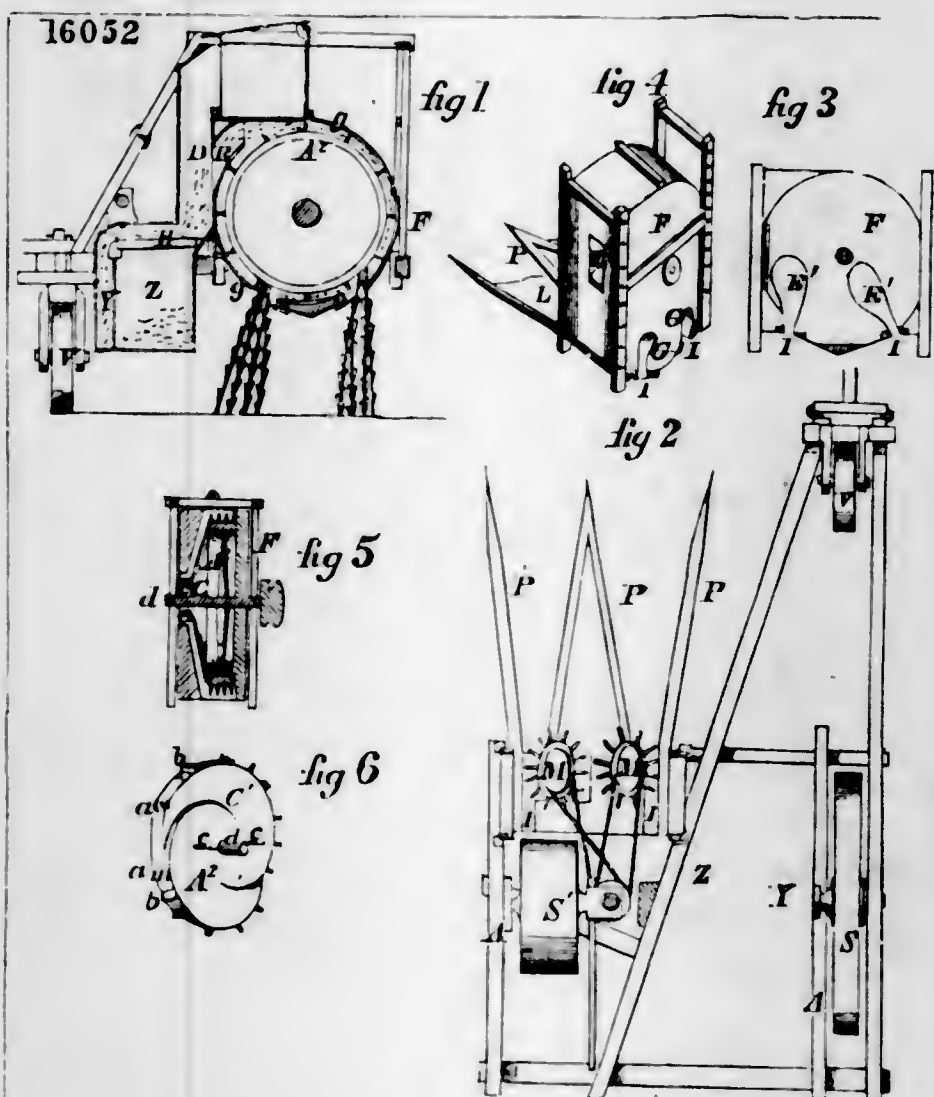
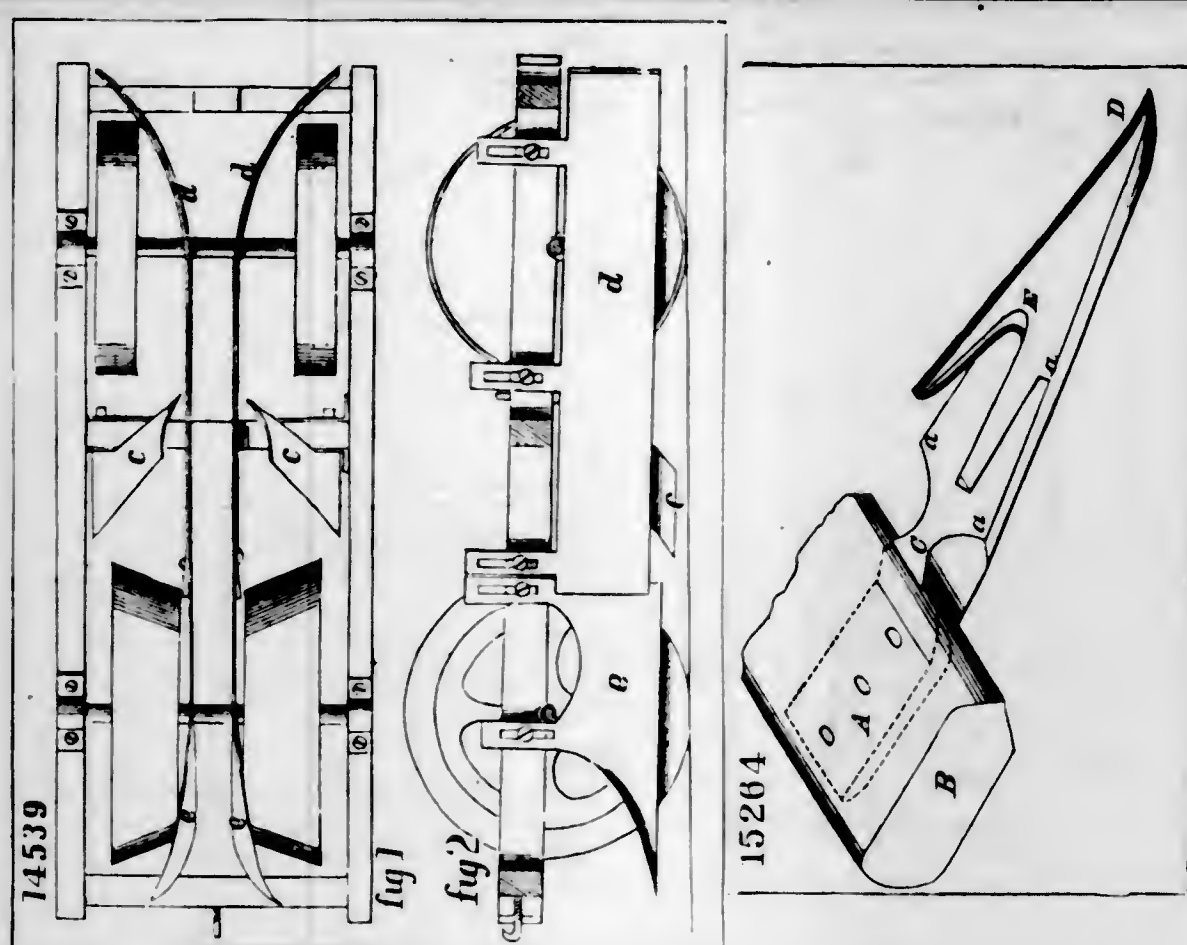


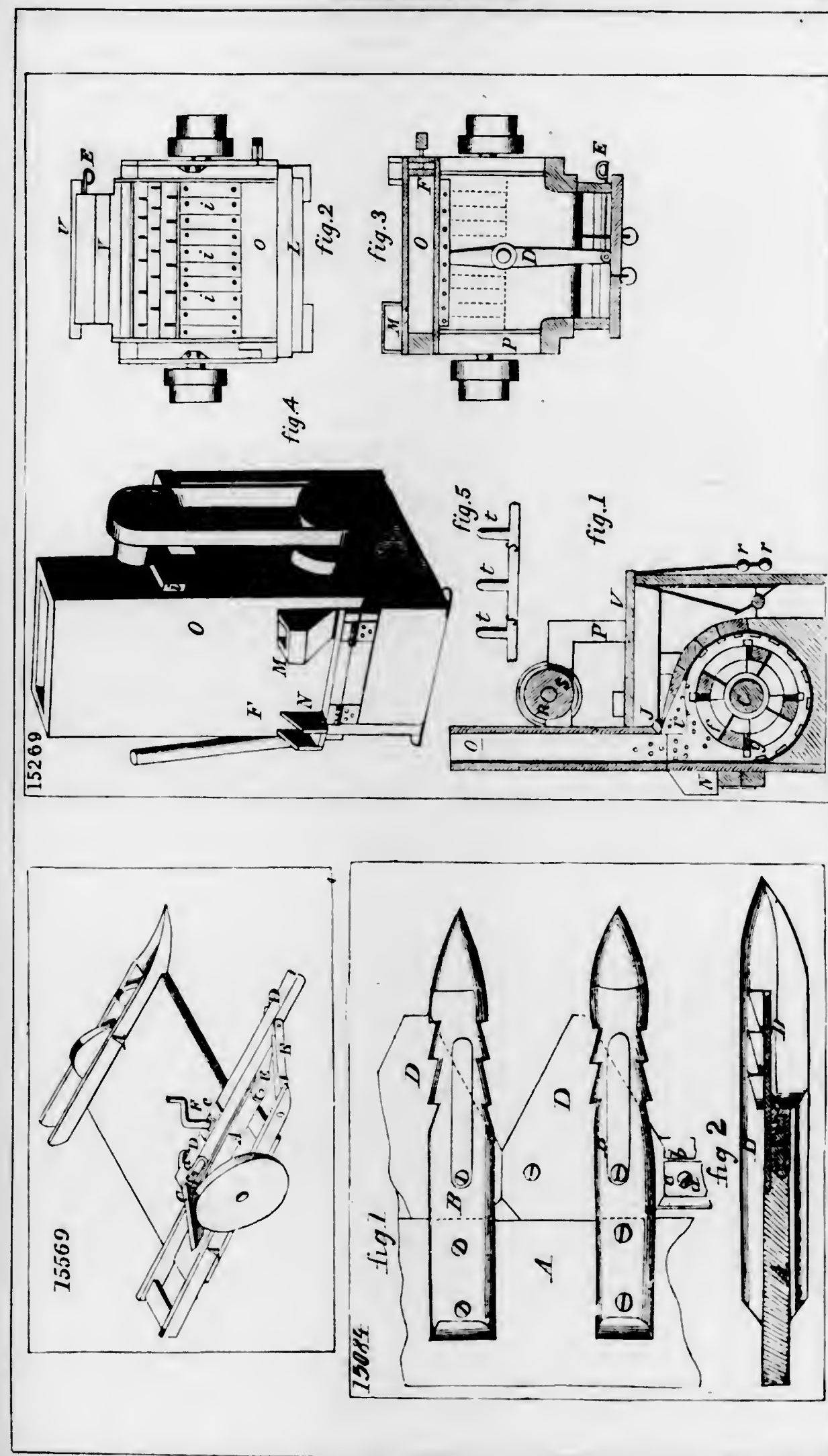
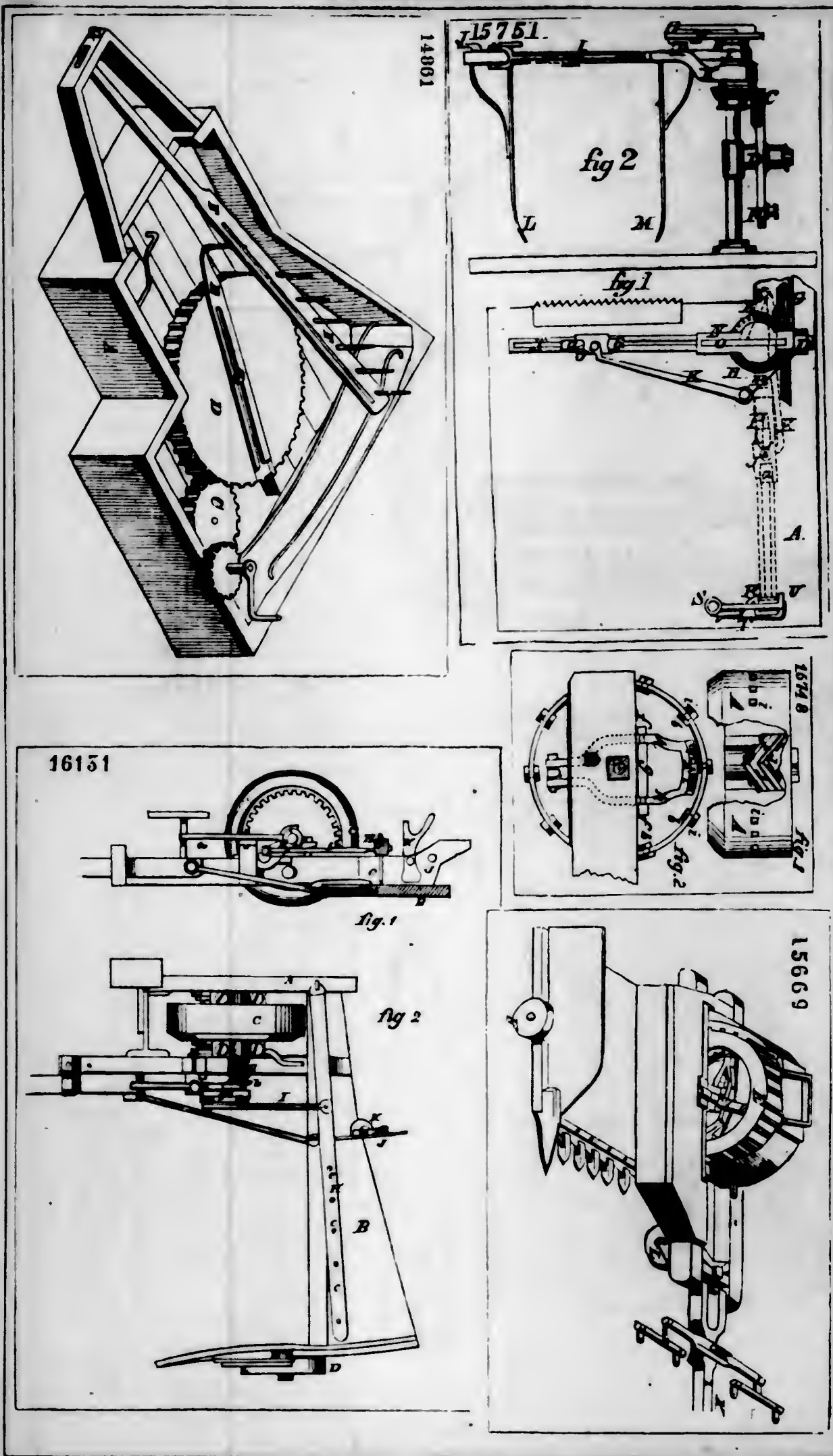


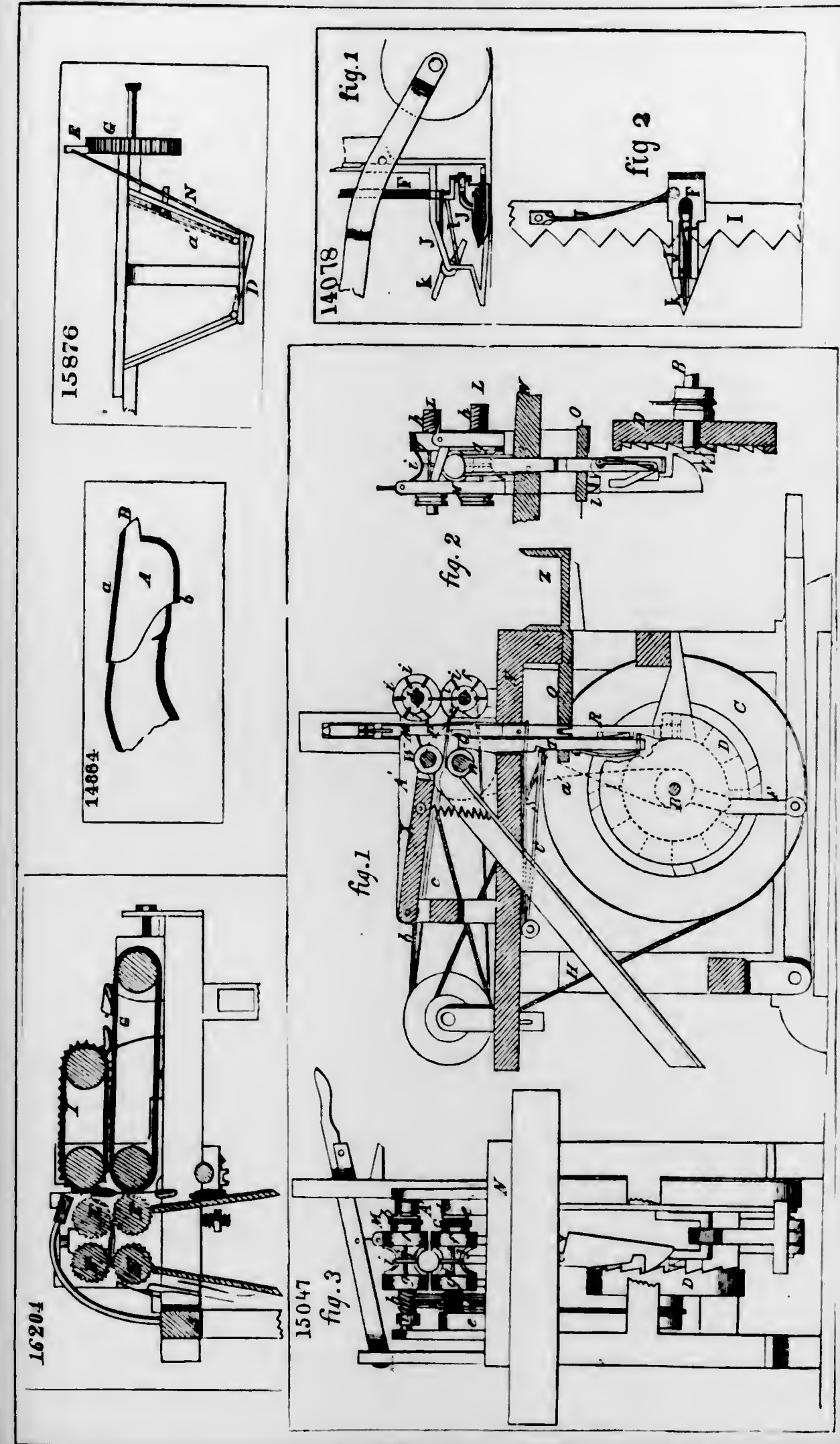
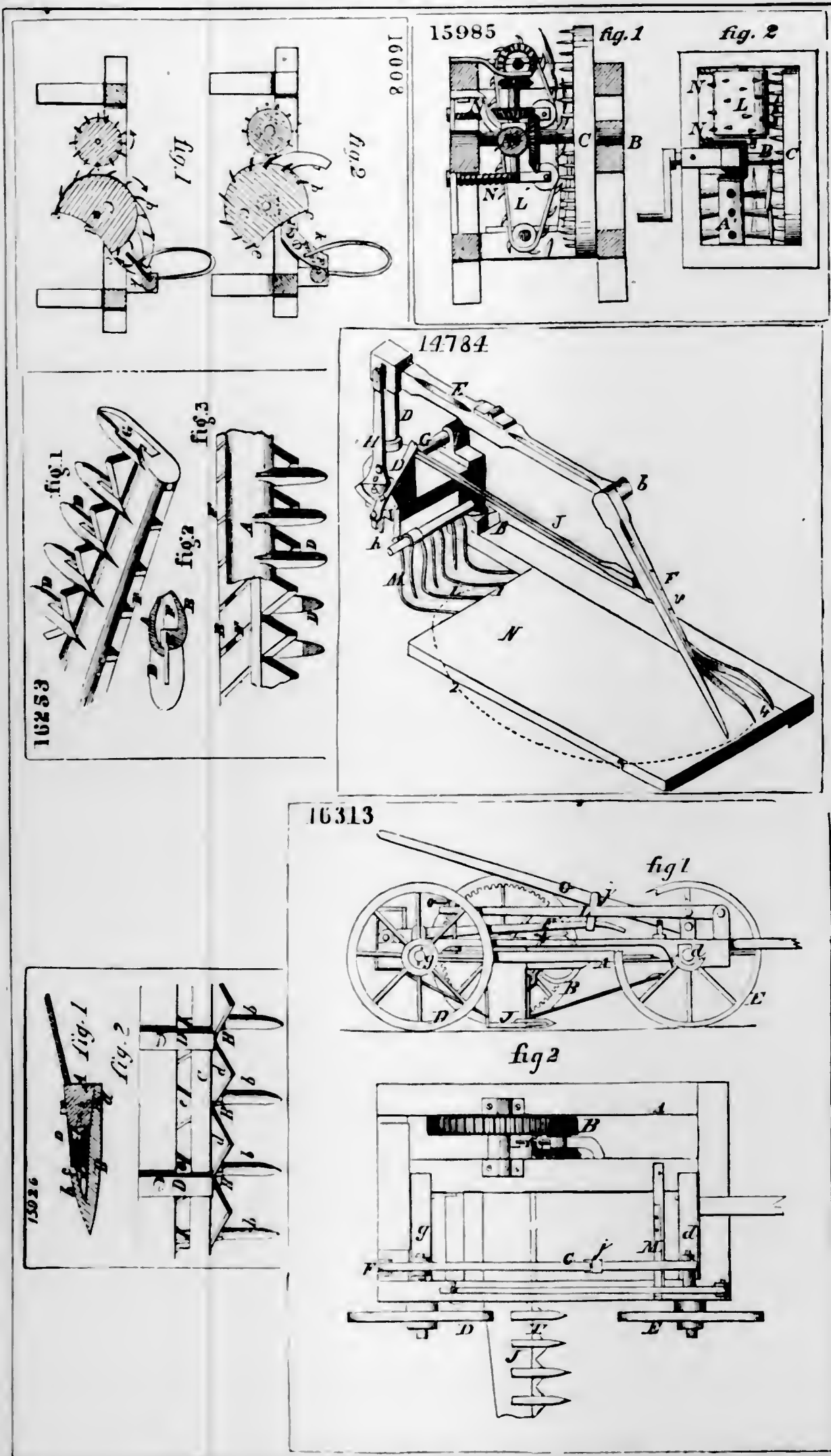
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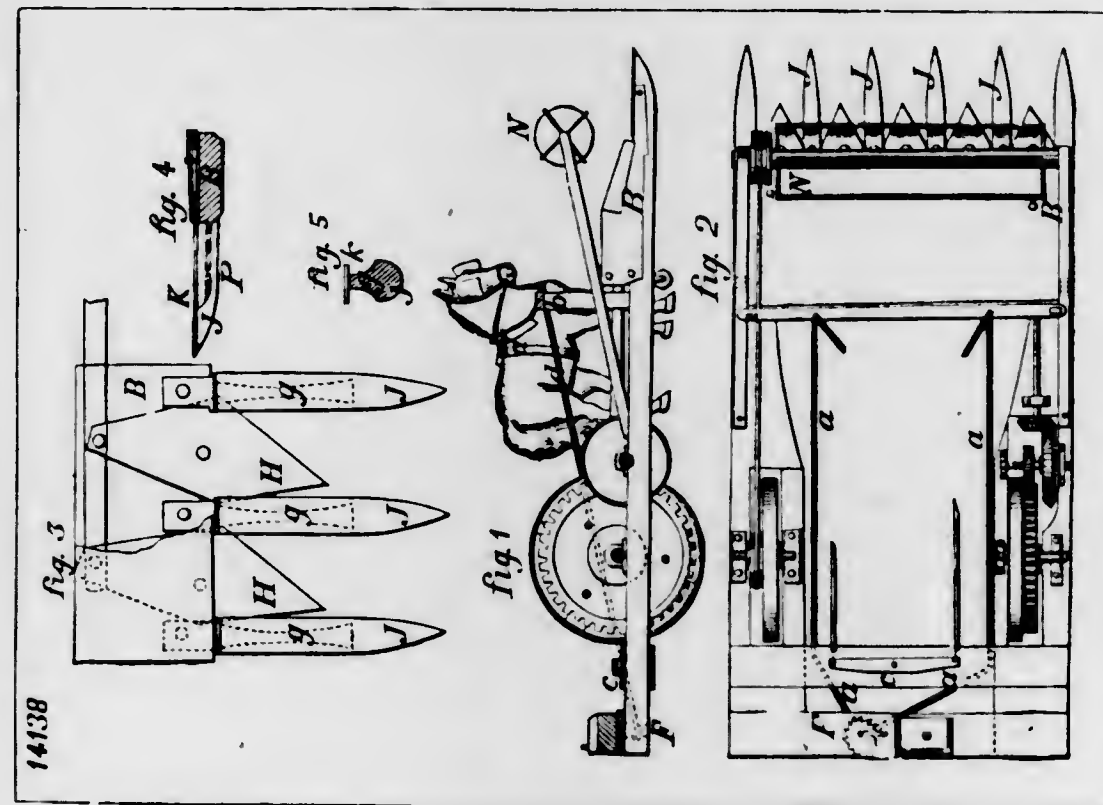
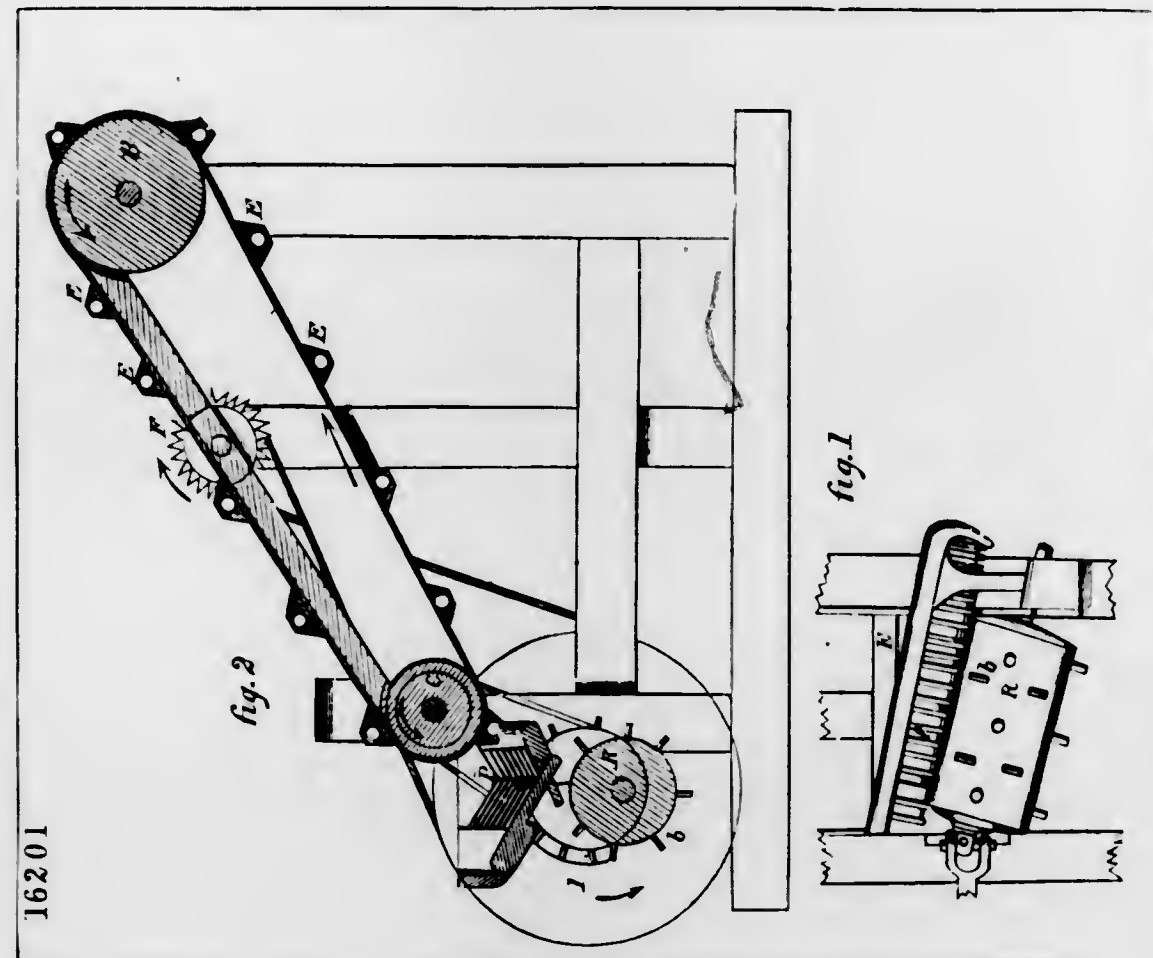
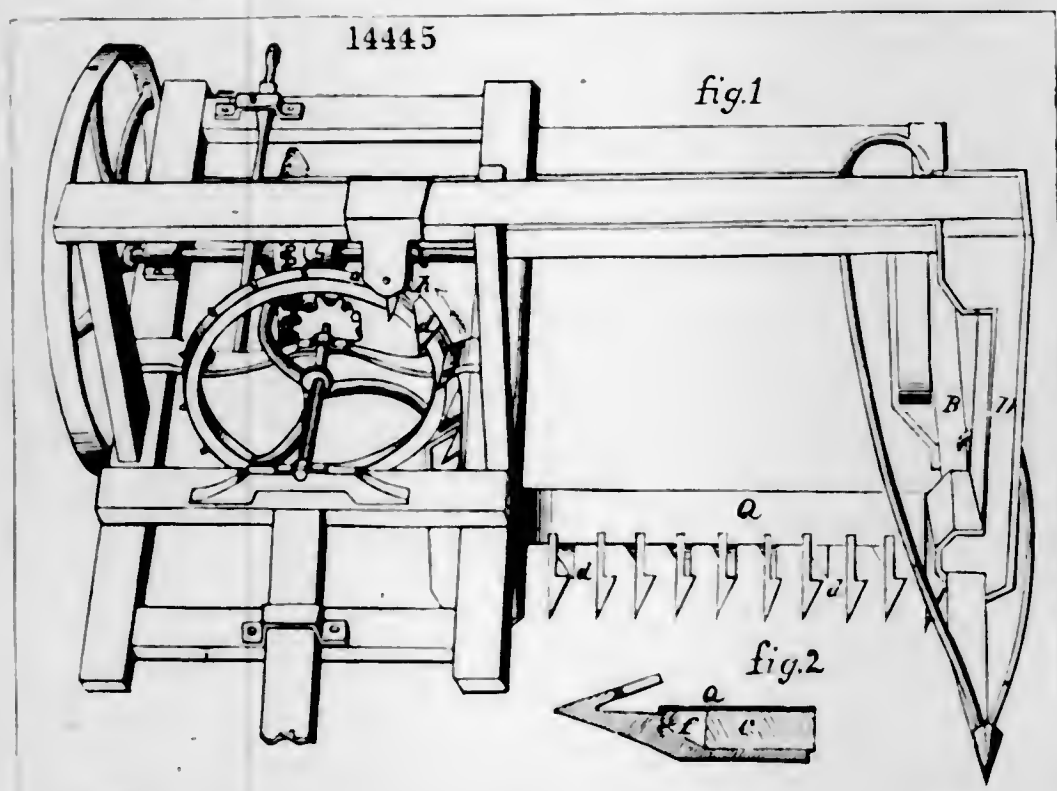
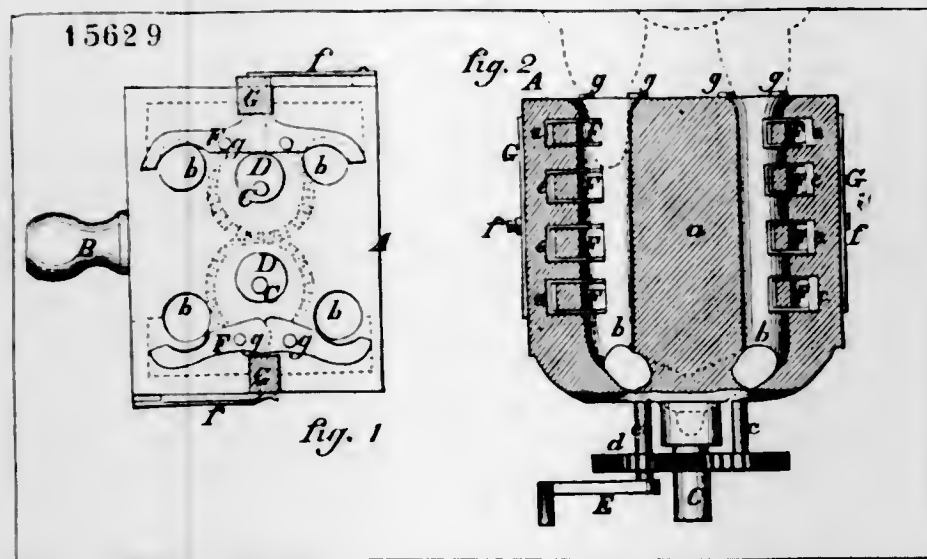
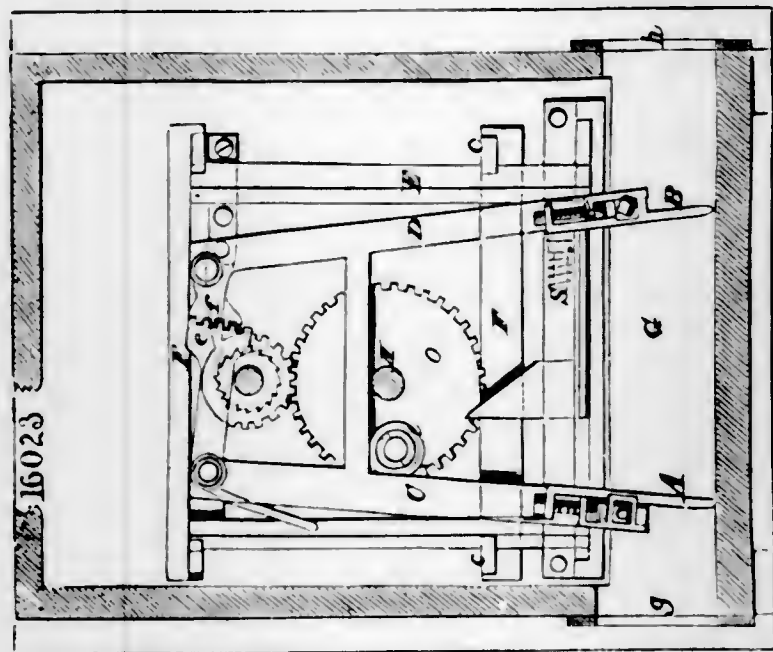


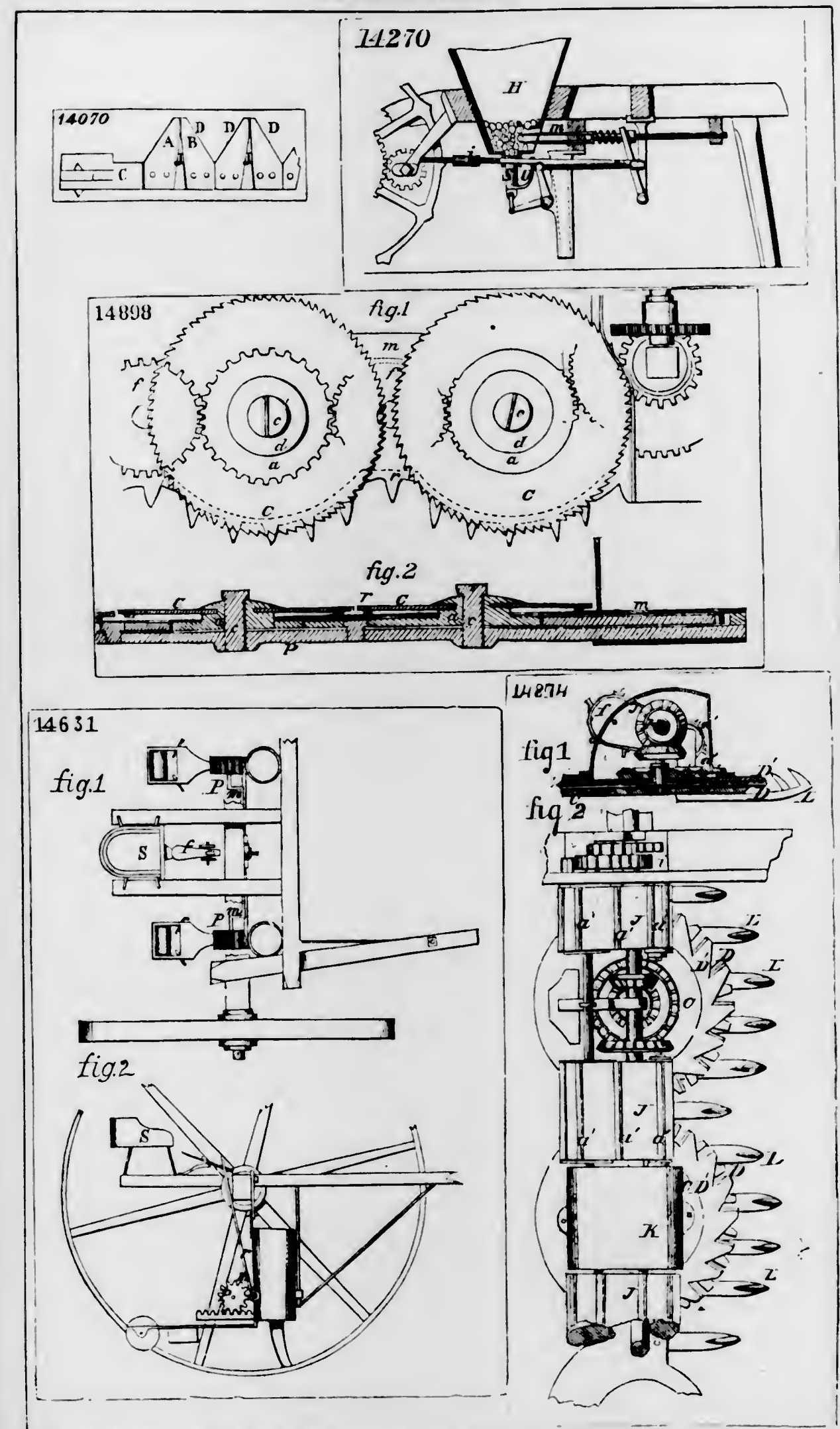
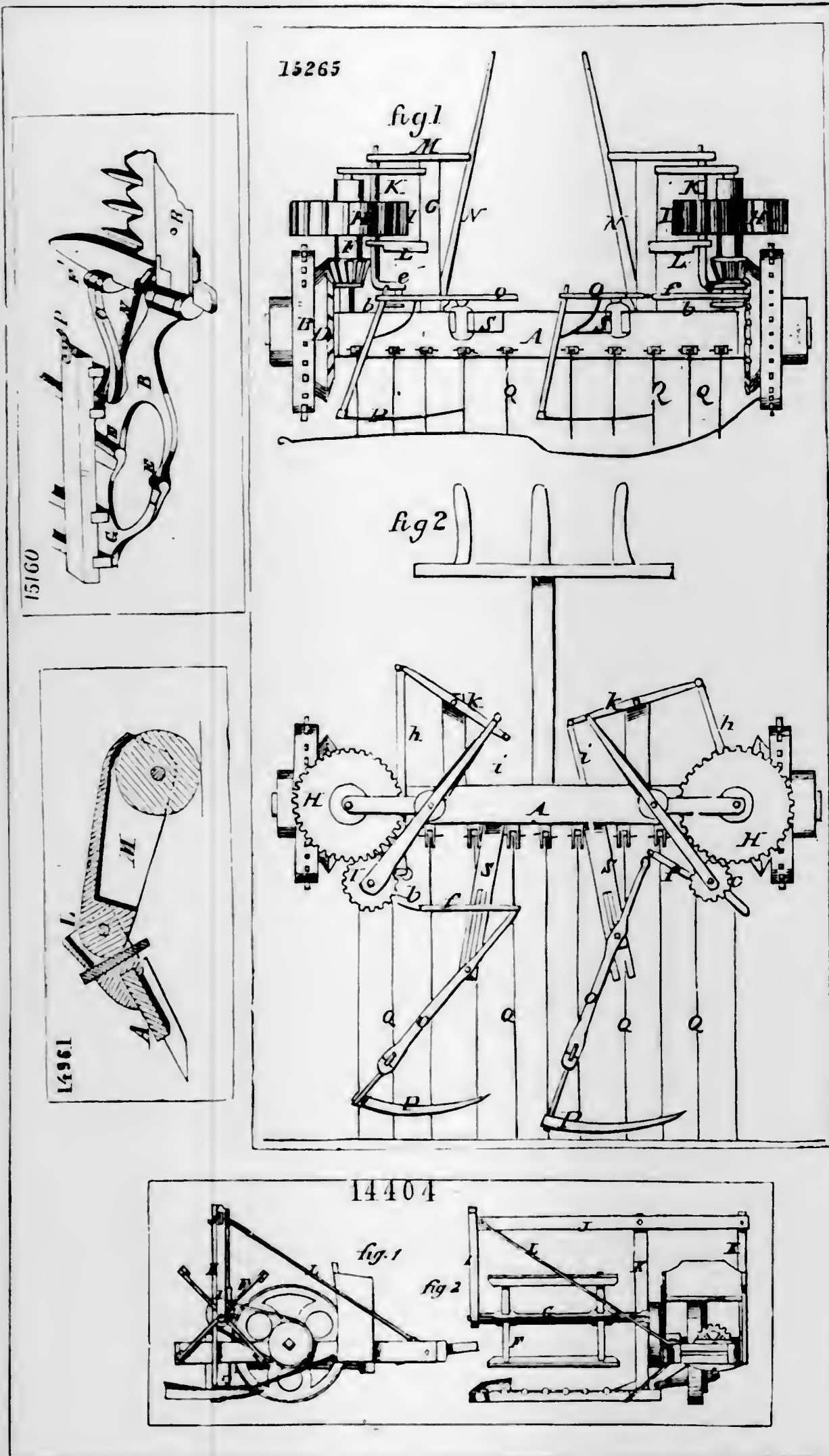


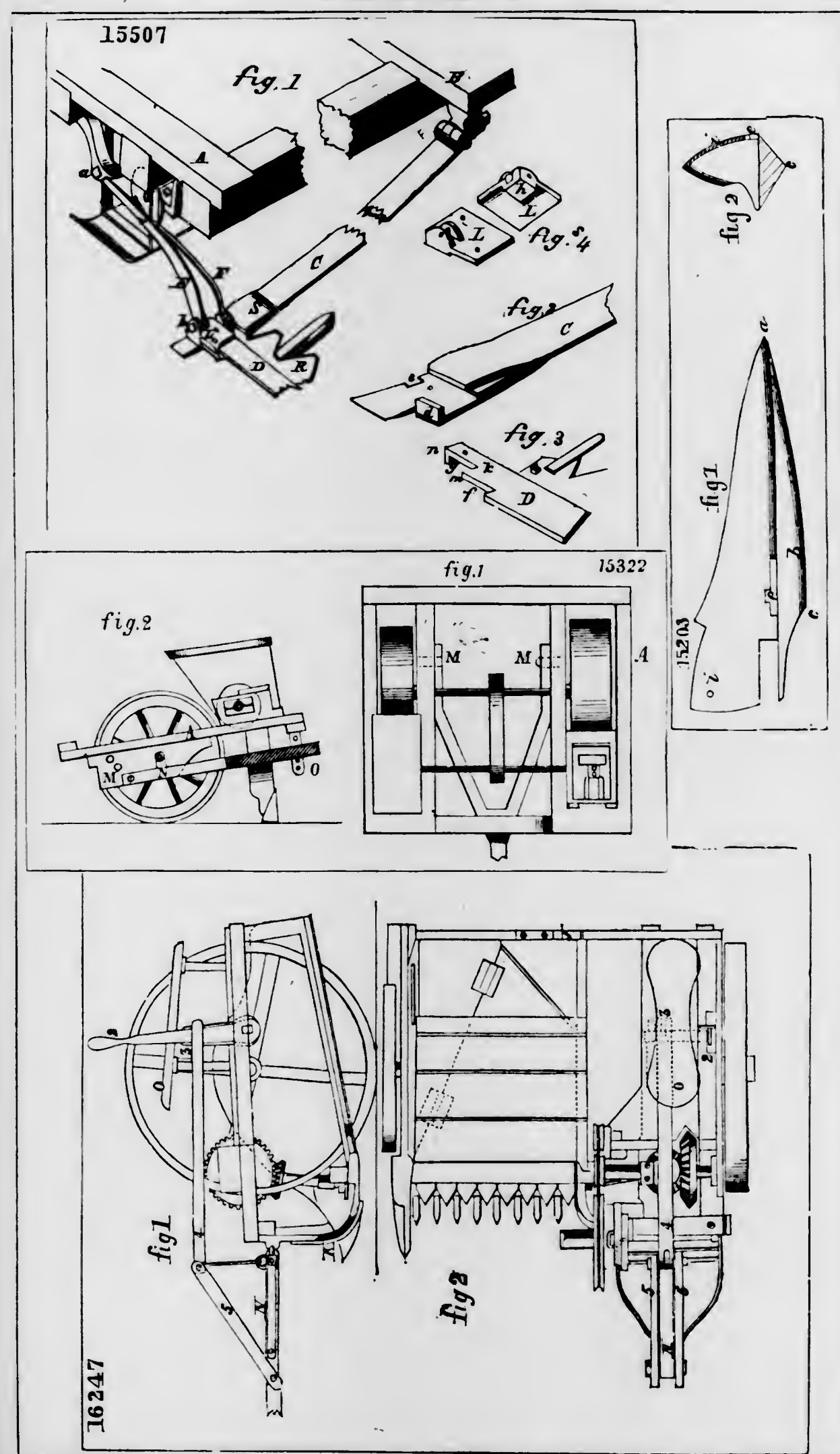
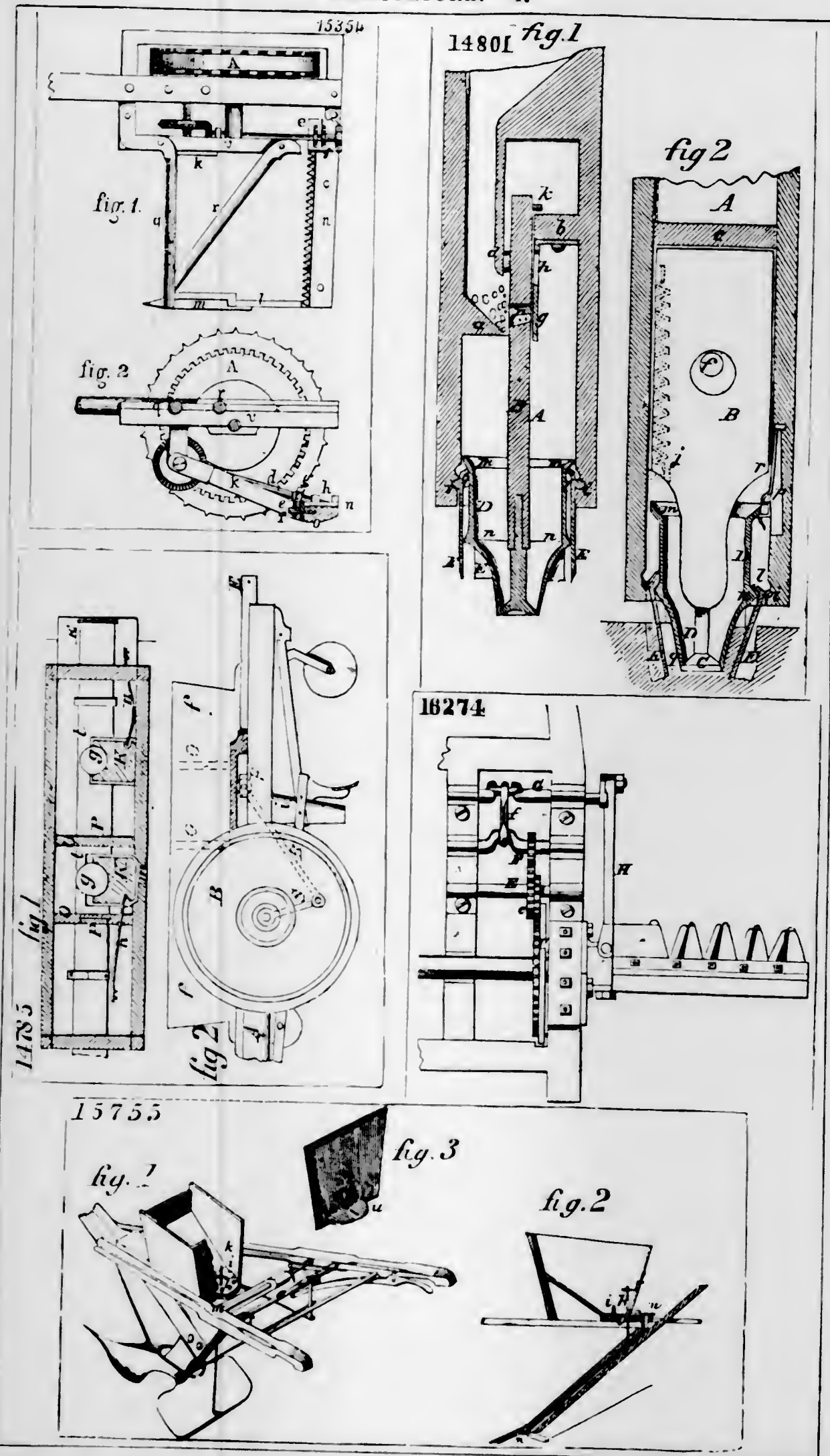


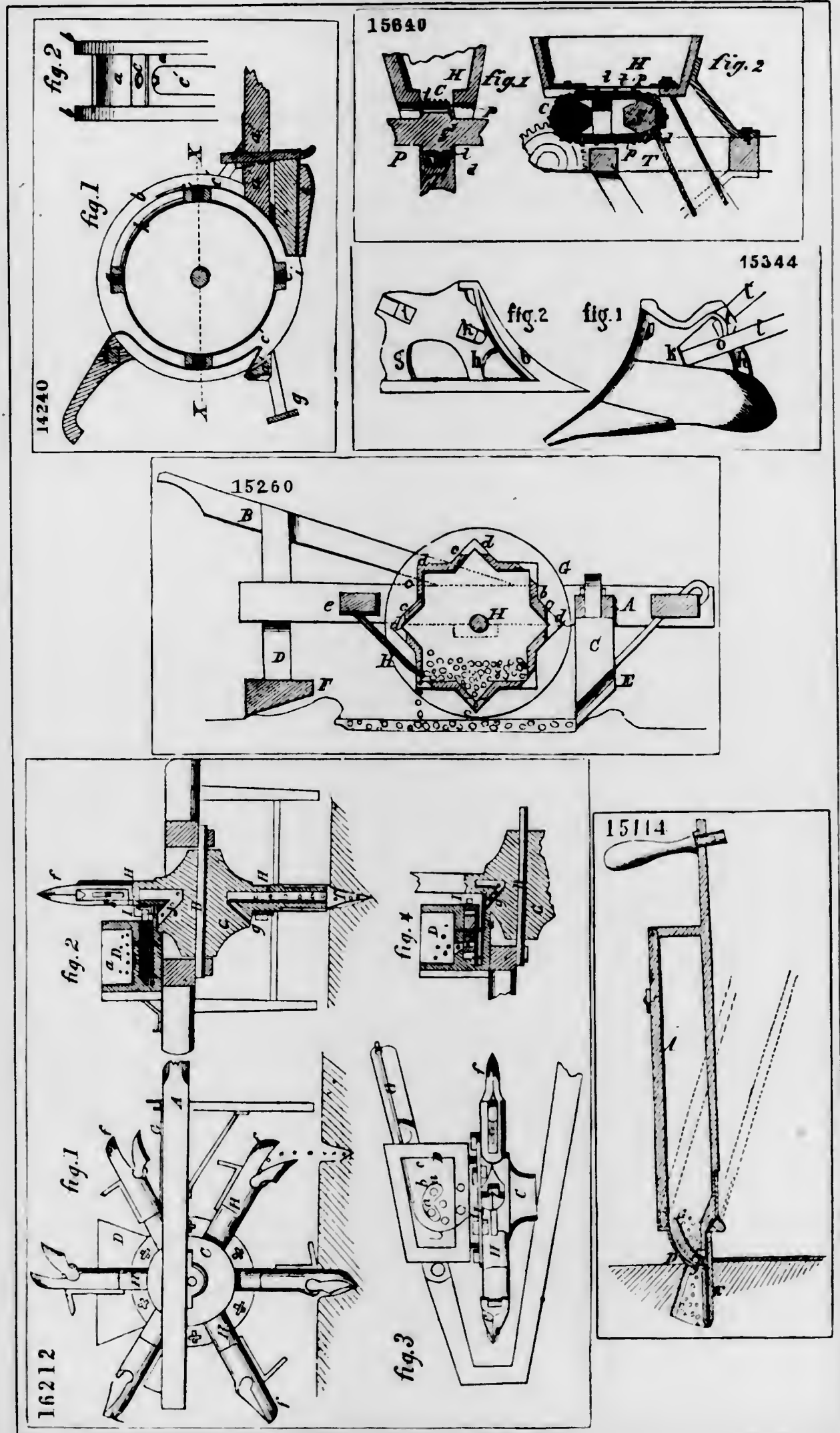
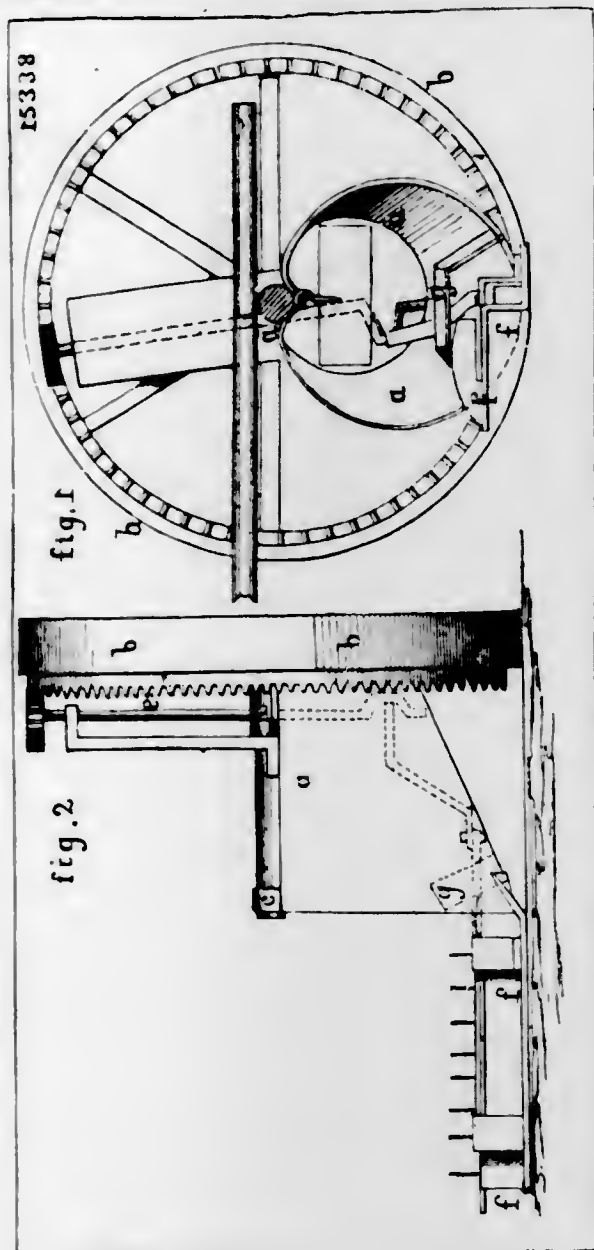
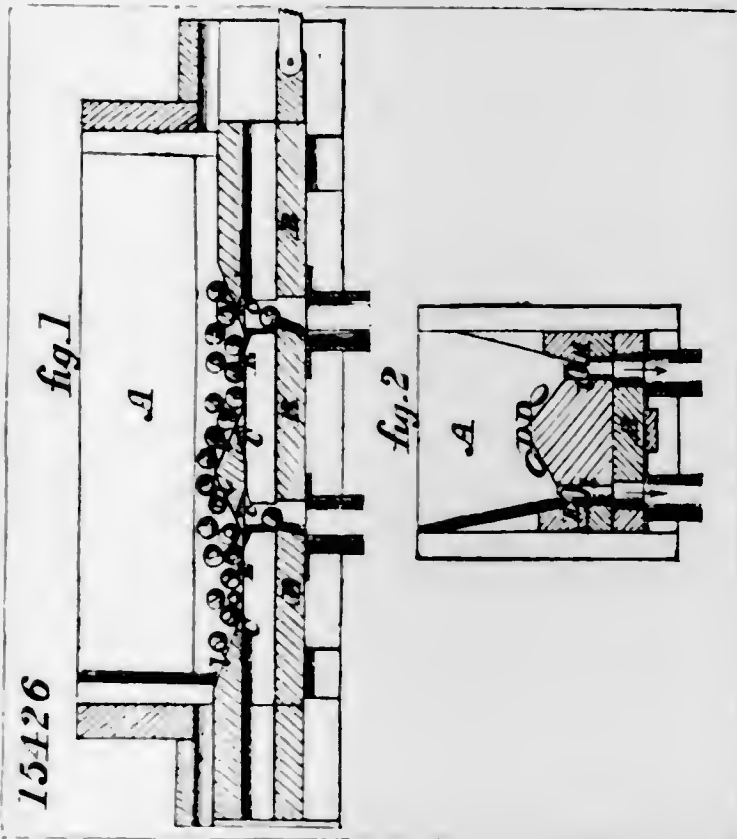
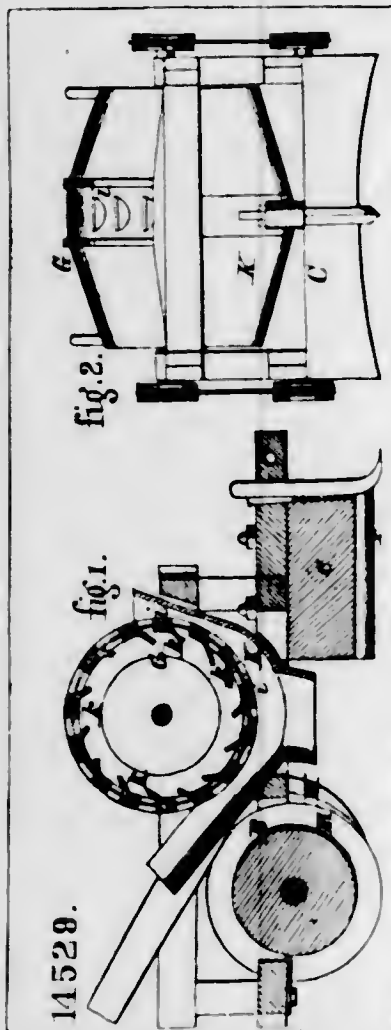
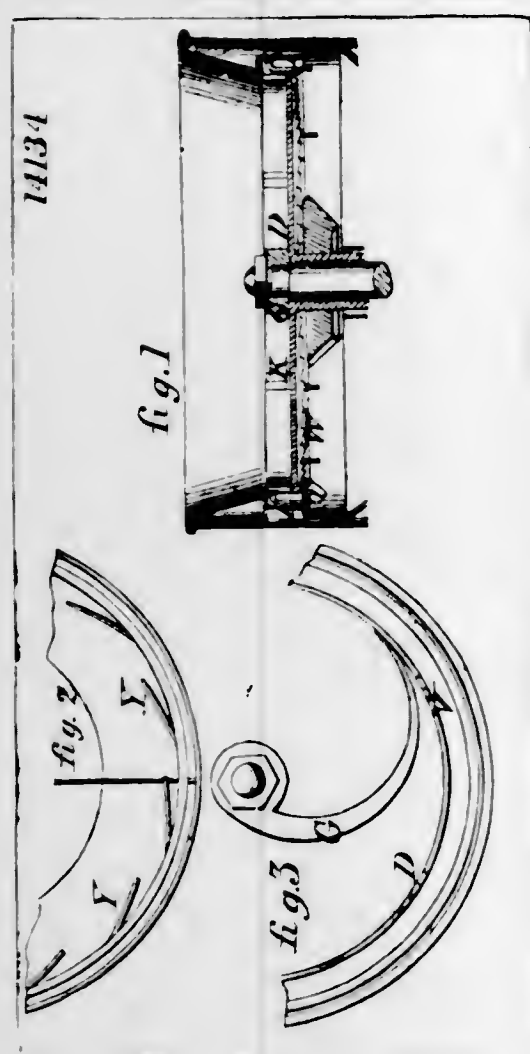


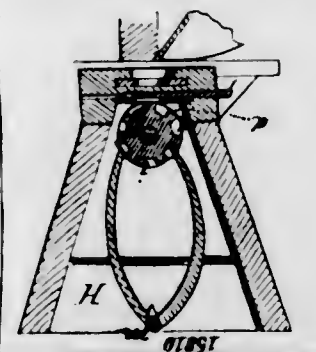
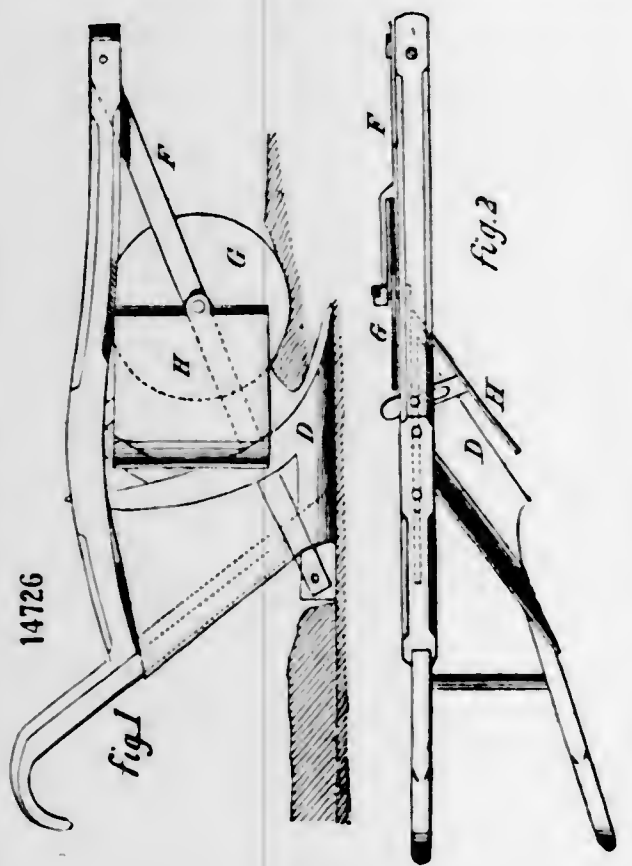
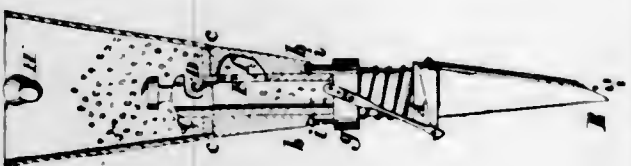
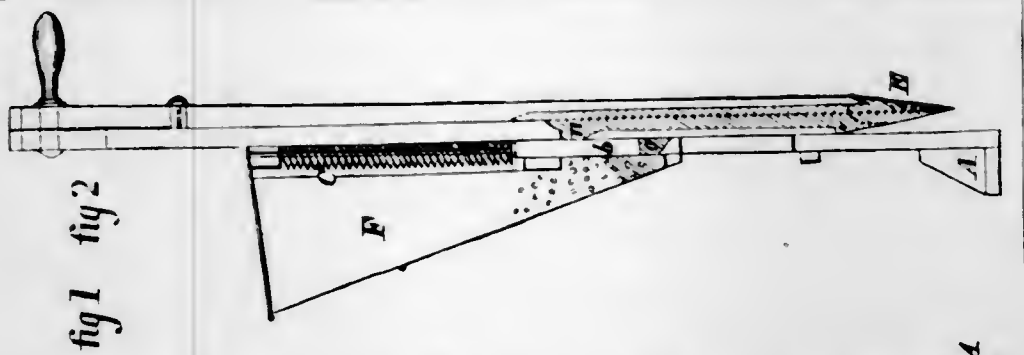
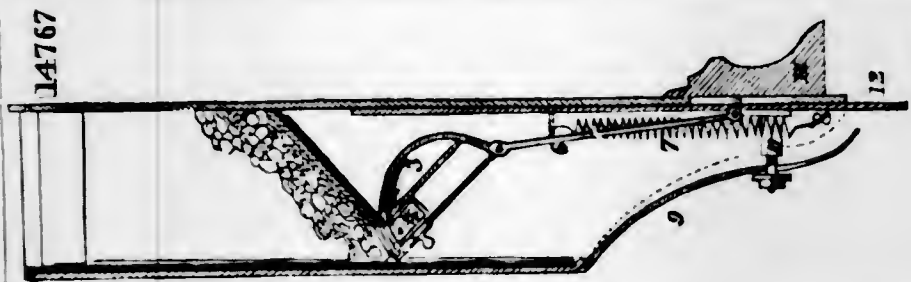




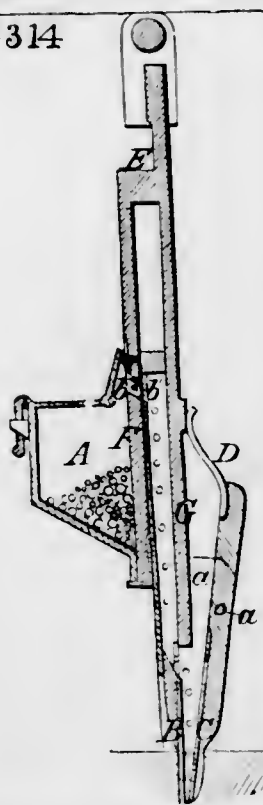








16314



15918

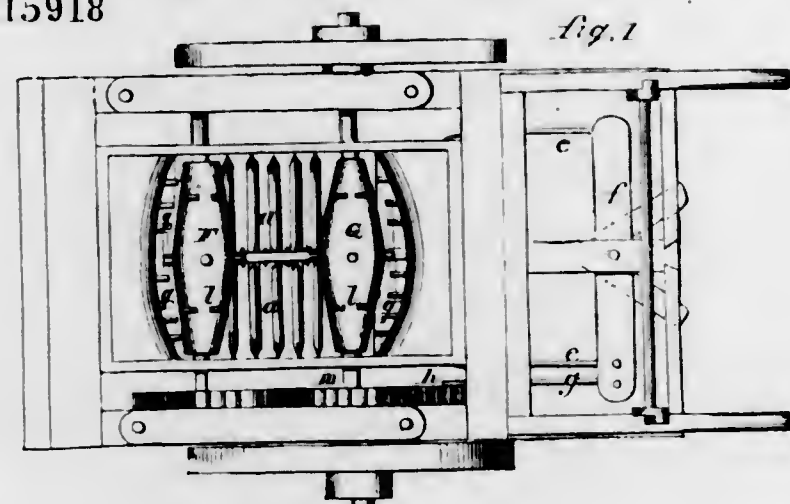
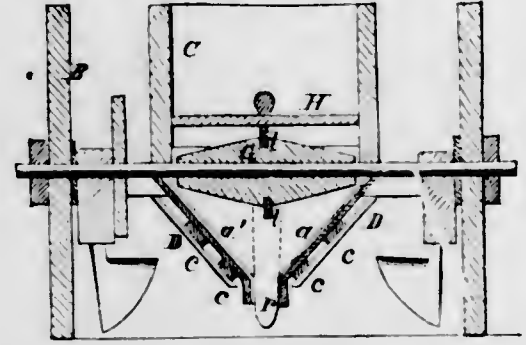


fig. 2



14501



fig. 2

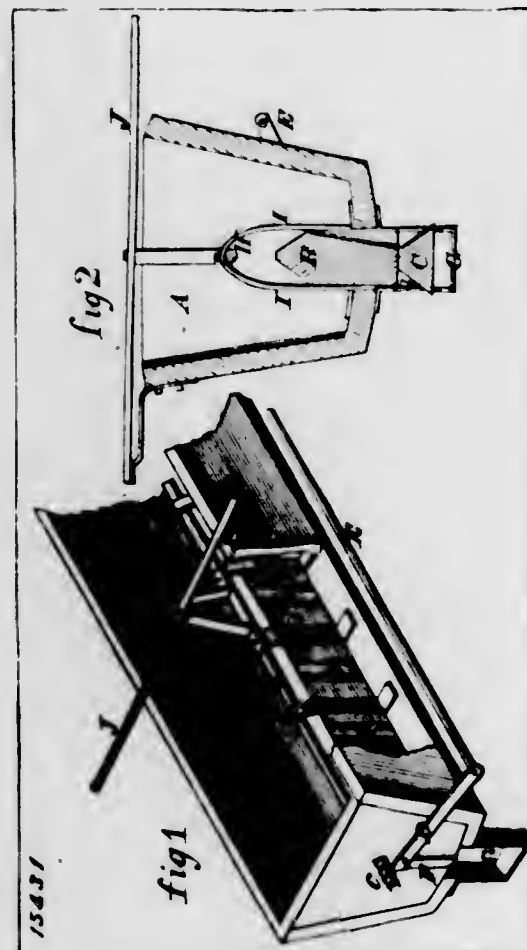
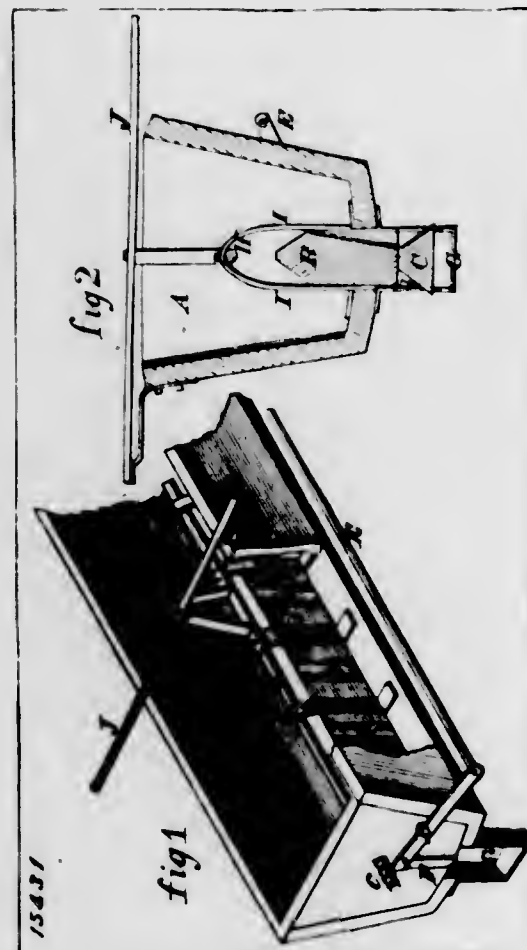
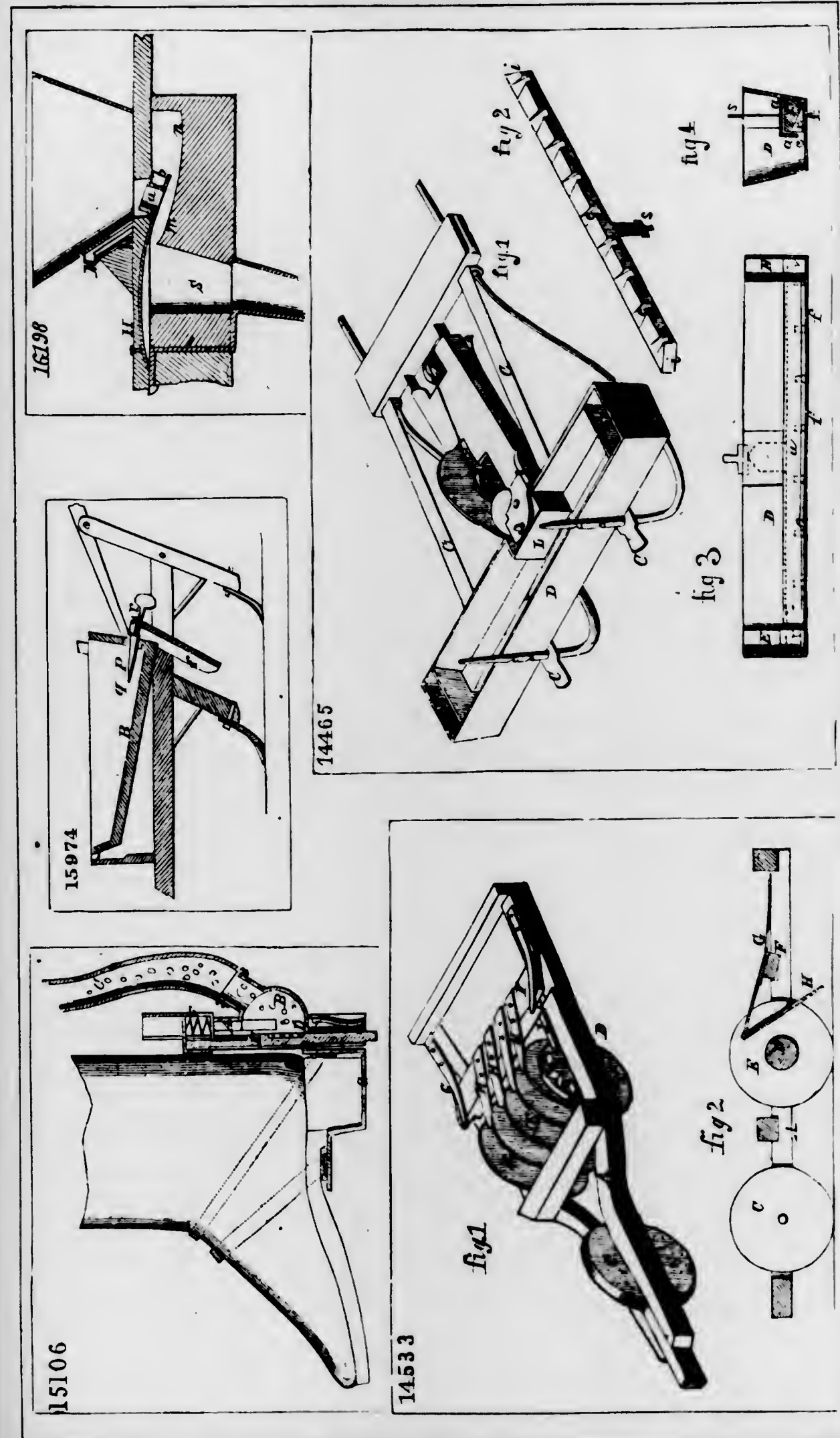
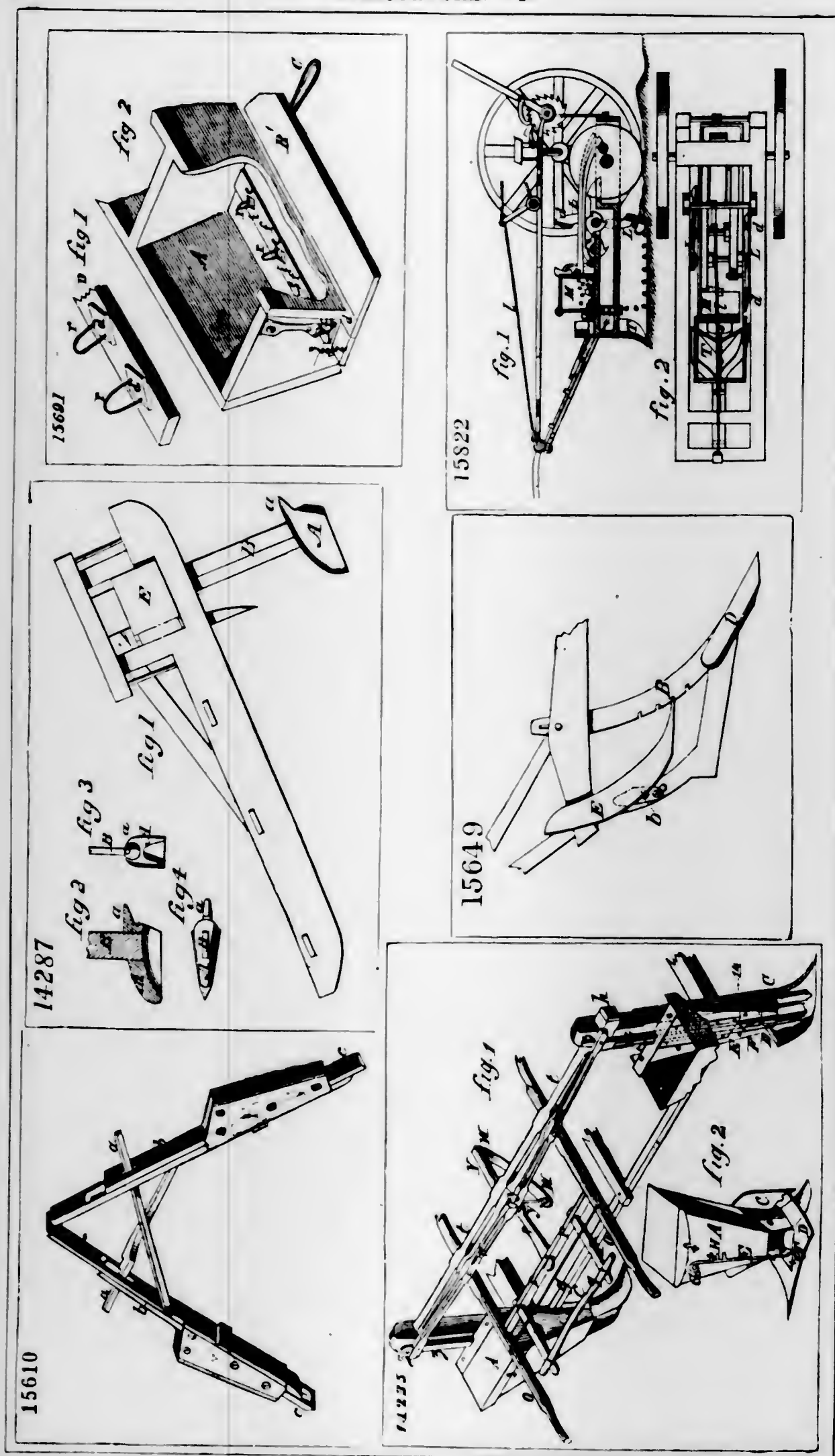
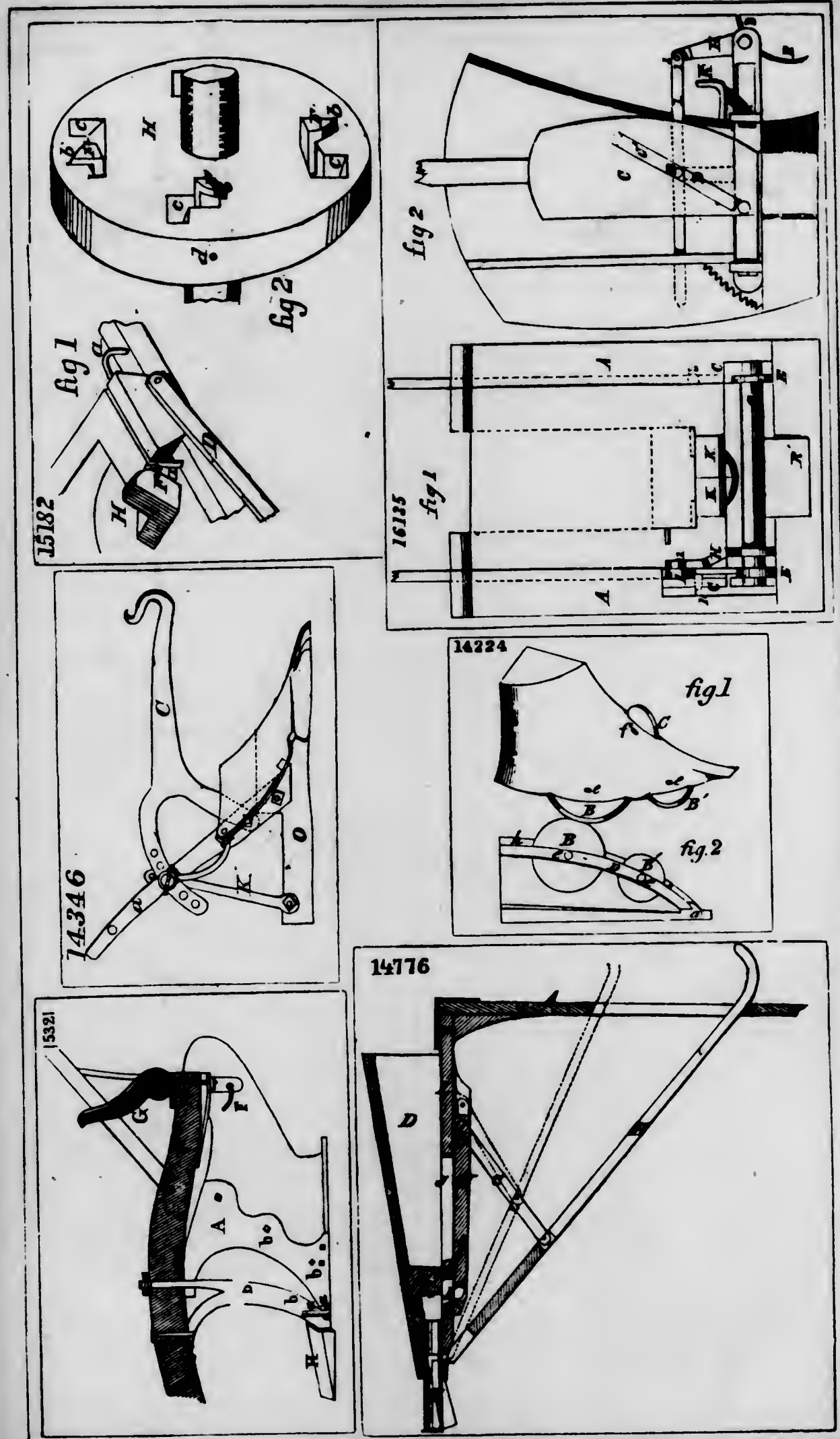
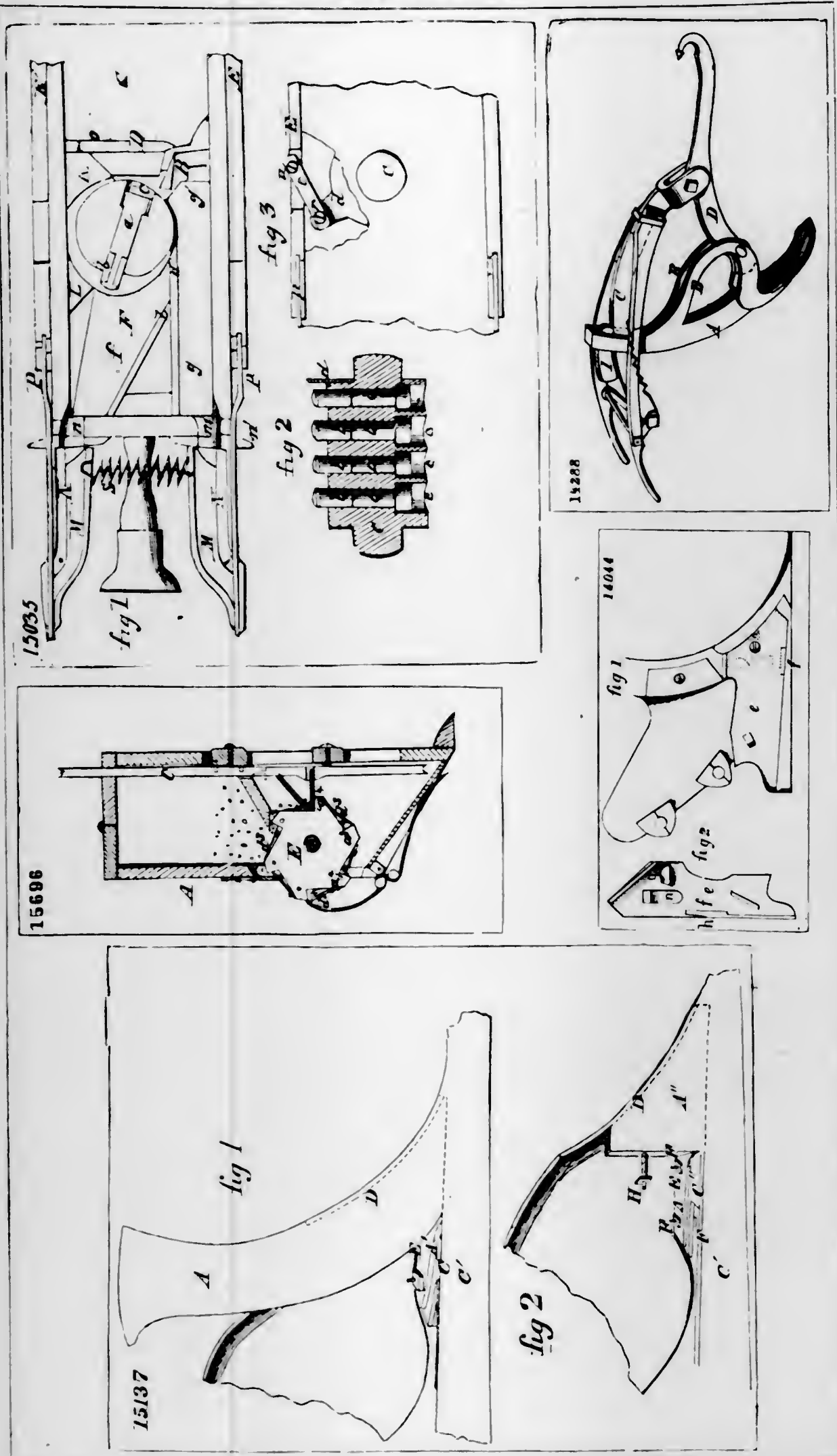
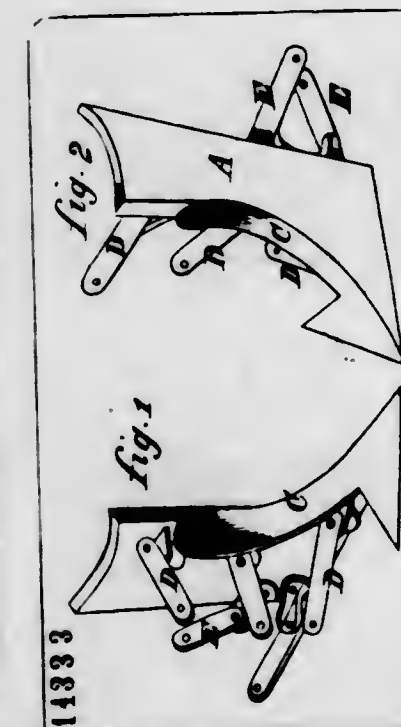
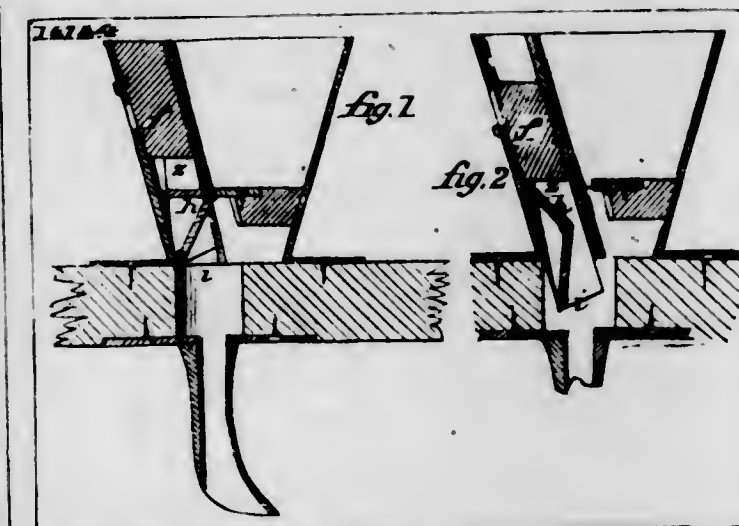
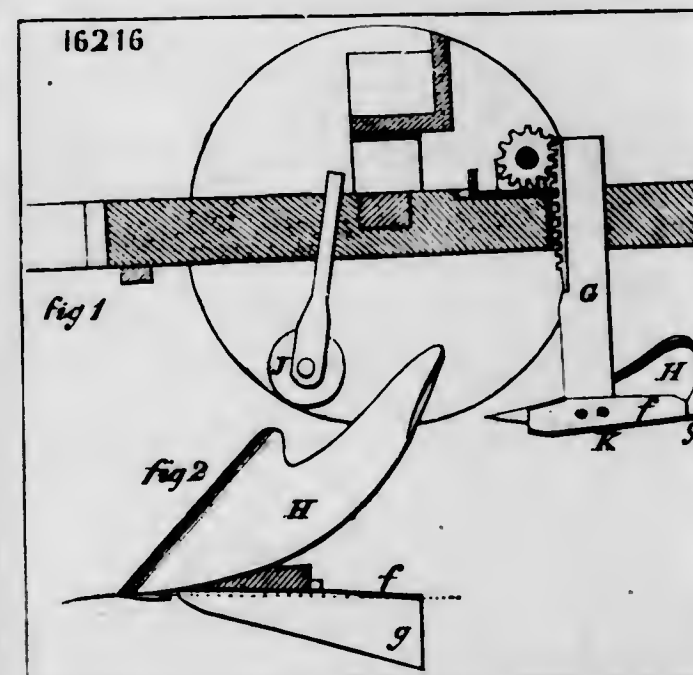
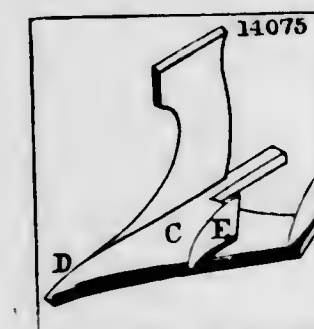
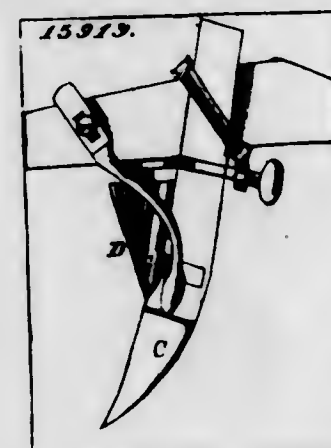
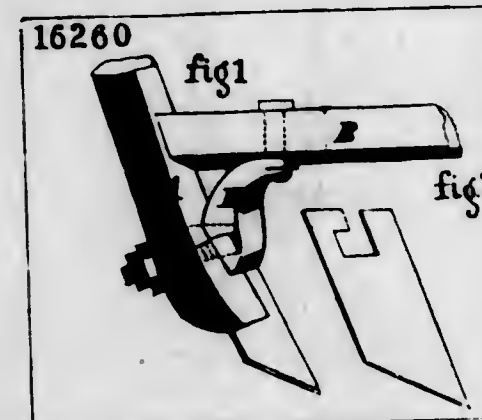
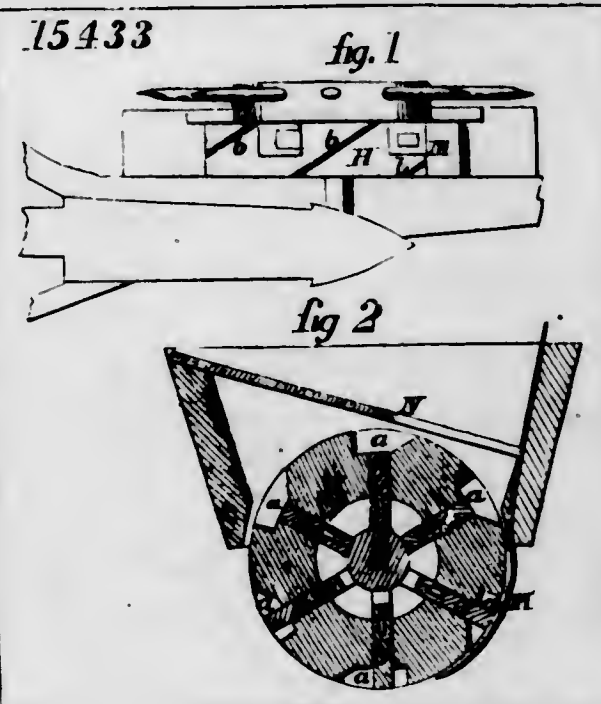
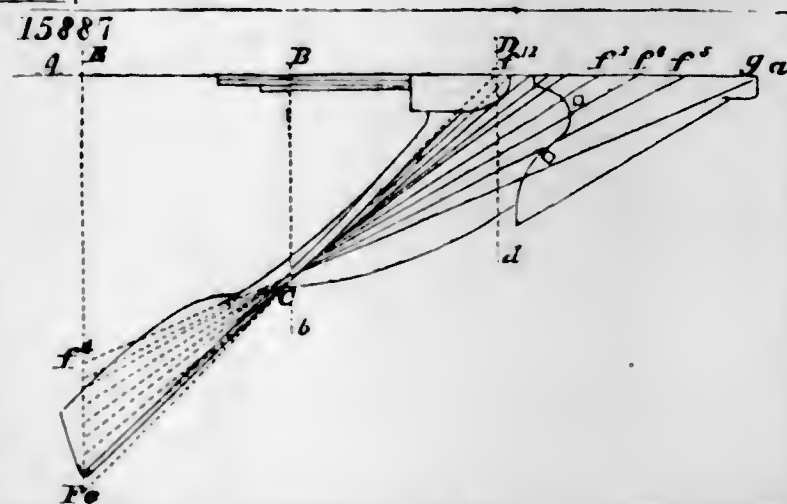
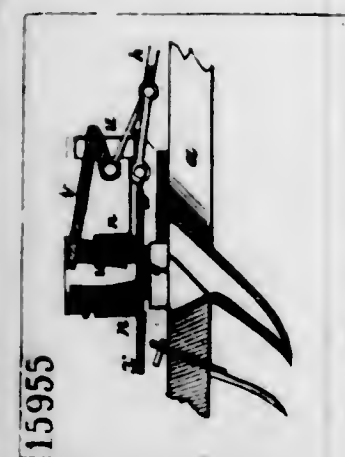
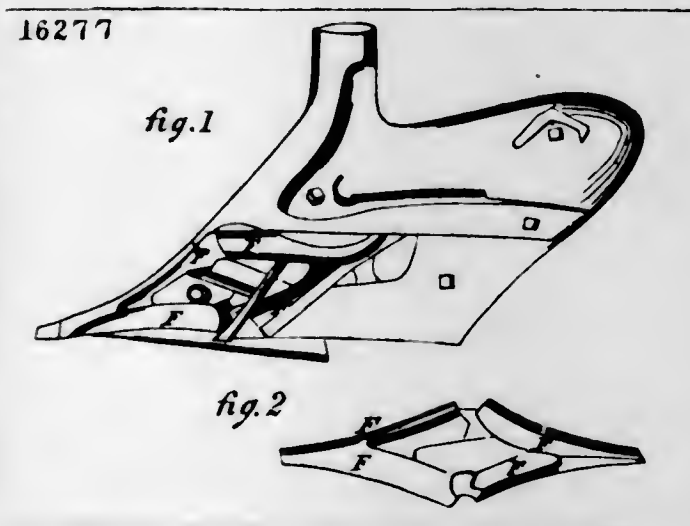
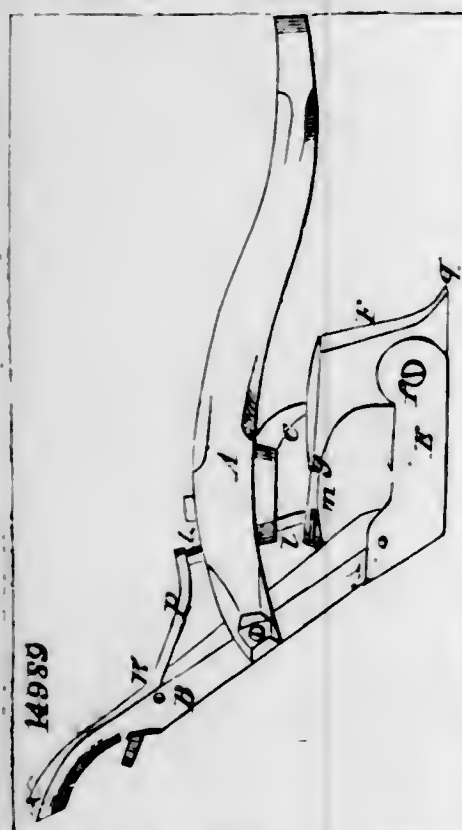
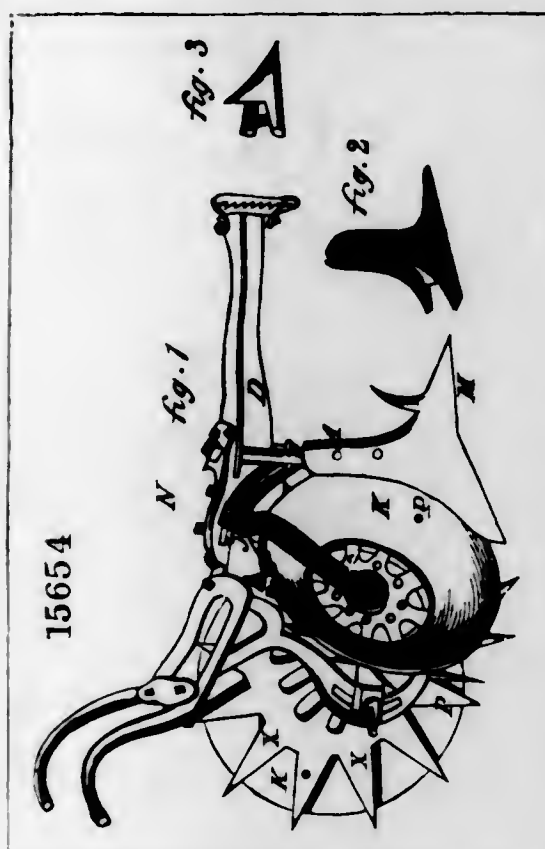
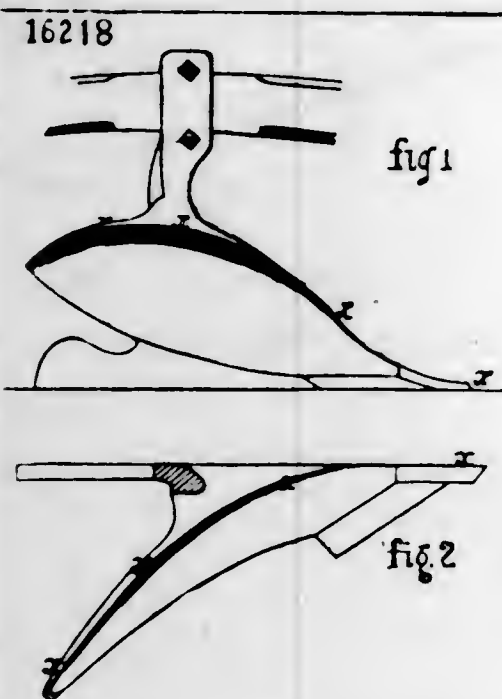


fig. 2

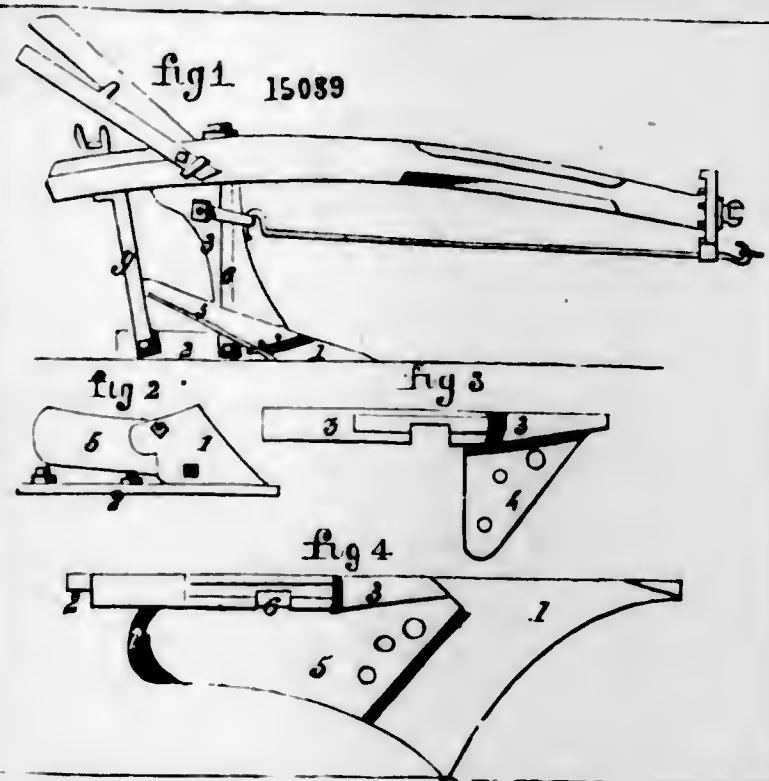




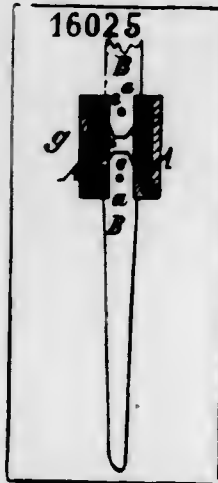




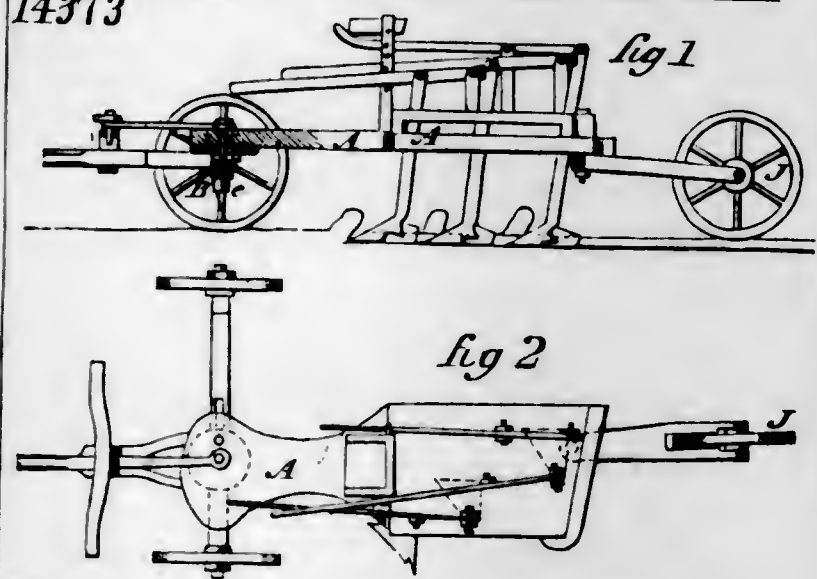
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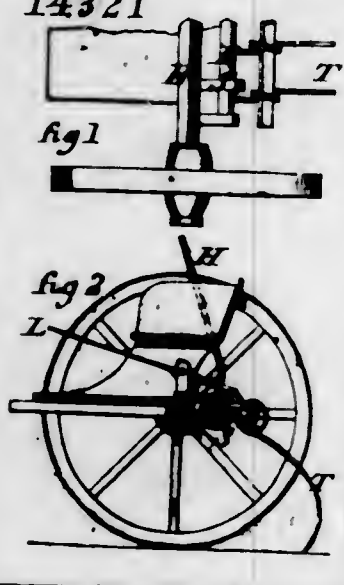
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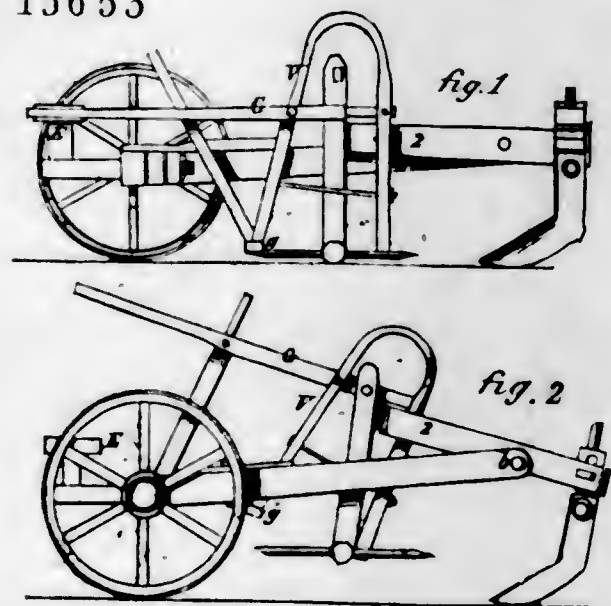
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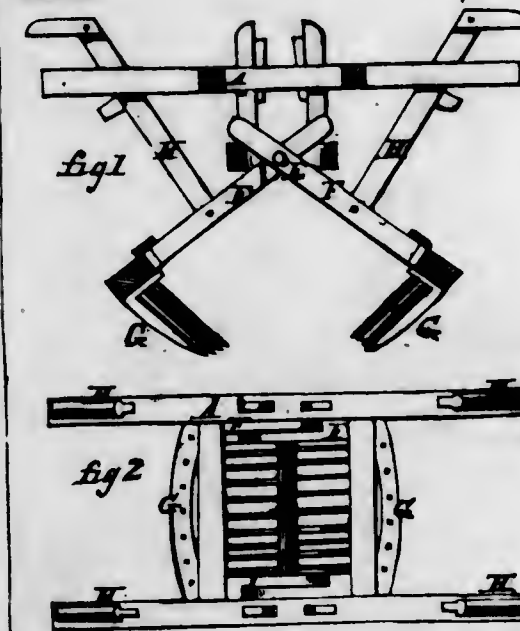
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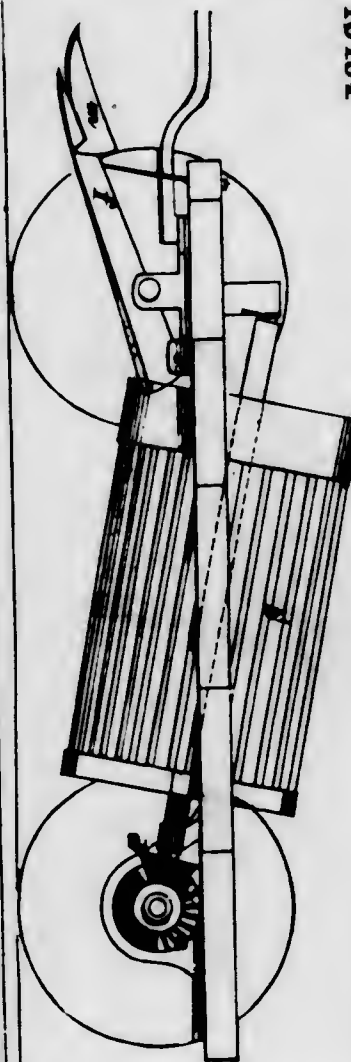


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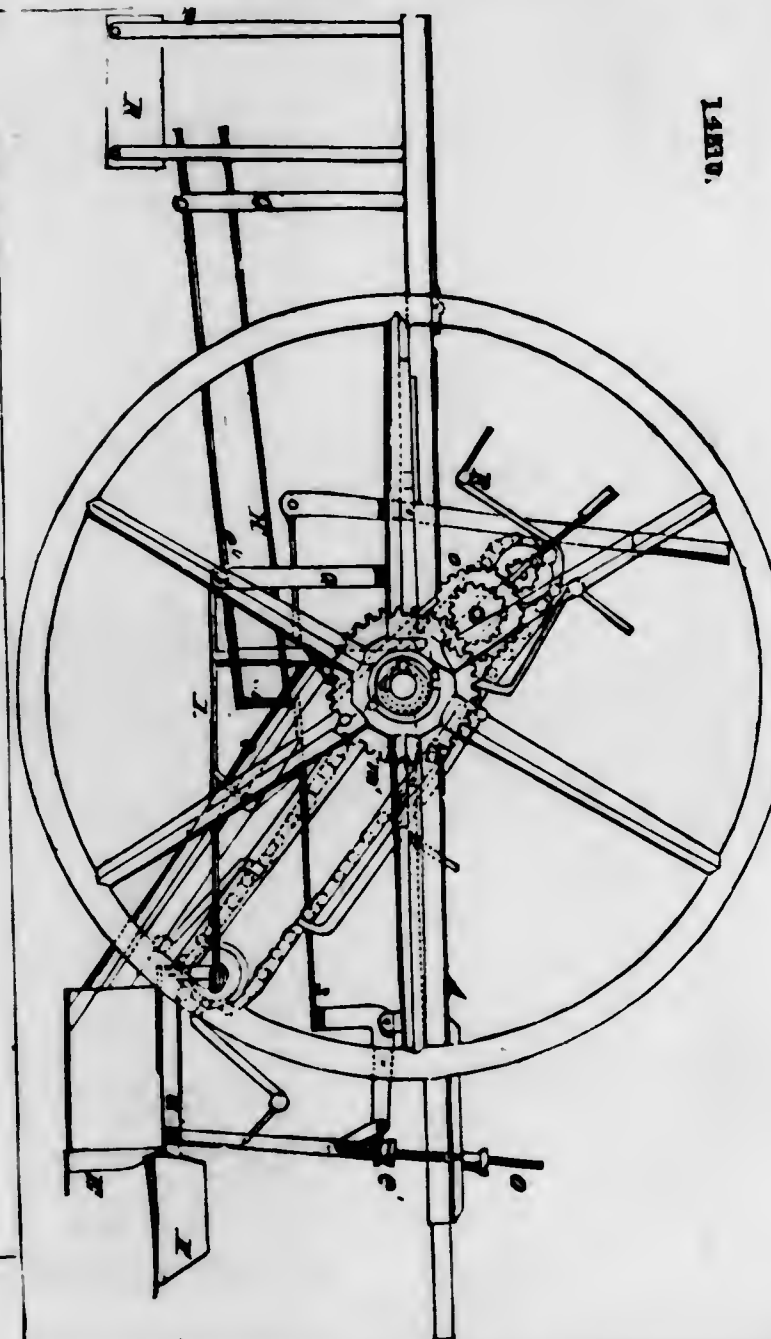


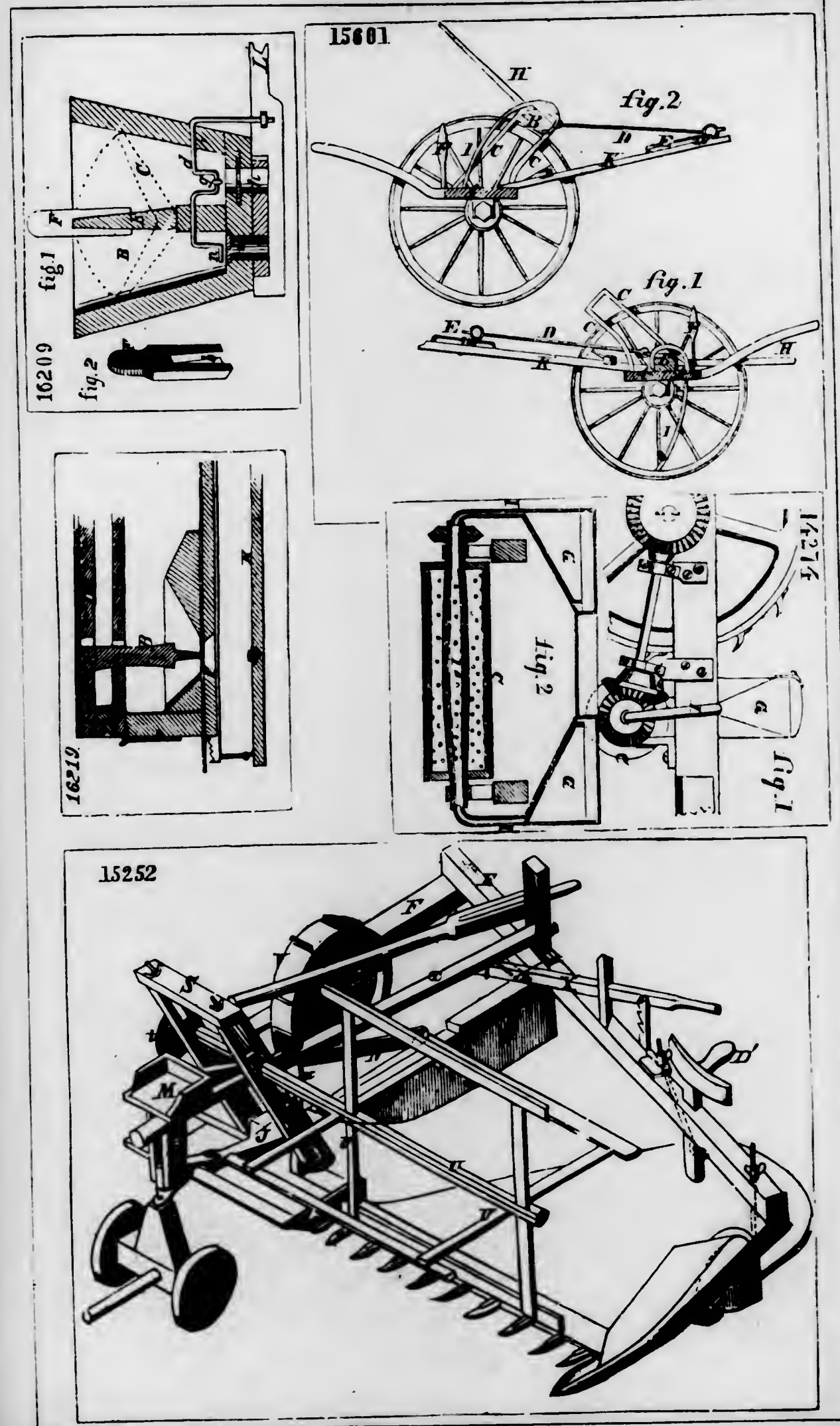
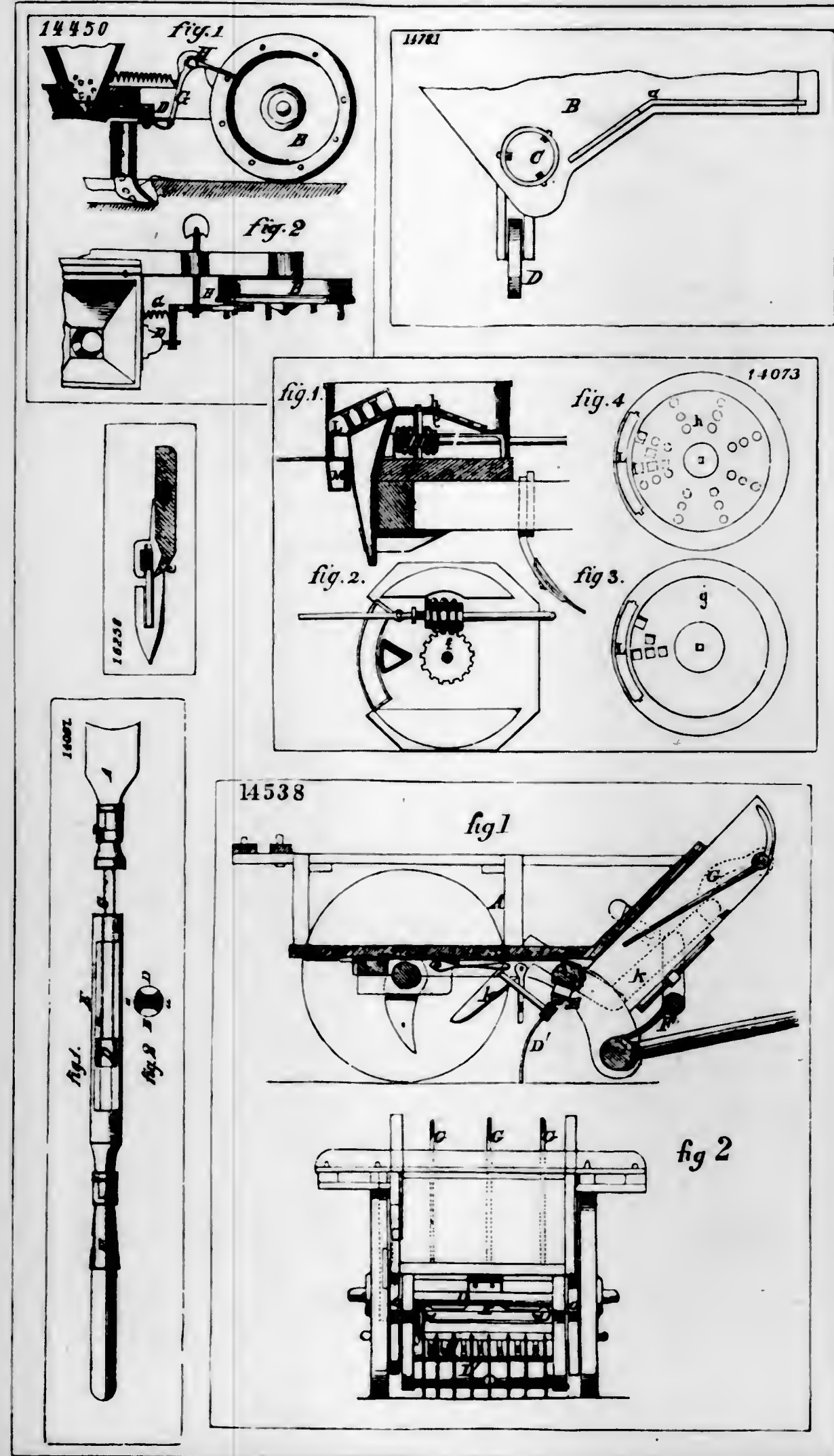
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16184



14800





15655

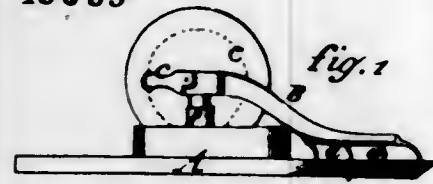


fig. 1

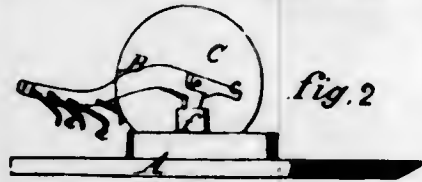


fig. 2

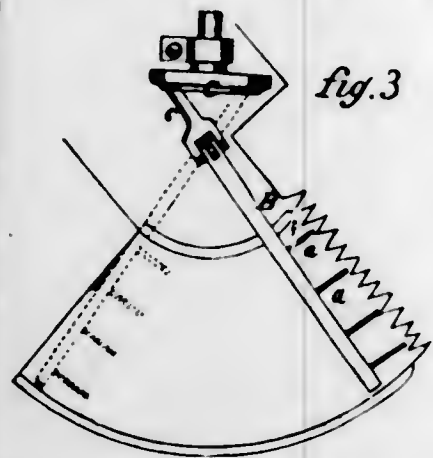
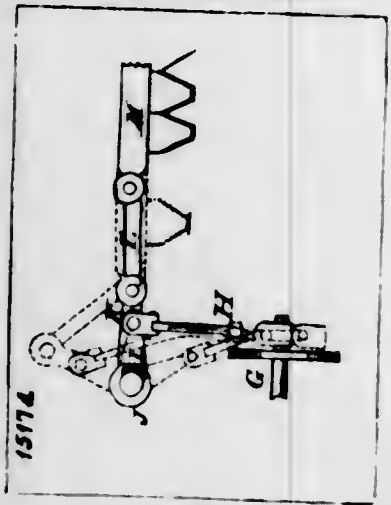
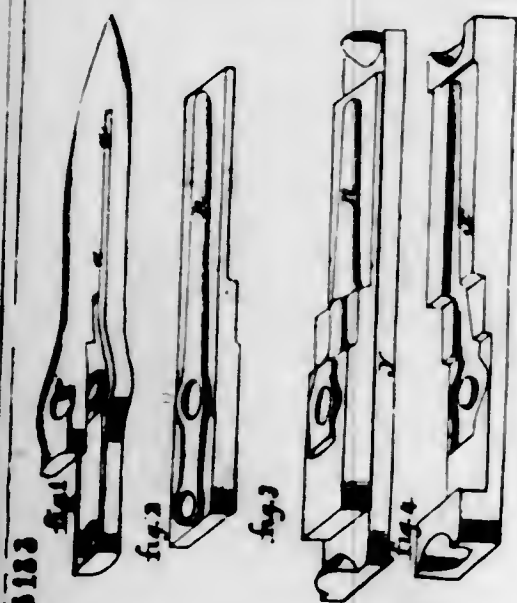


fig. 3



15774



15777

16318

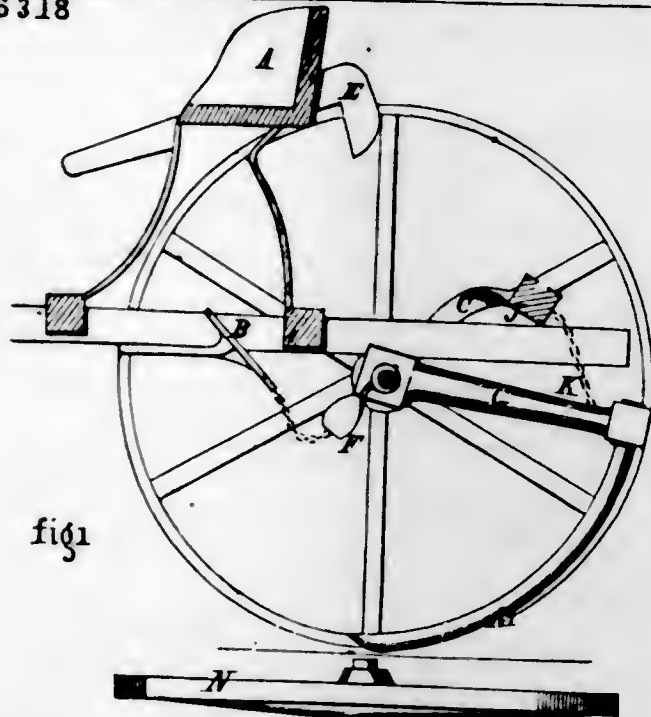
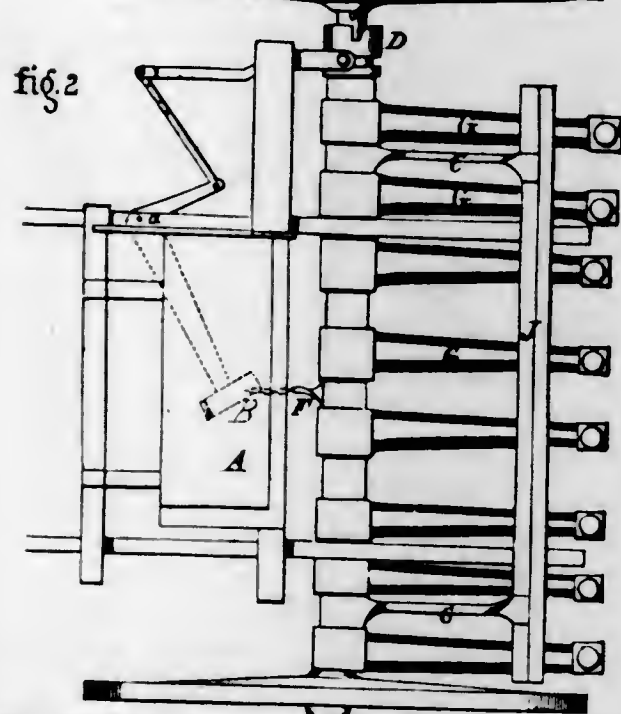


fig. 1

fig. 2



15777

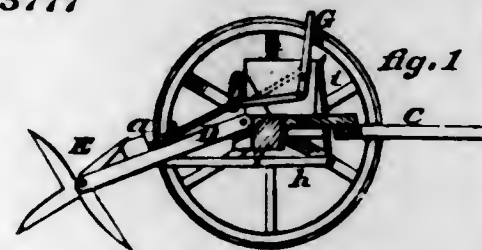


fig. 1

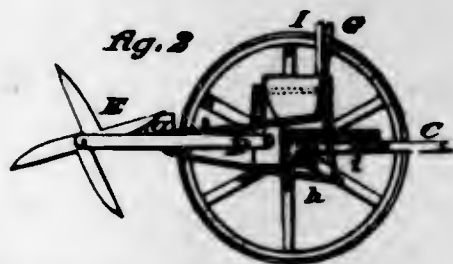


fig. 2

14284

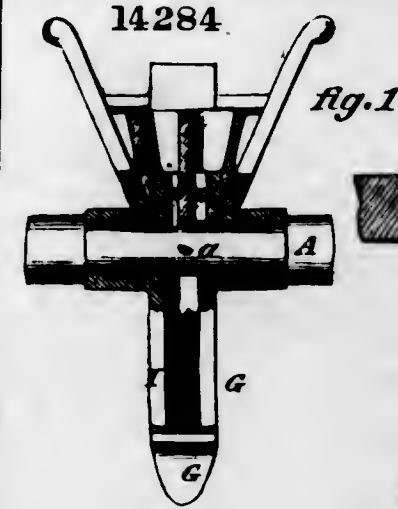
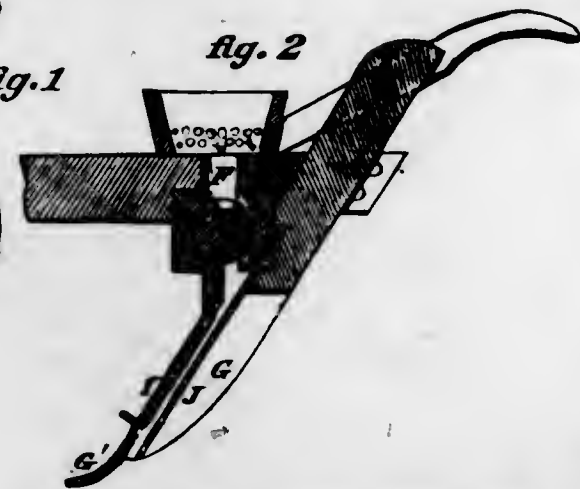
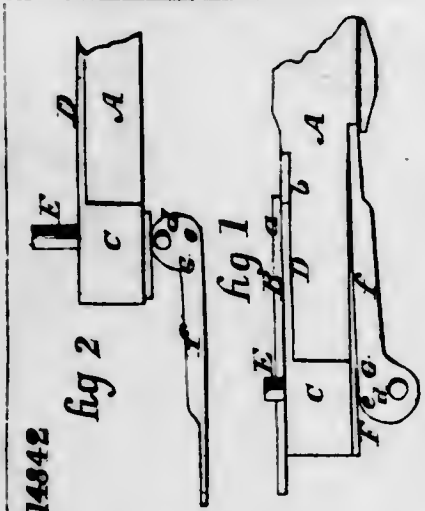
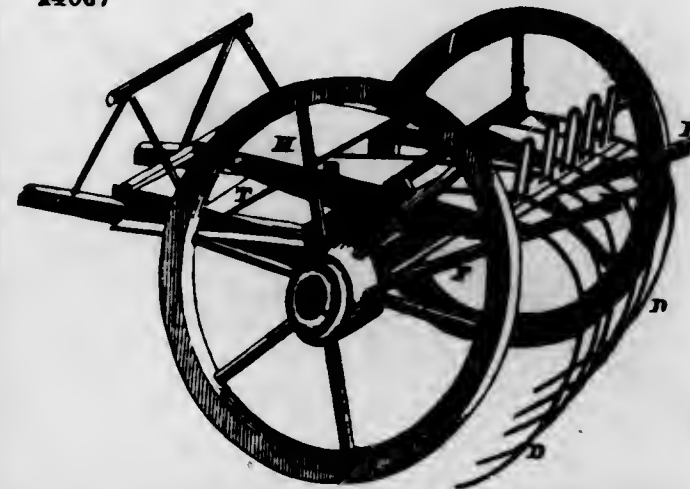


fig. 1

fig. 2



14067



14342

fig. 2

fig. 1

15194

fig. 1

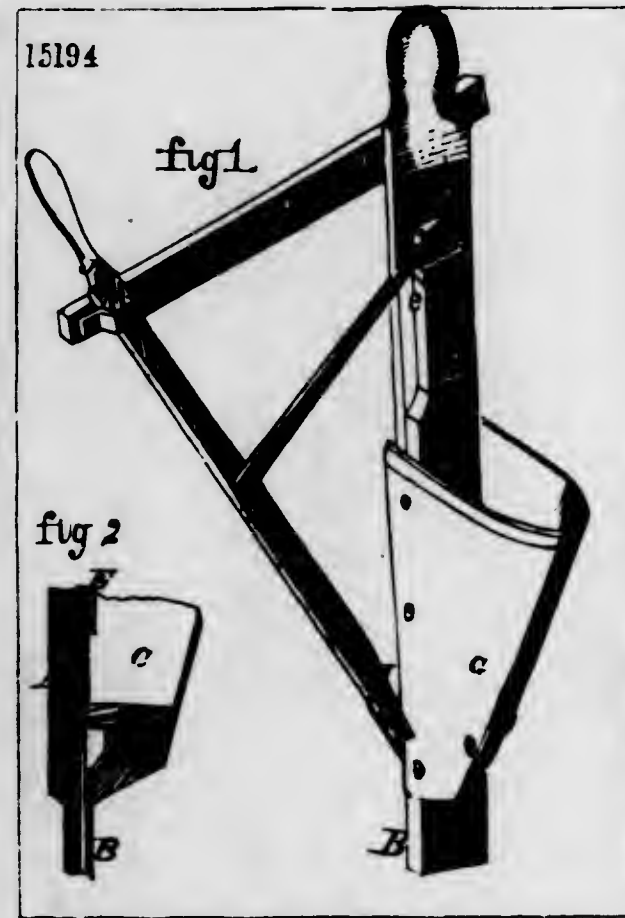
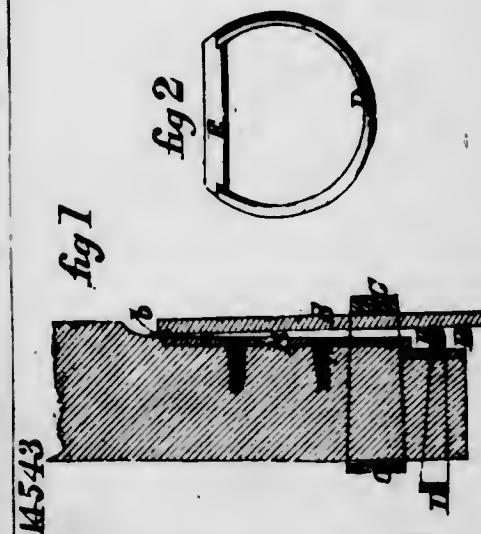


fig. 2



14543

fig. 1

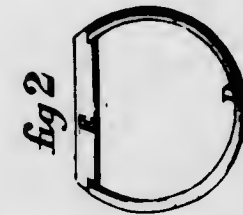
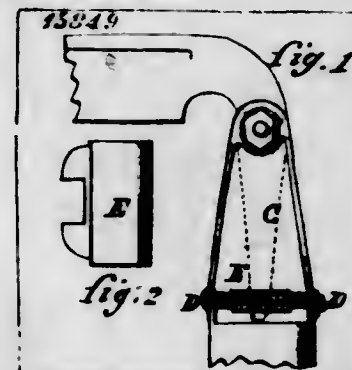


fig. 2



15049

fig. 1

fig. 2

16156

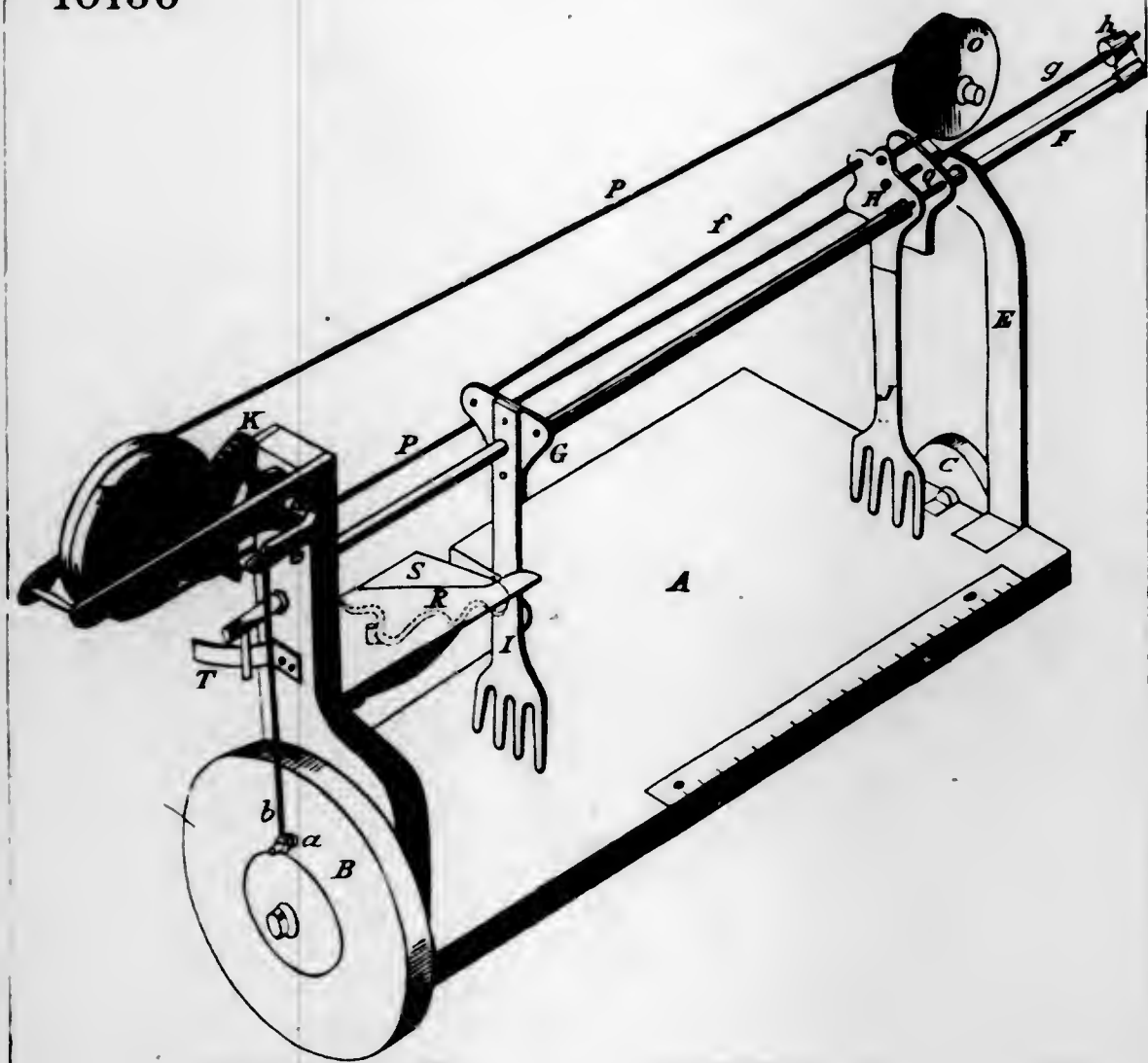
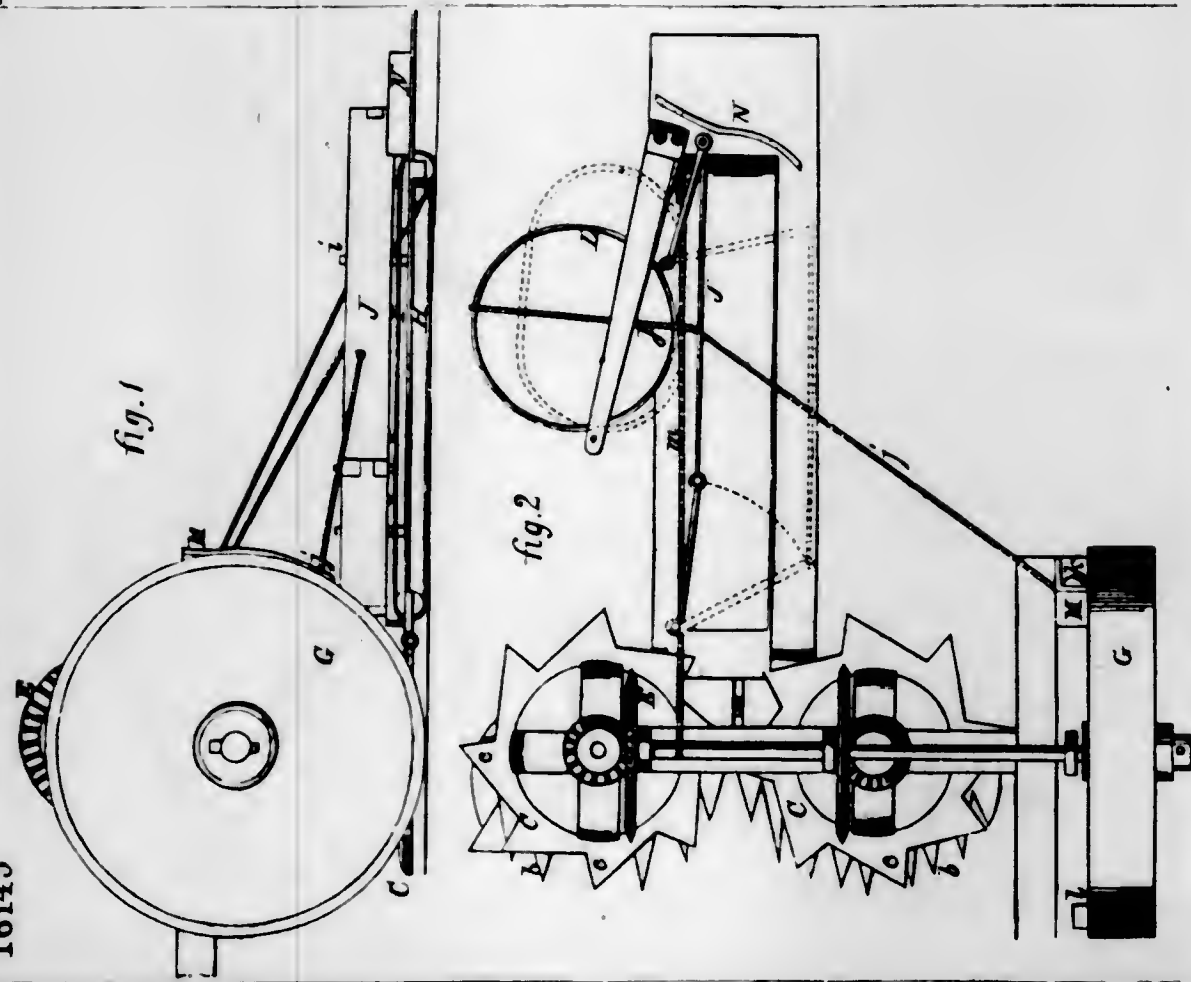
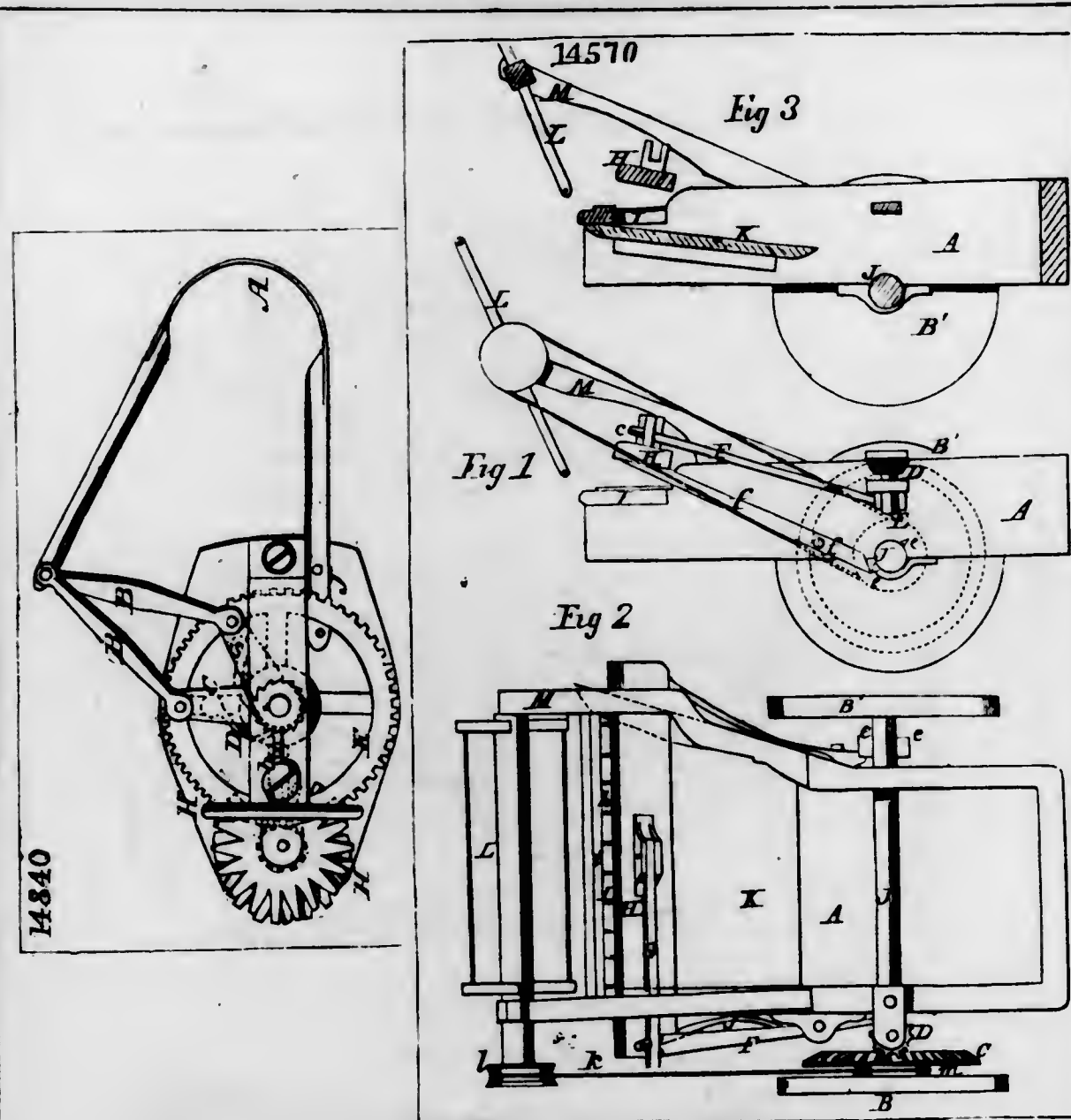


fig. 1



16145

fig. 2



14840

Fig 3

Fig 1

Fig 2

15237

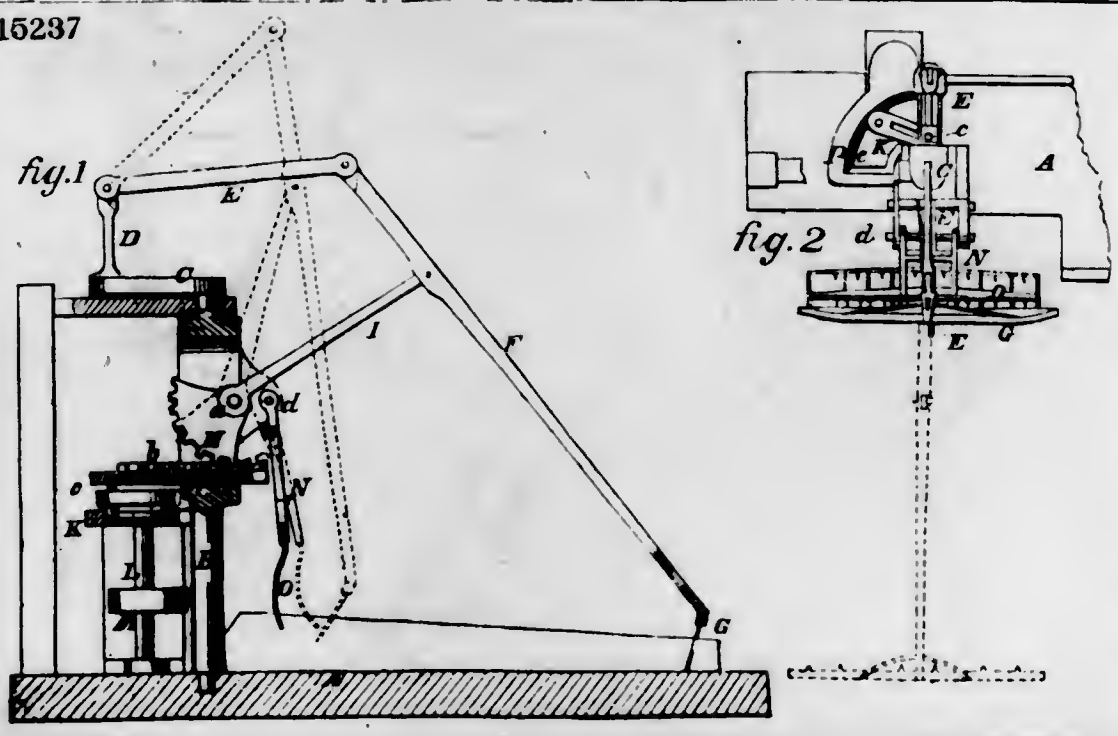


fig. 1

fig. 2

14517

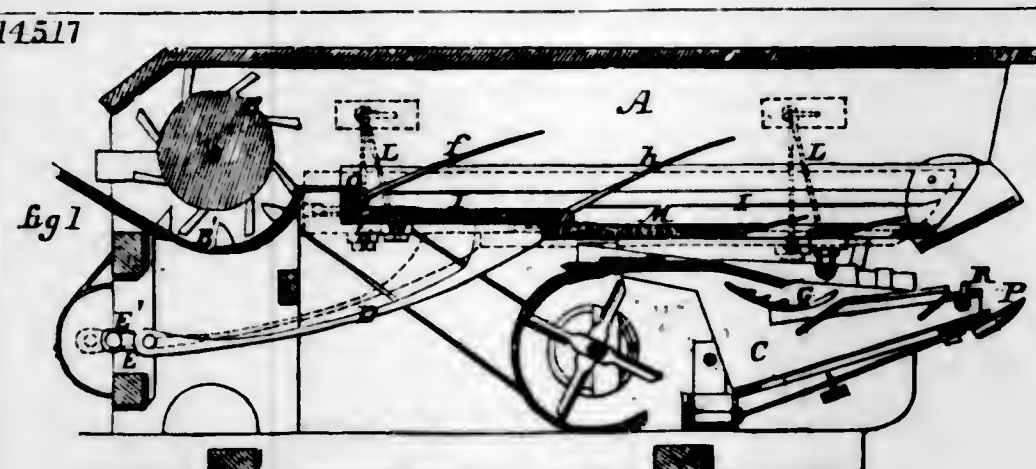
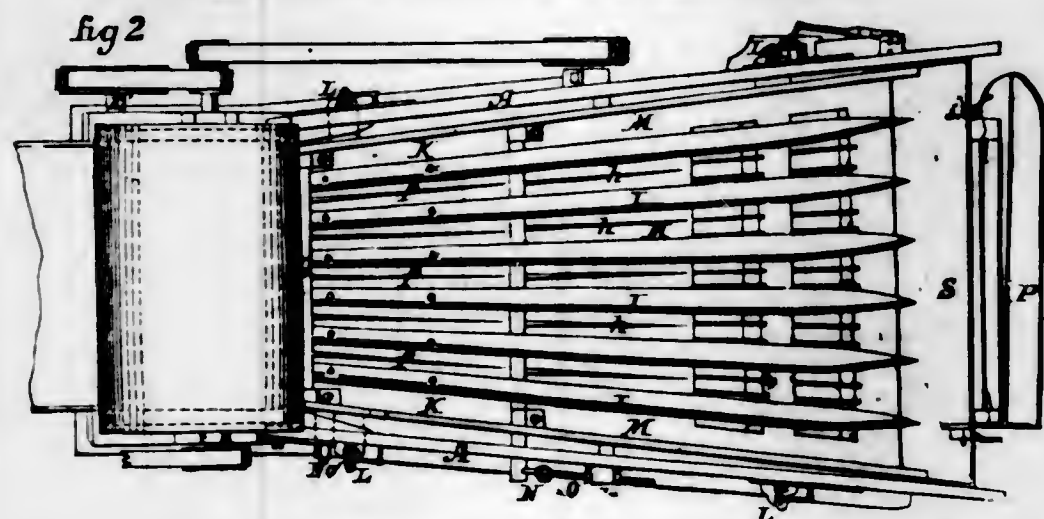
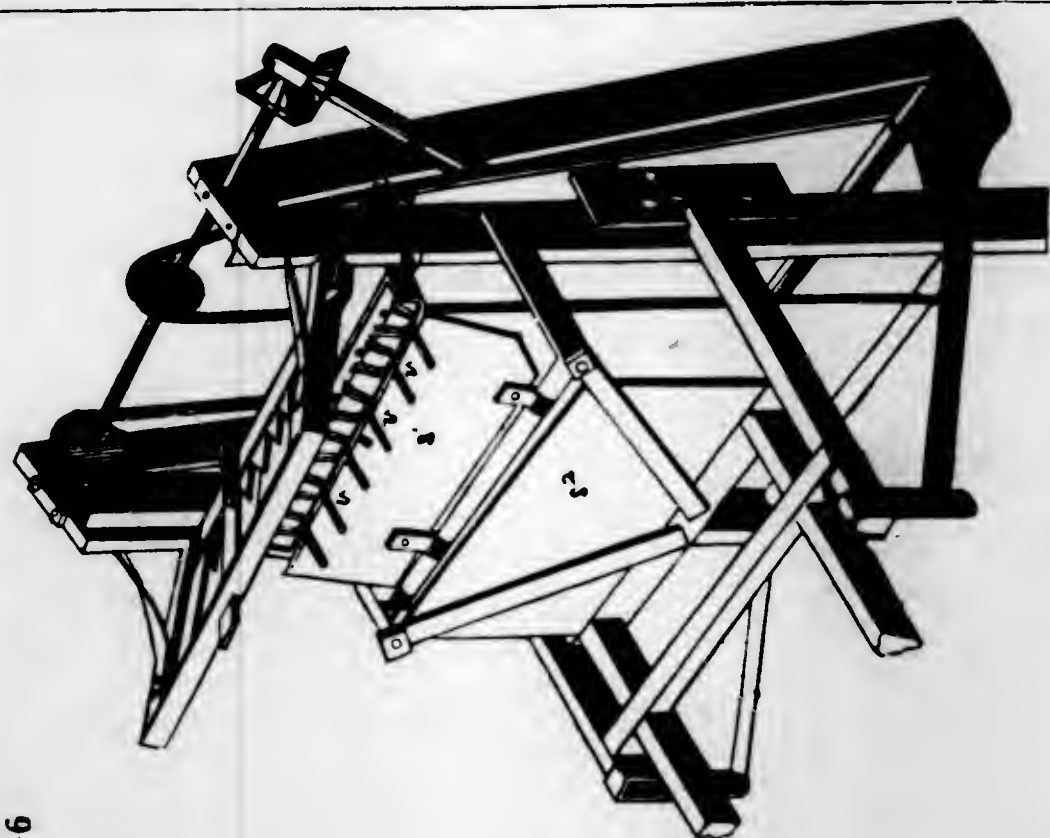


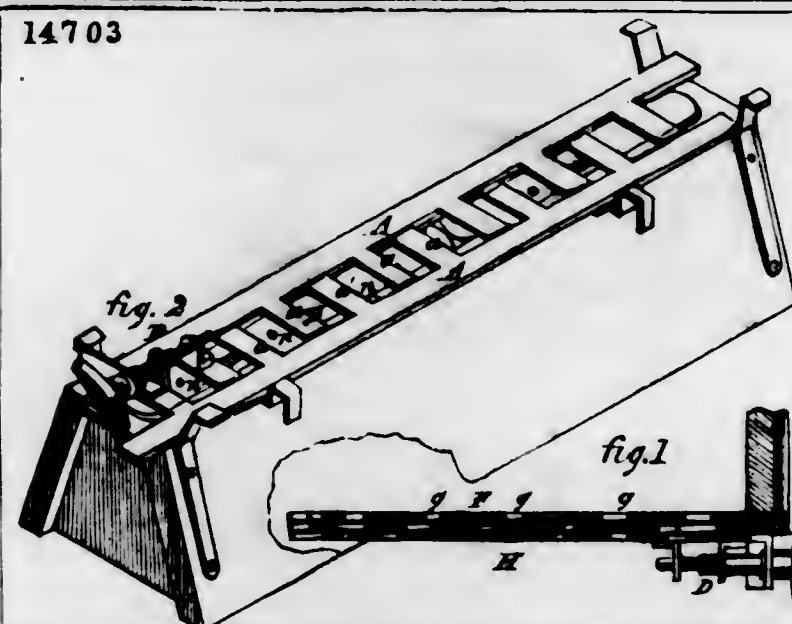
fig 2



15046



14703



15044

fig 1

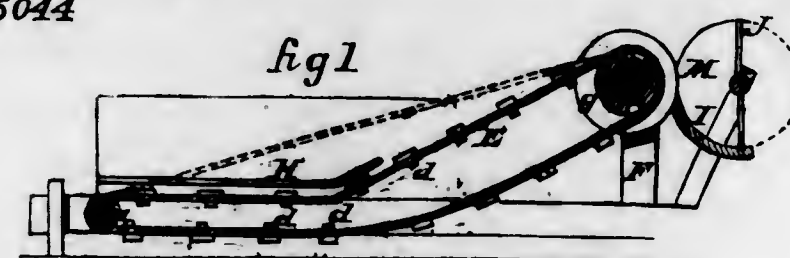
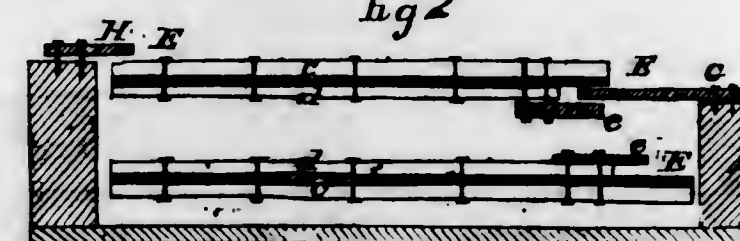


fig 2



15096

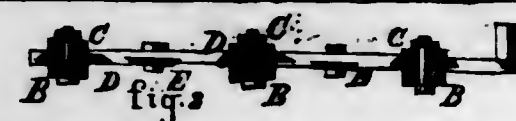
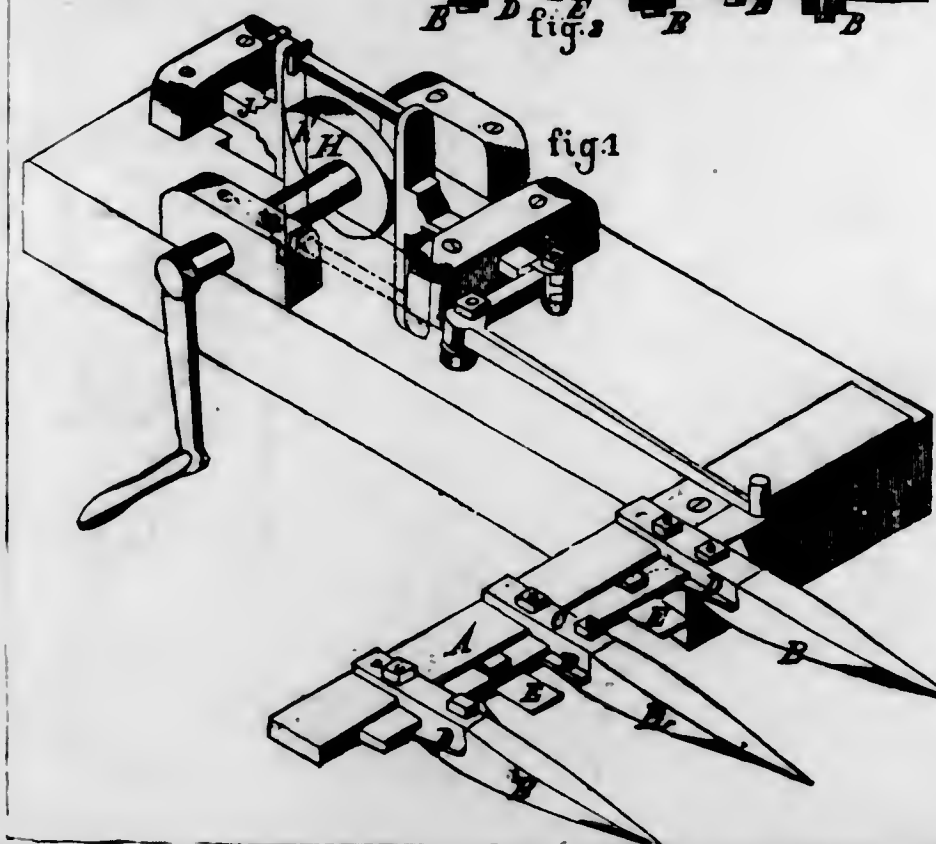
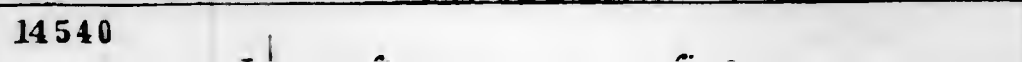


fig 1



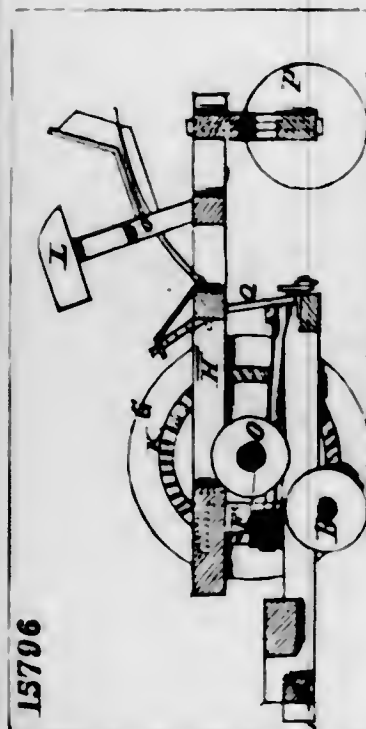
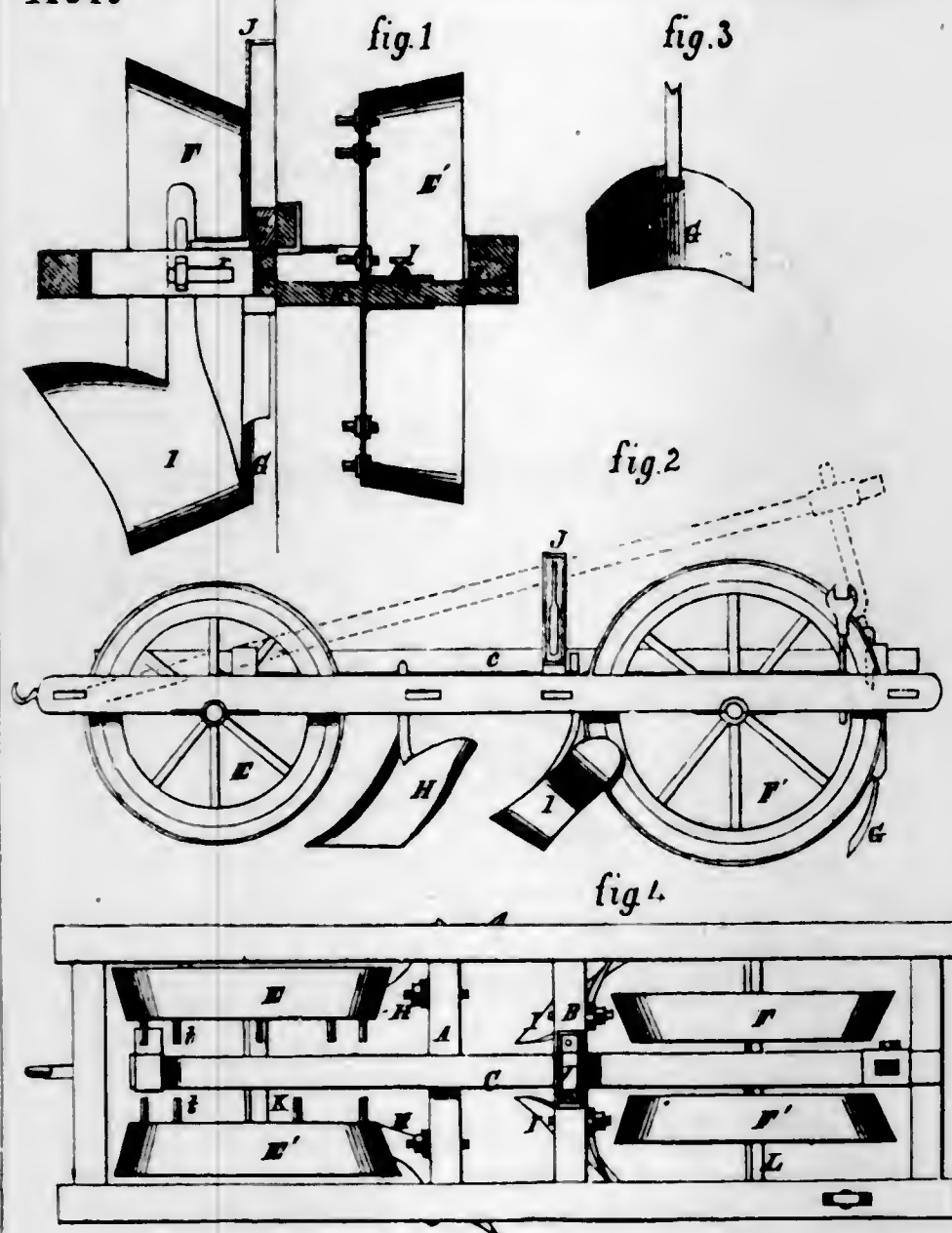
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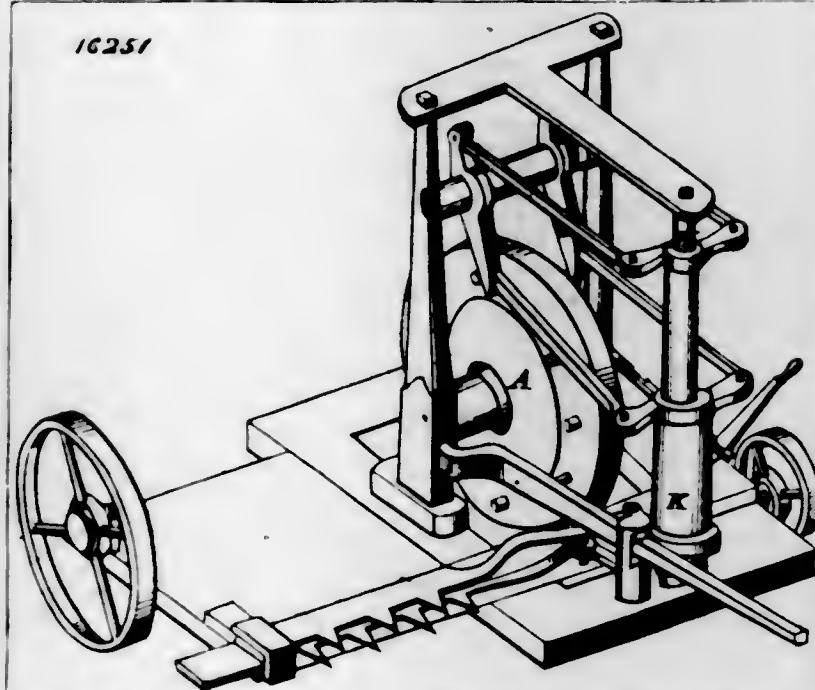
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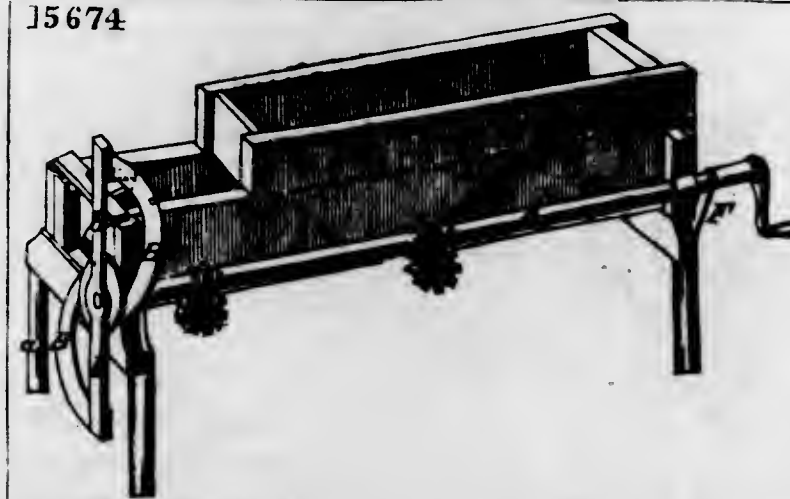
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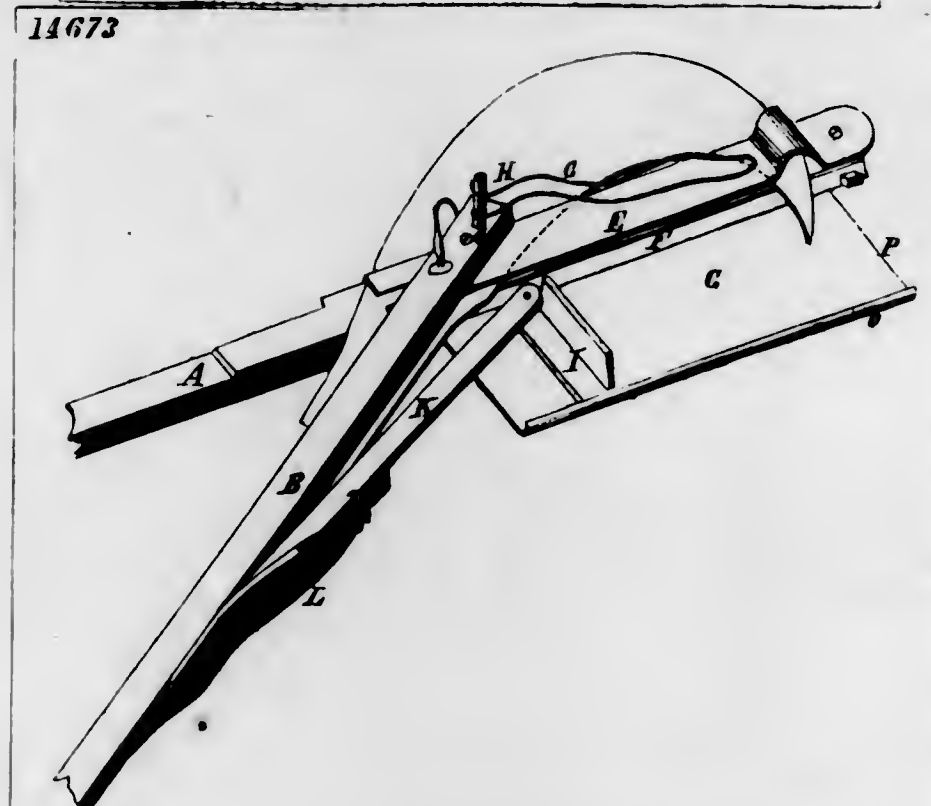
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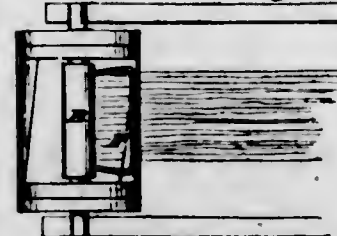
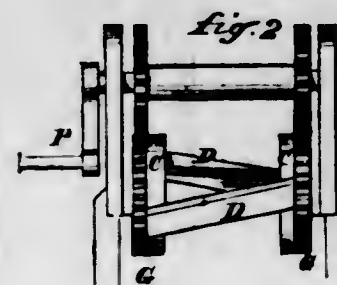
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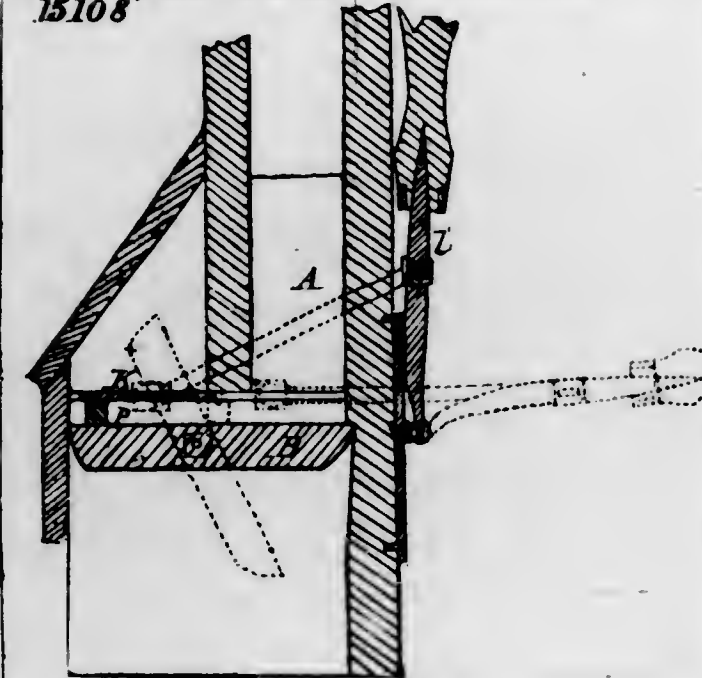
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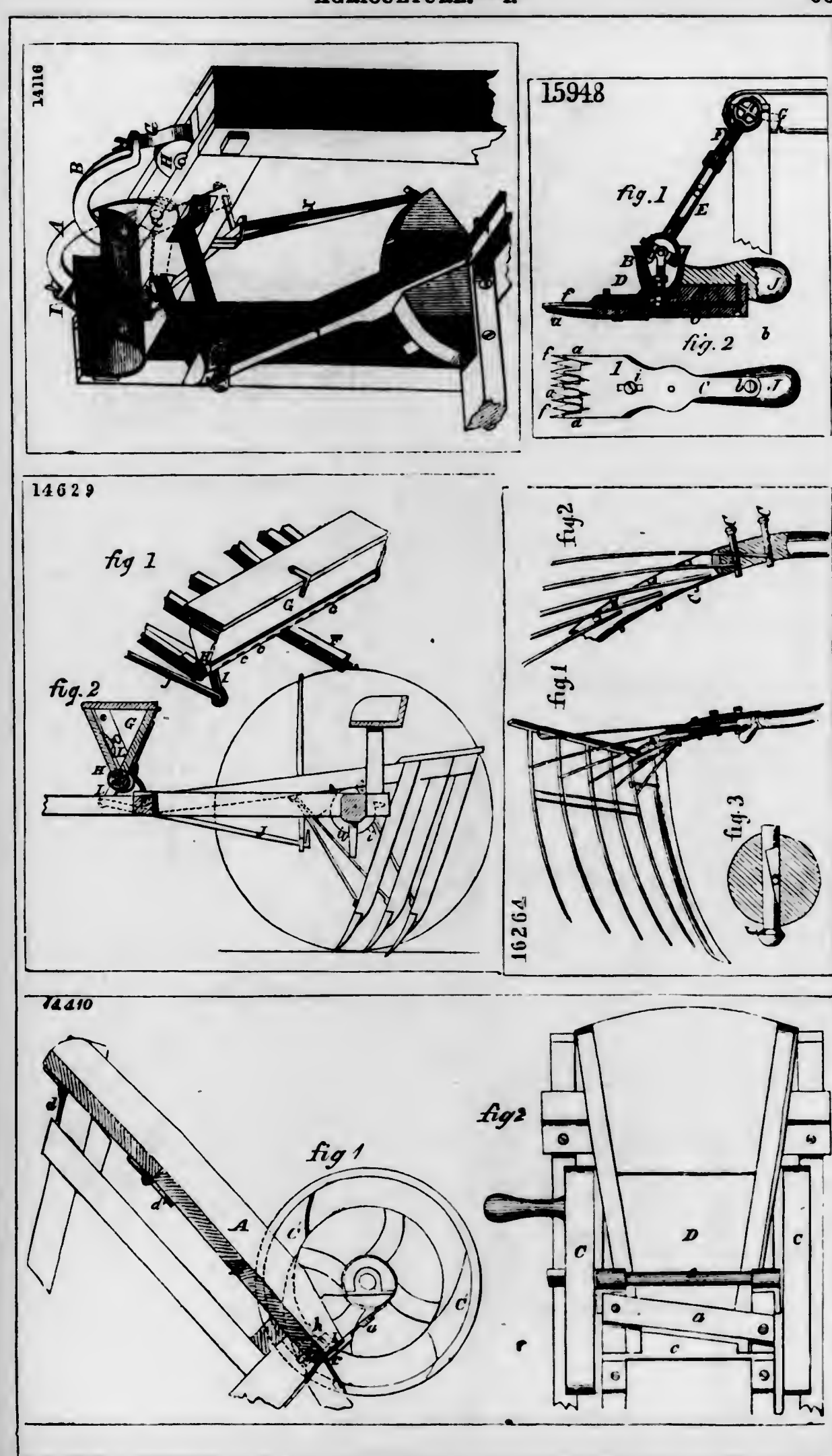
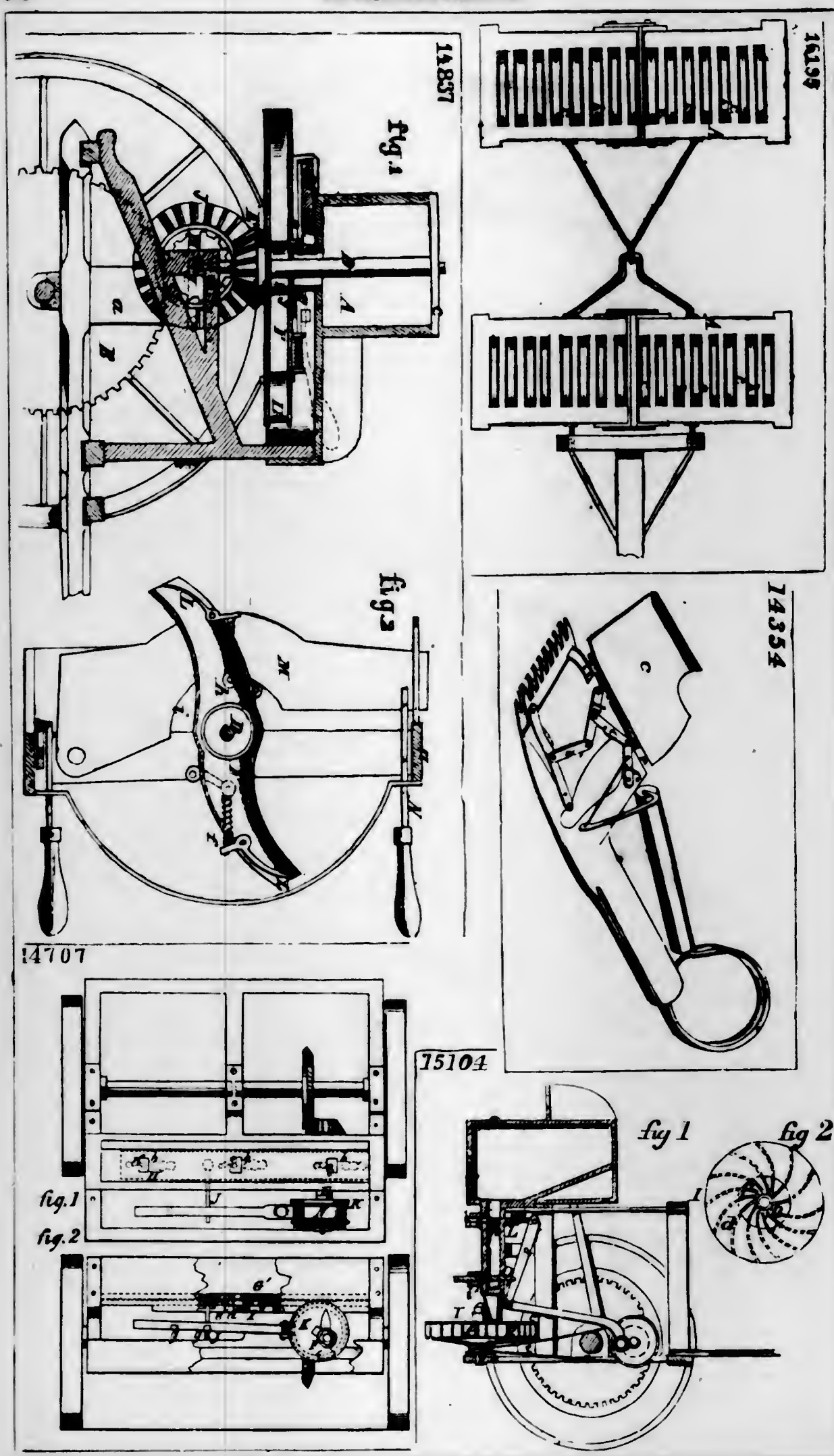


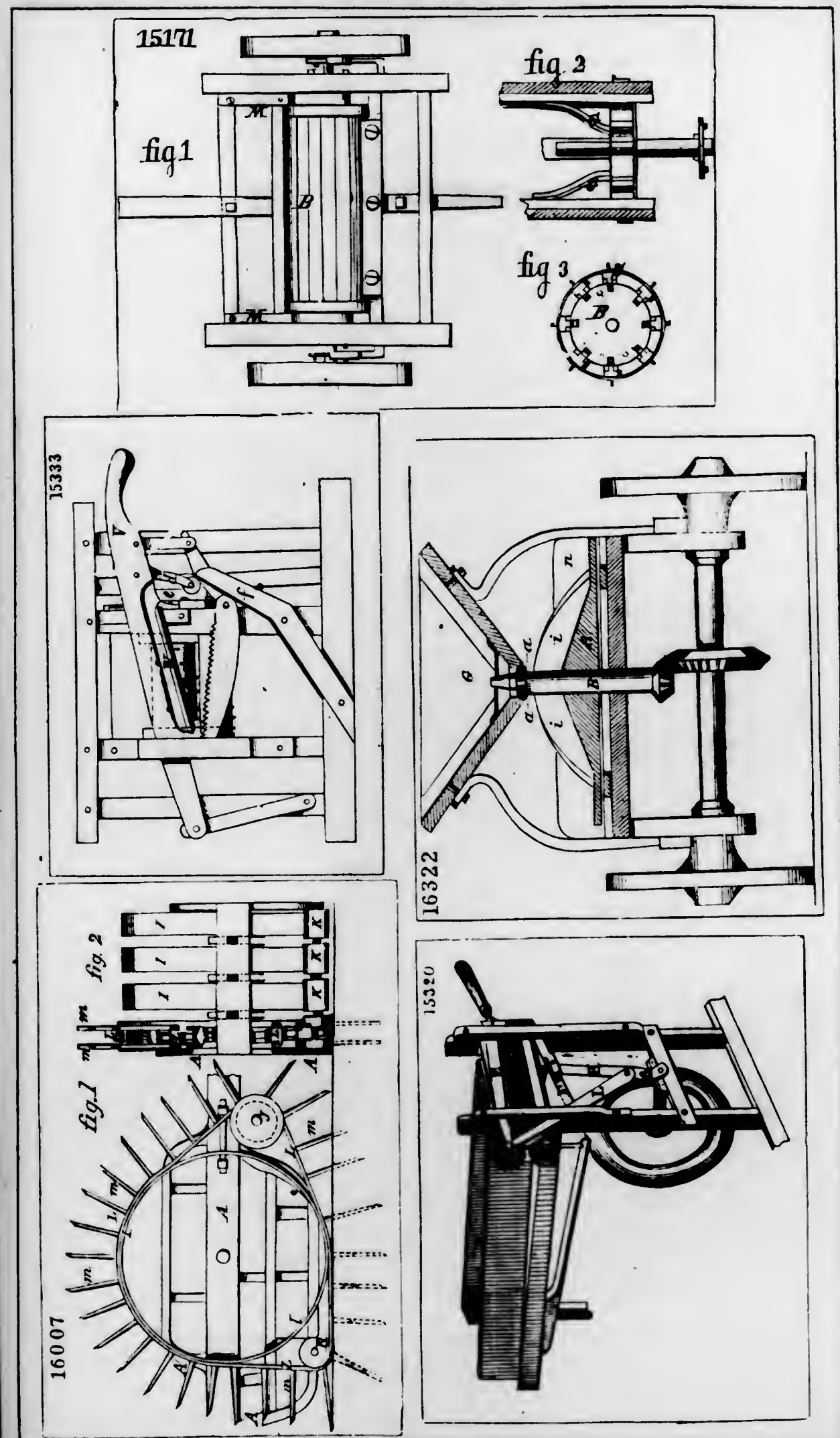
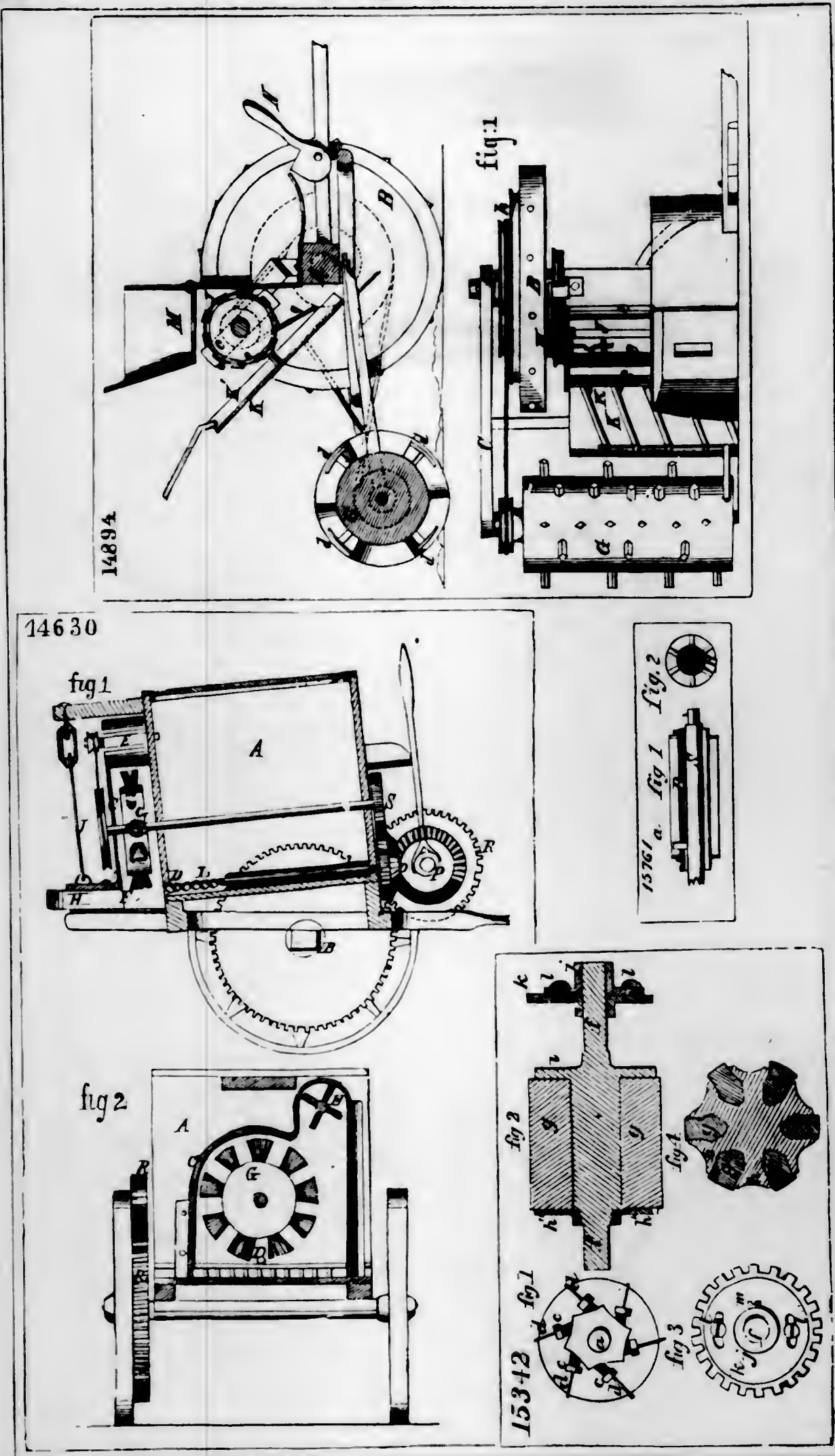
15485

fig. 1*fig. 2*

15108







14462

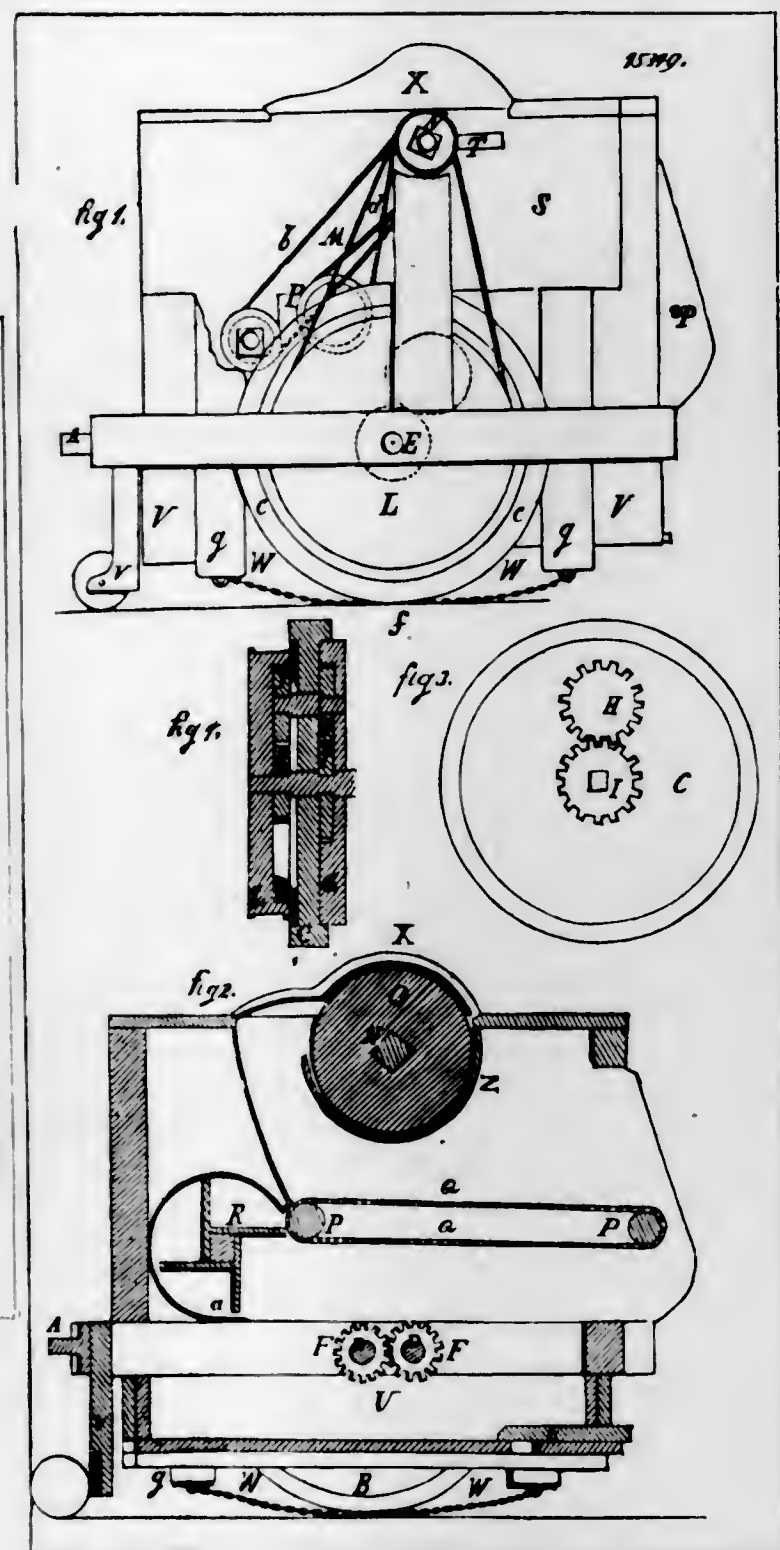
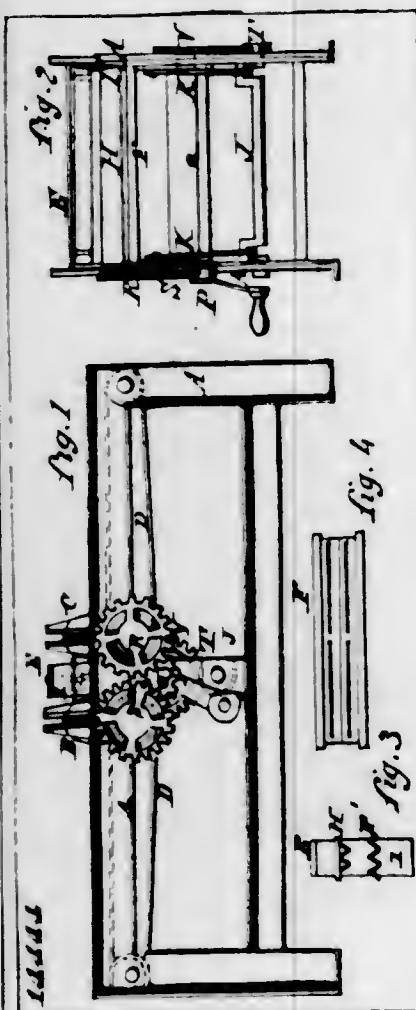
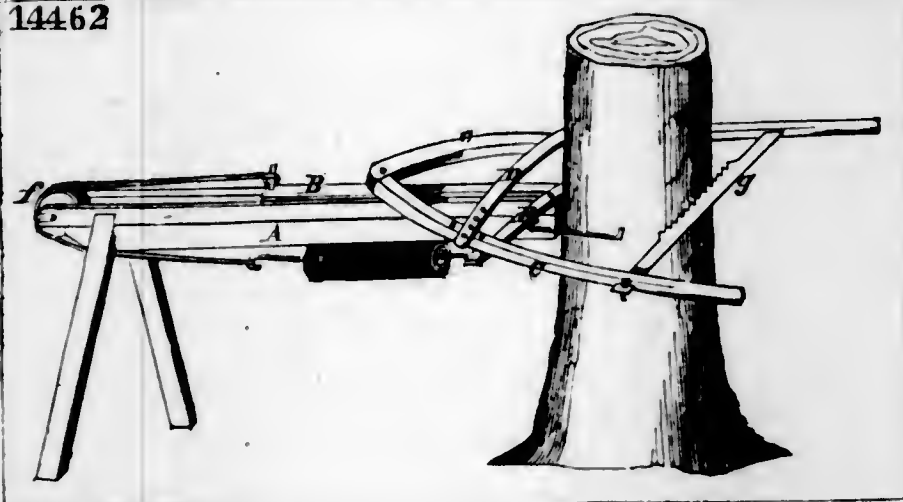
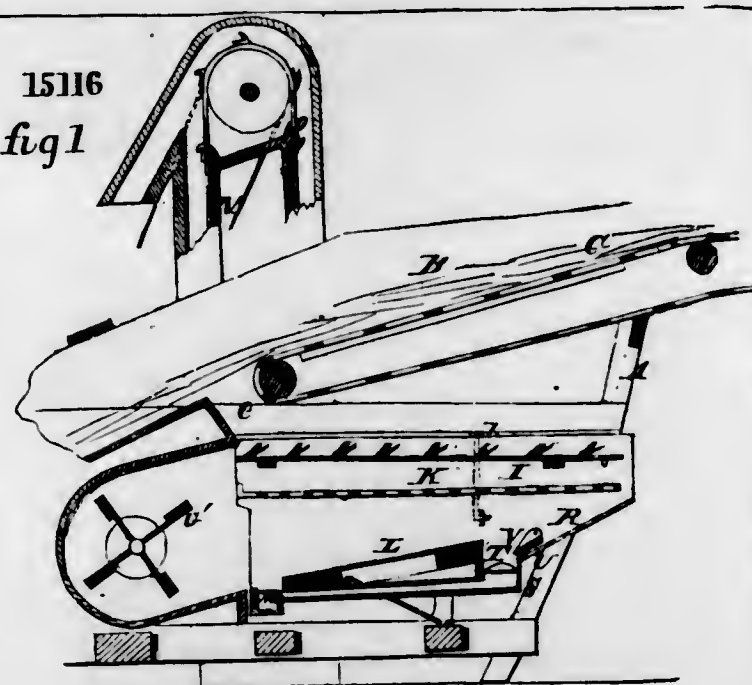
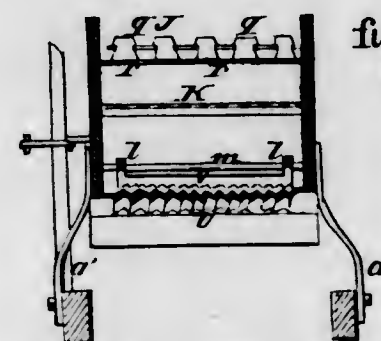
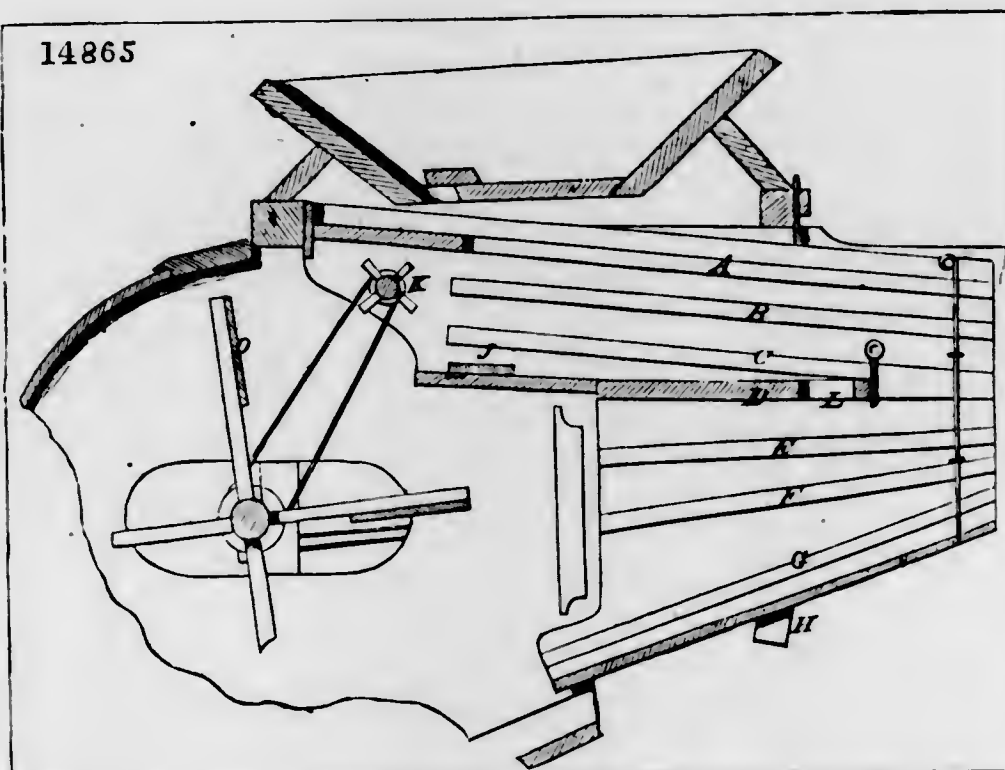
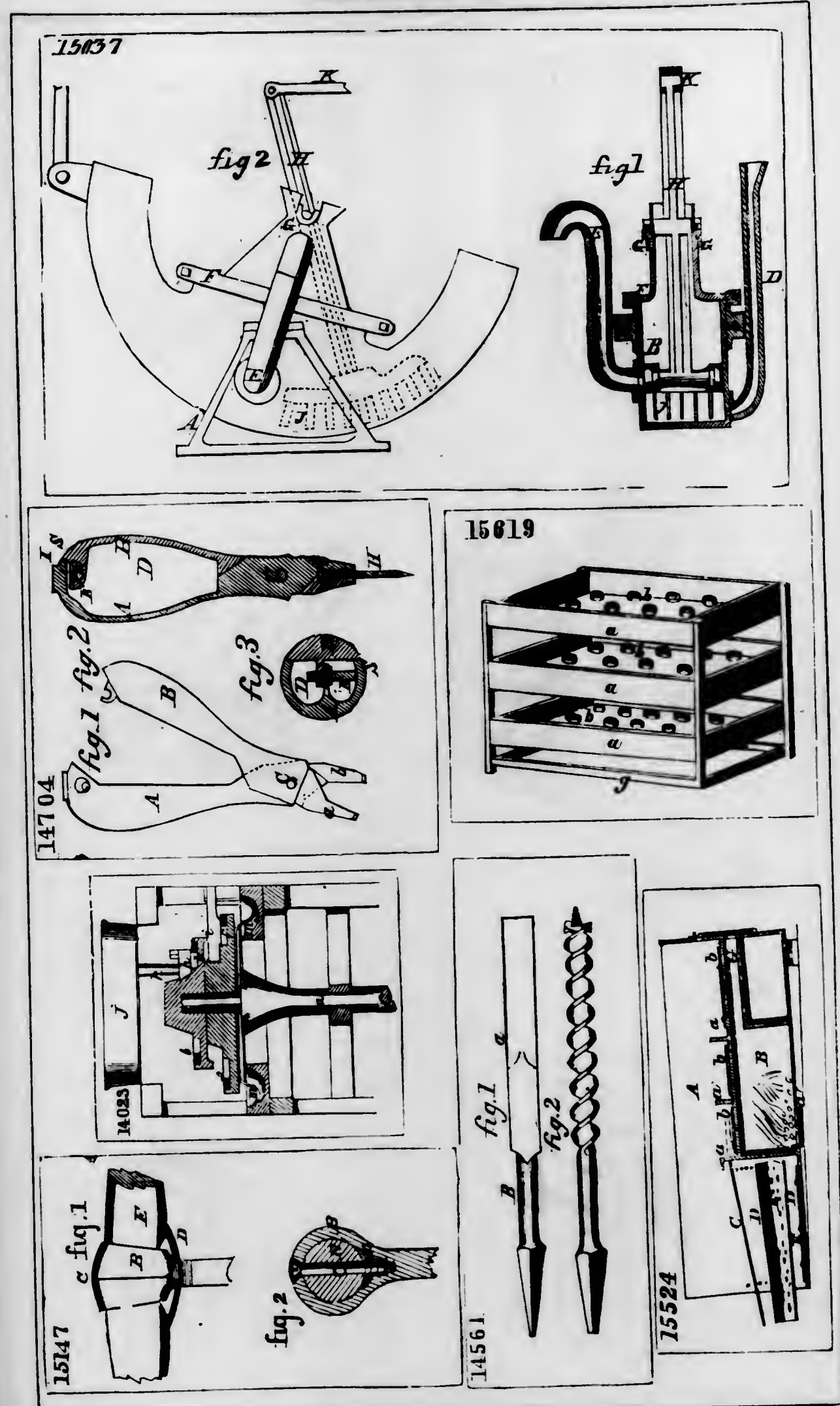
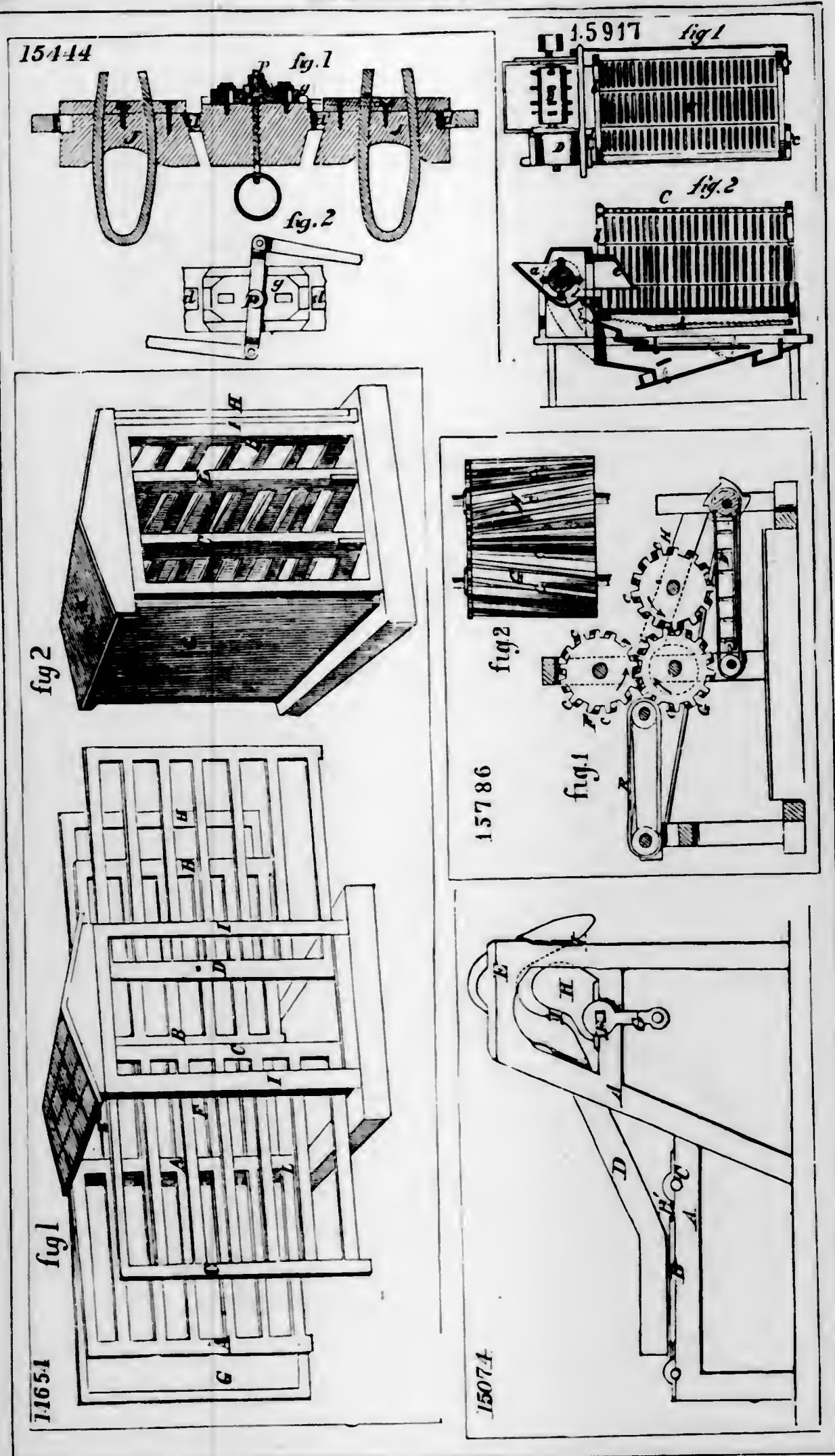
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fig 1

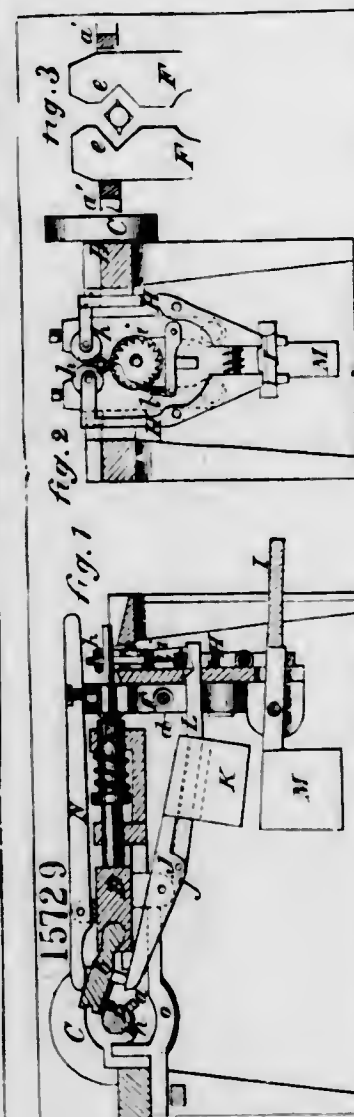
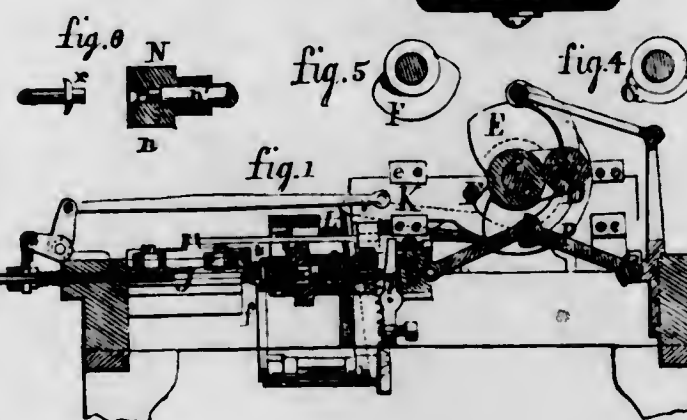
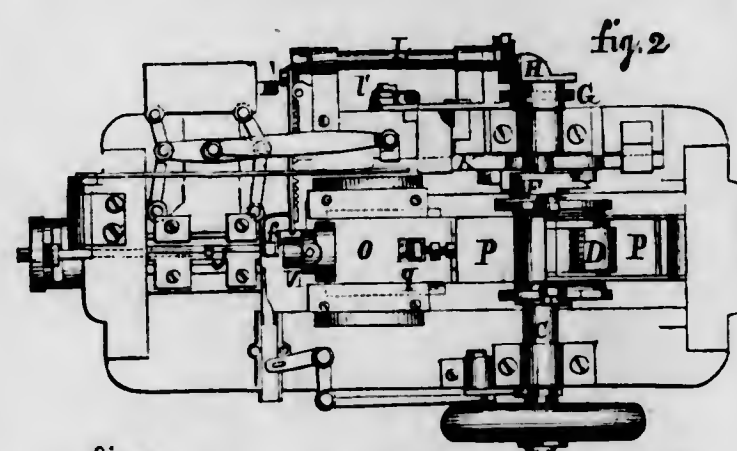
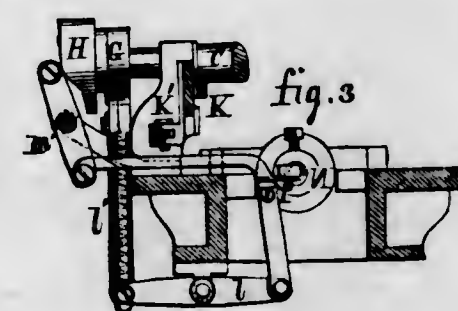
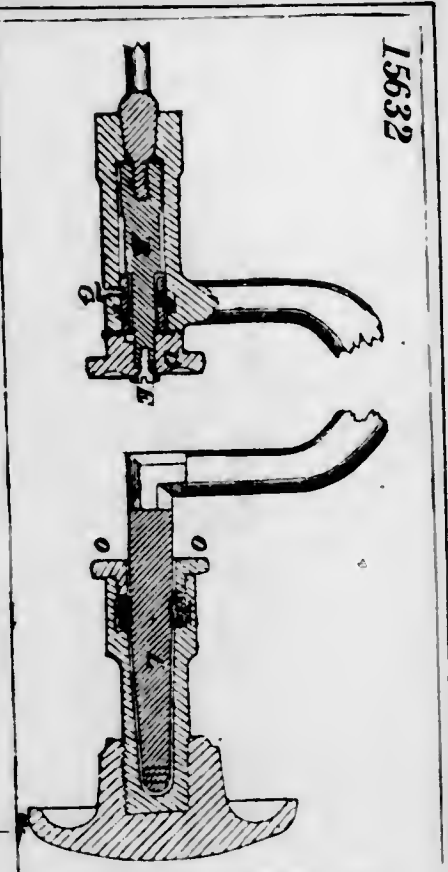
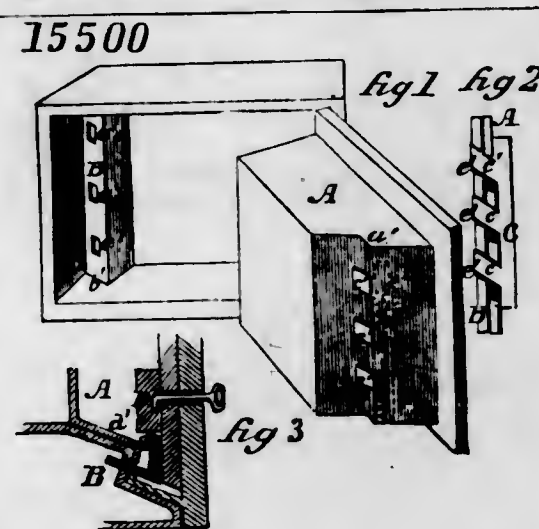
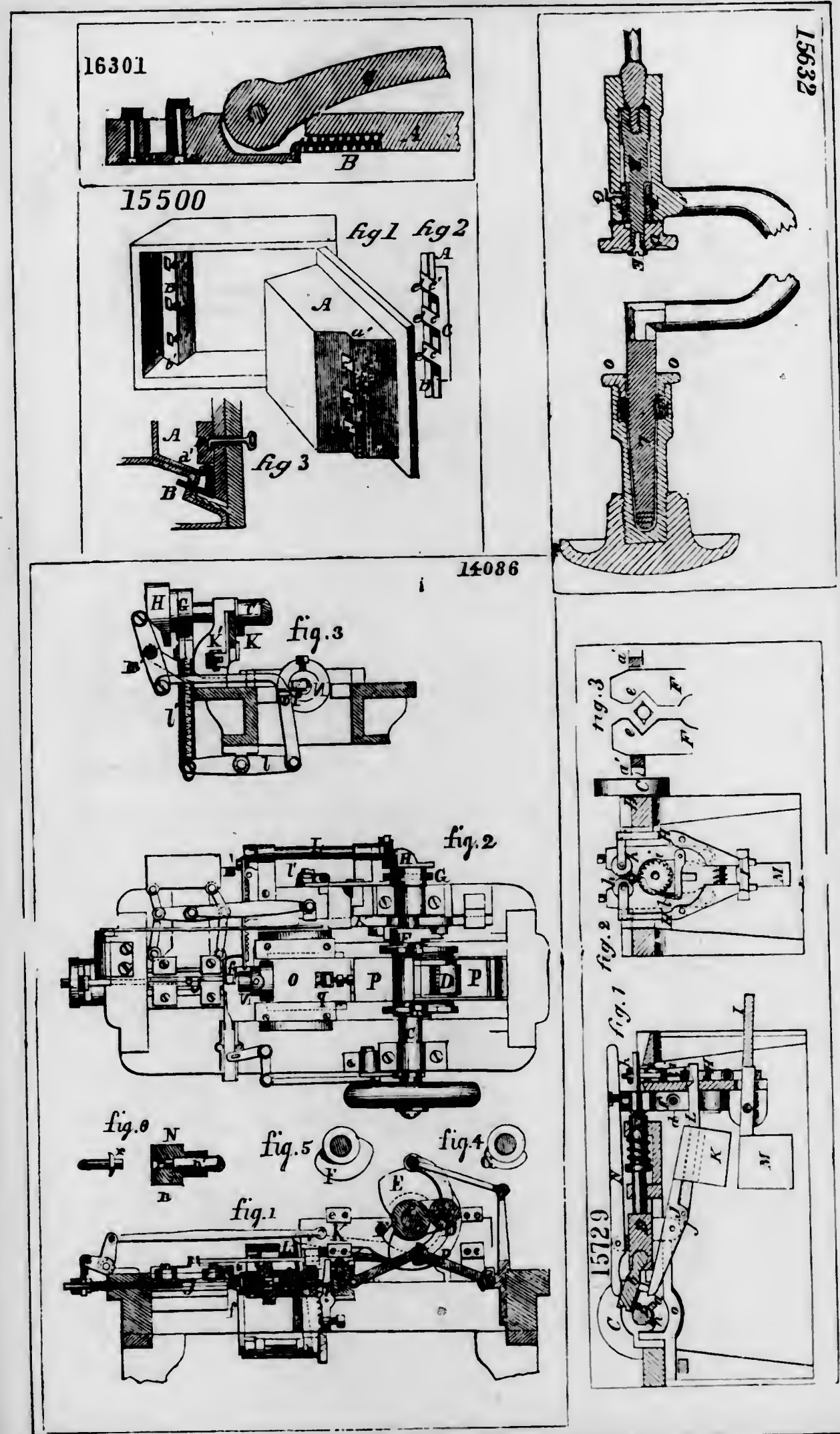
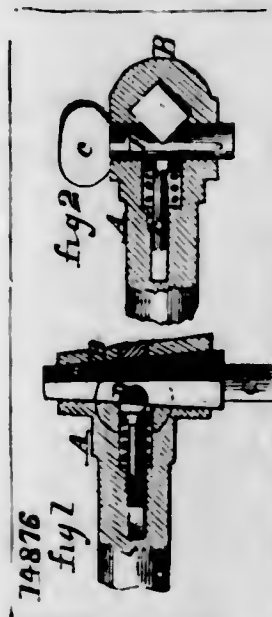
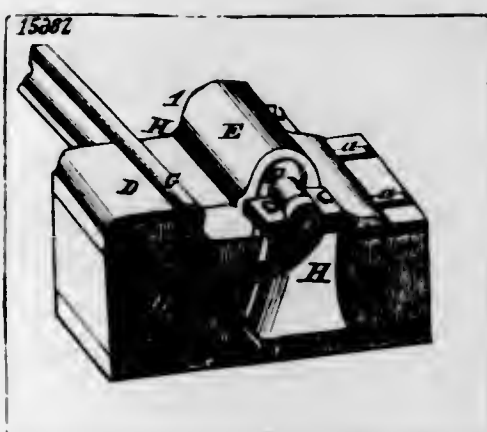
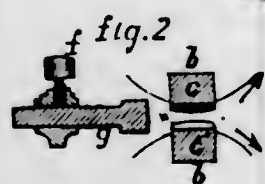
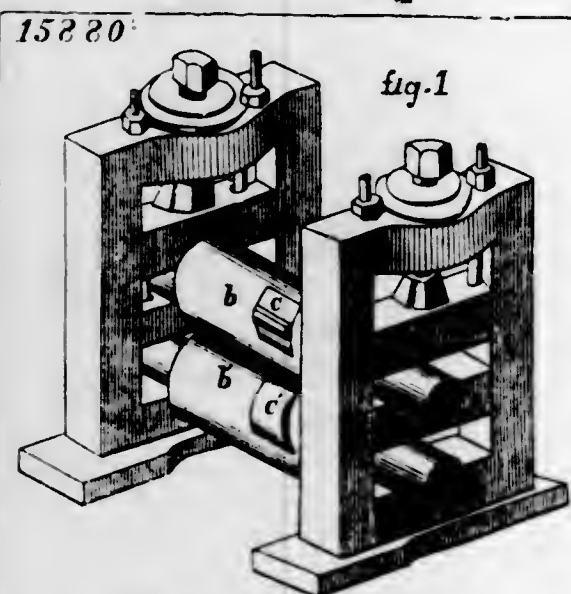
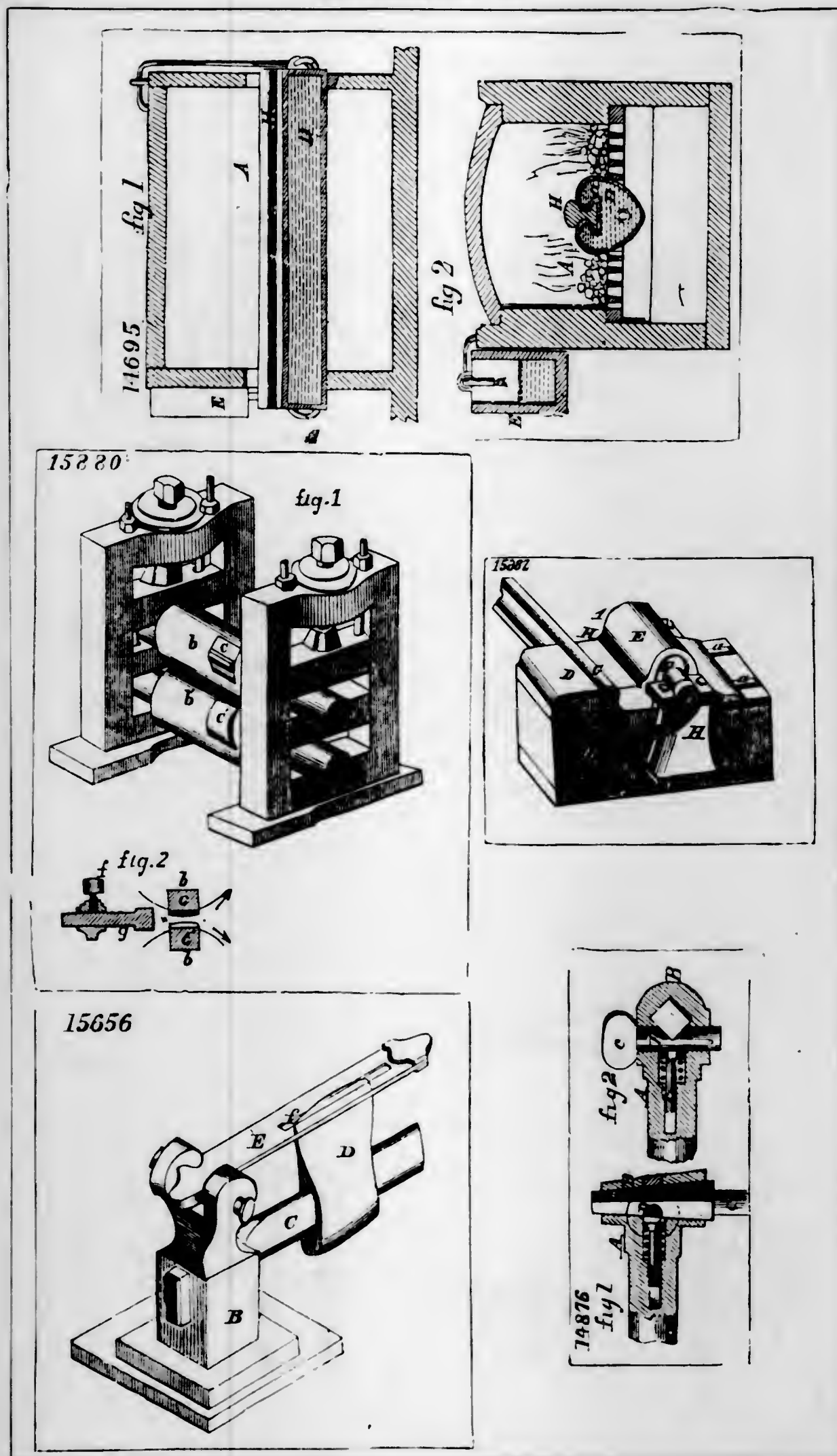
fig 2

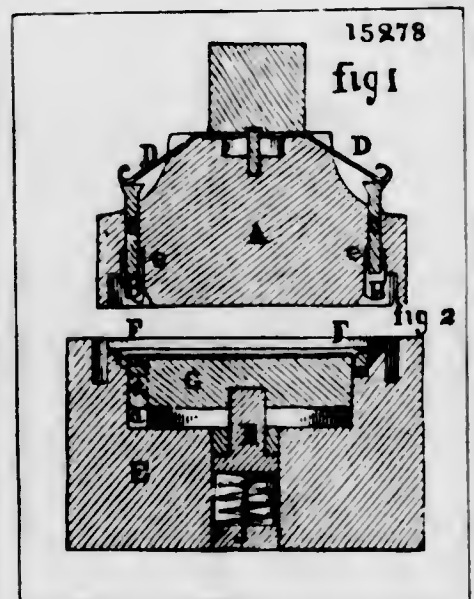
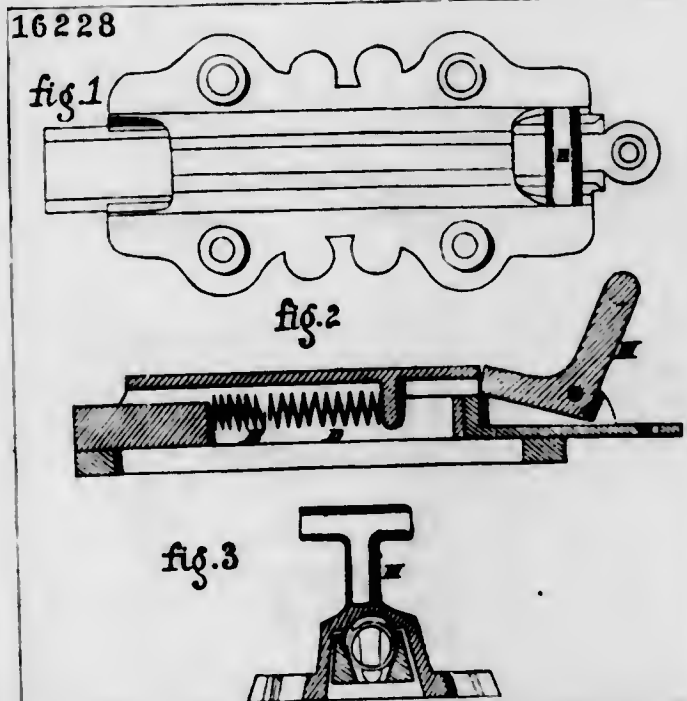
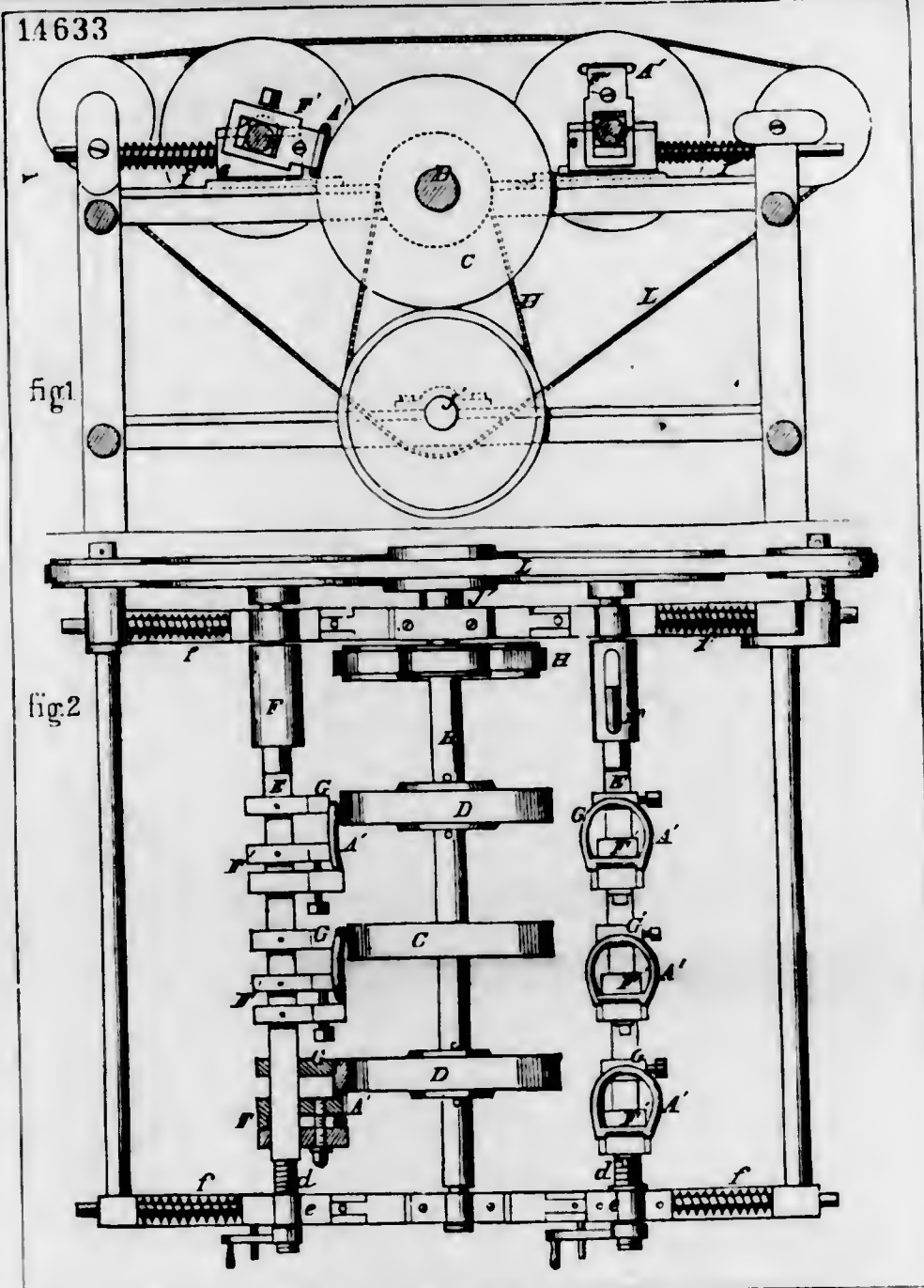
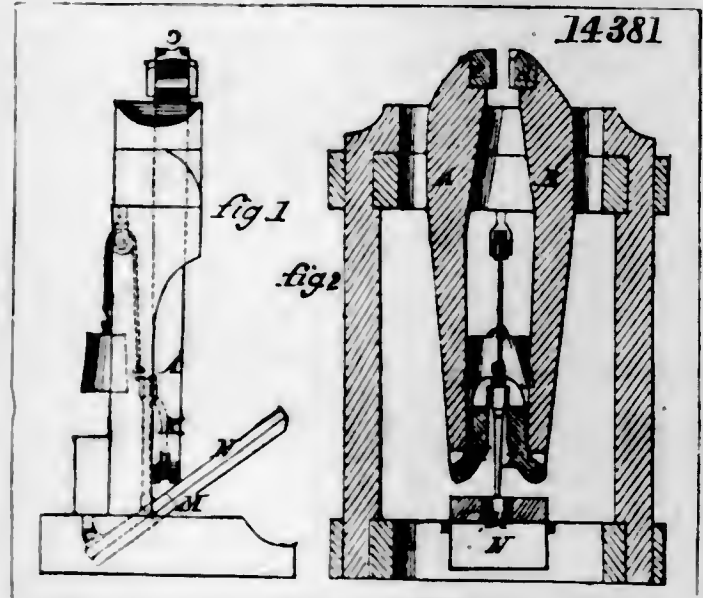
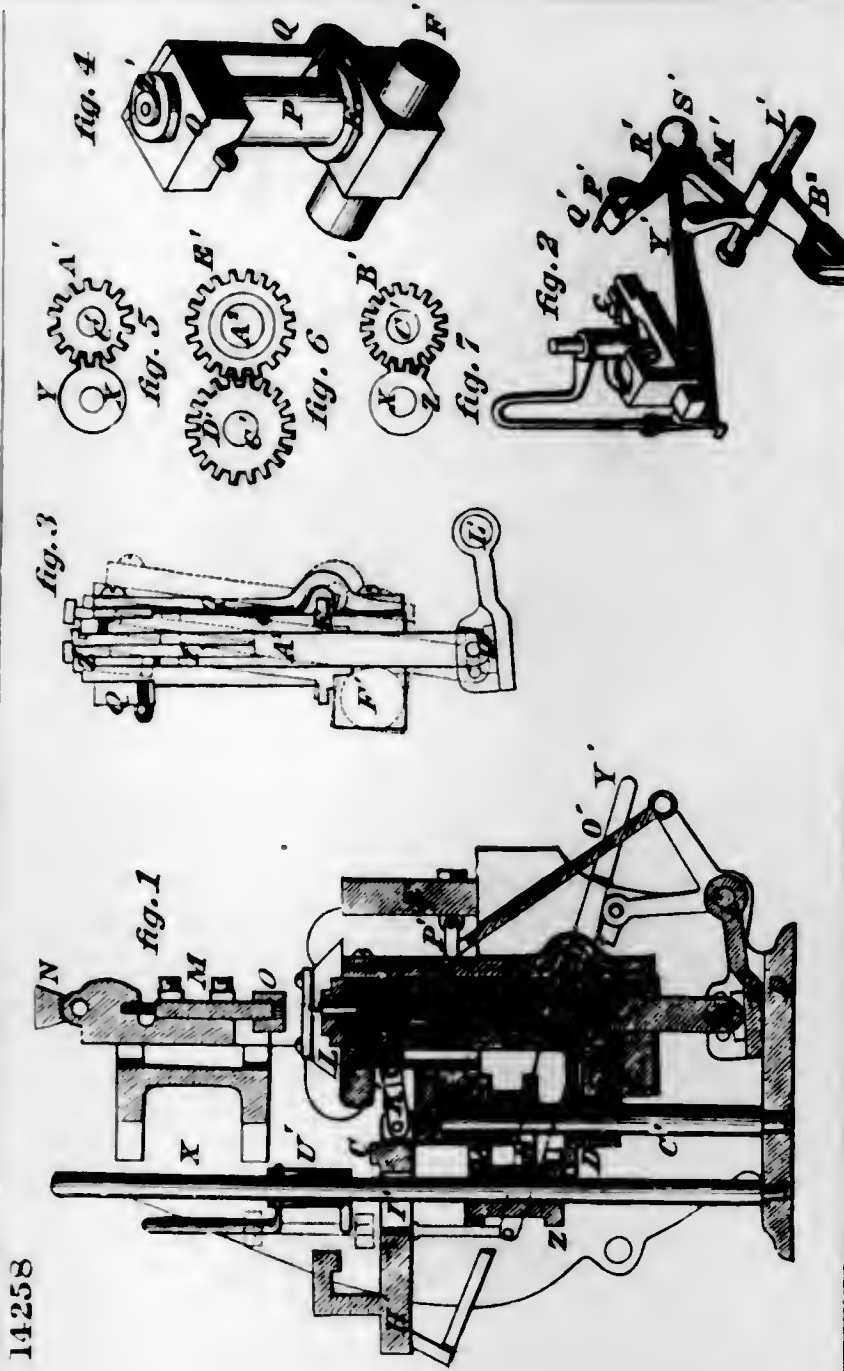
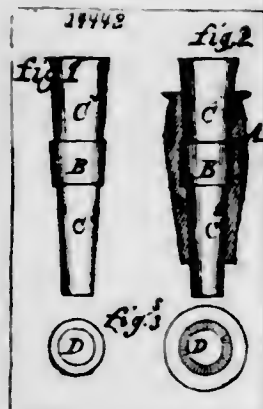
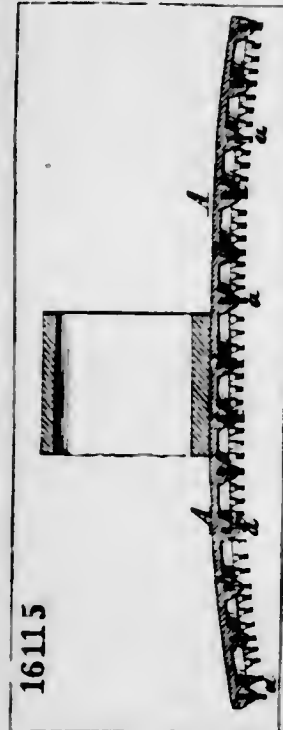


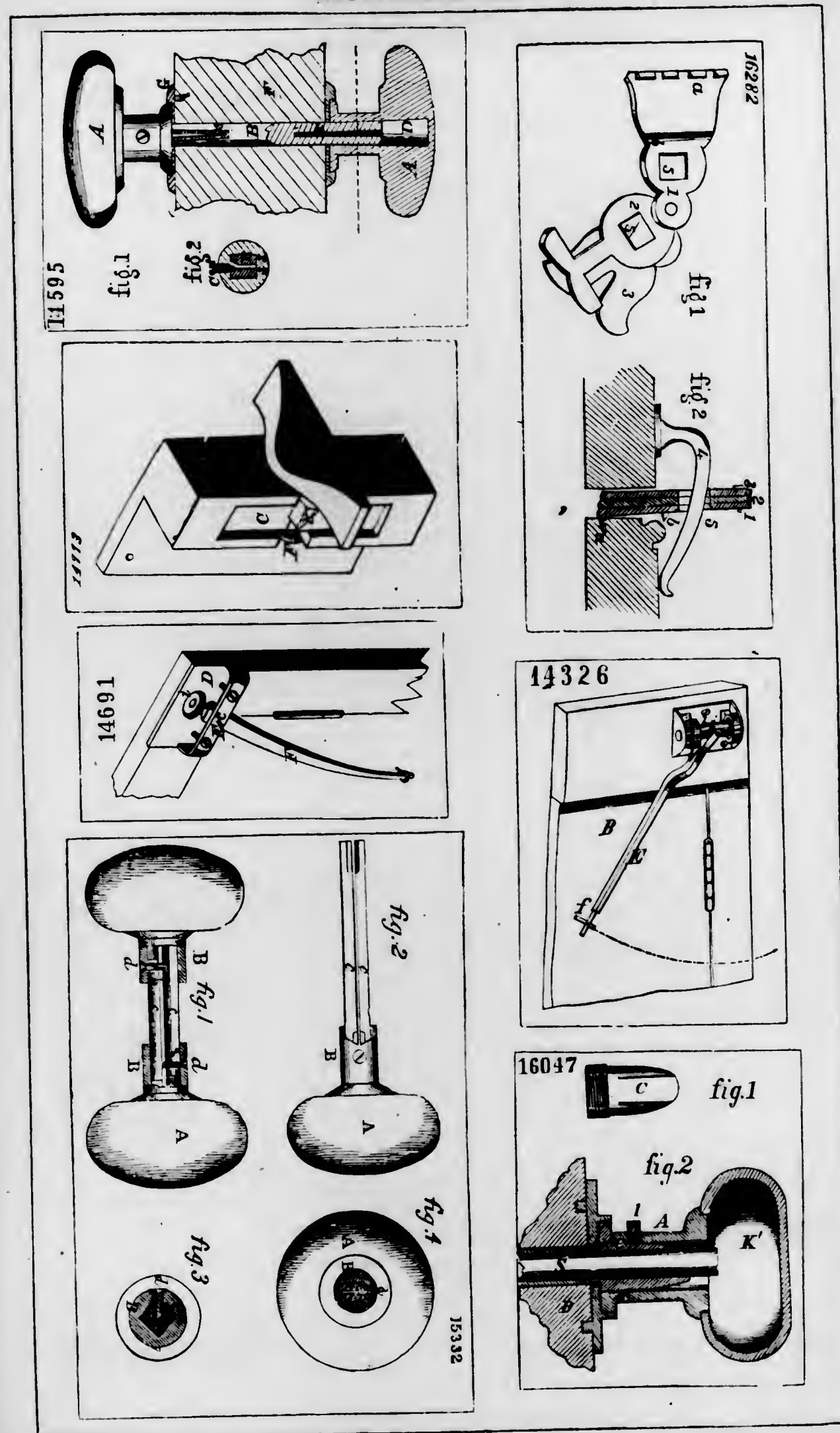
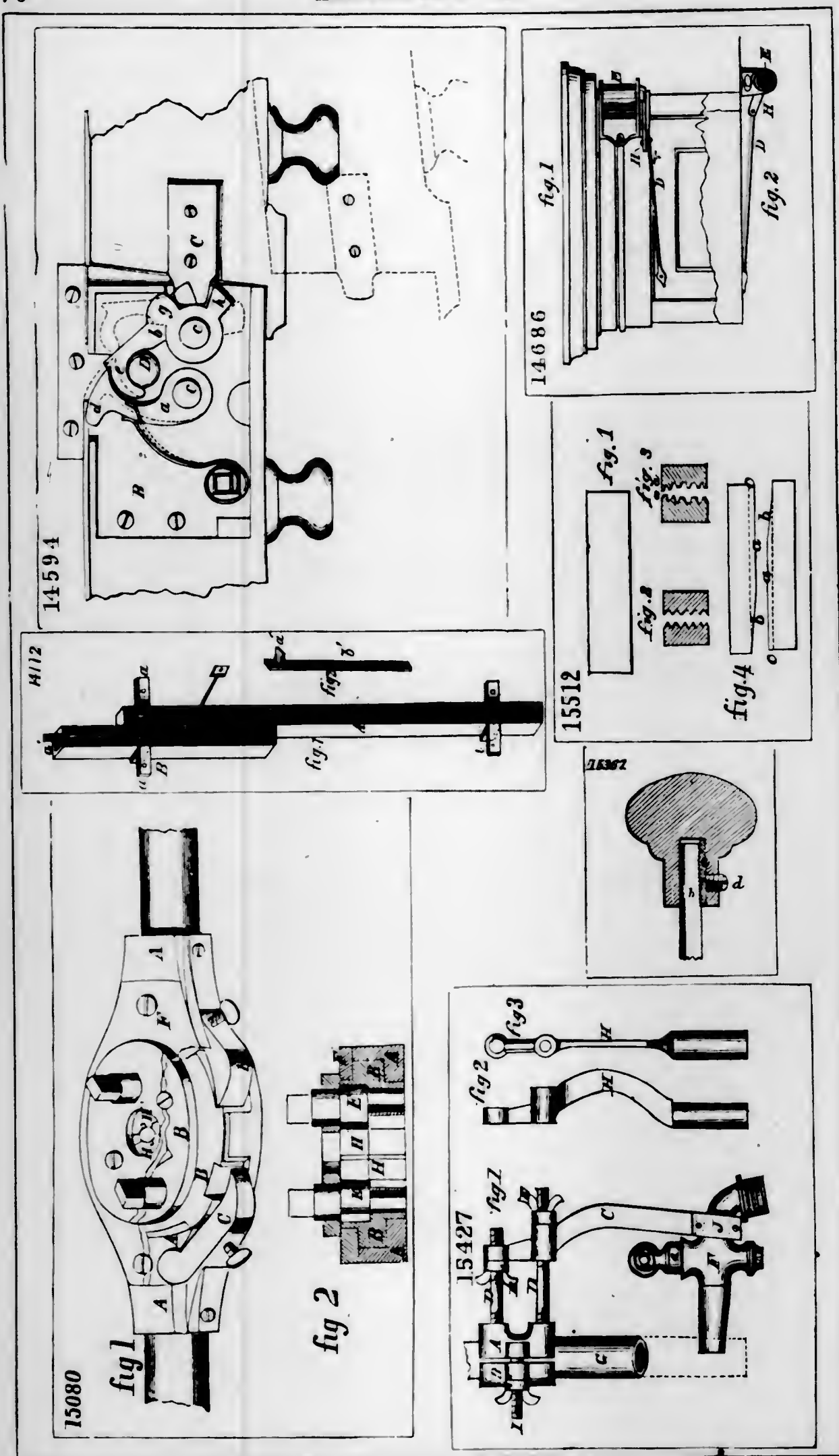
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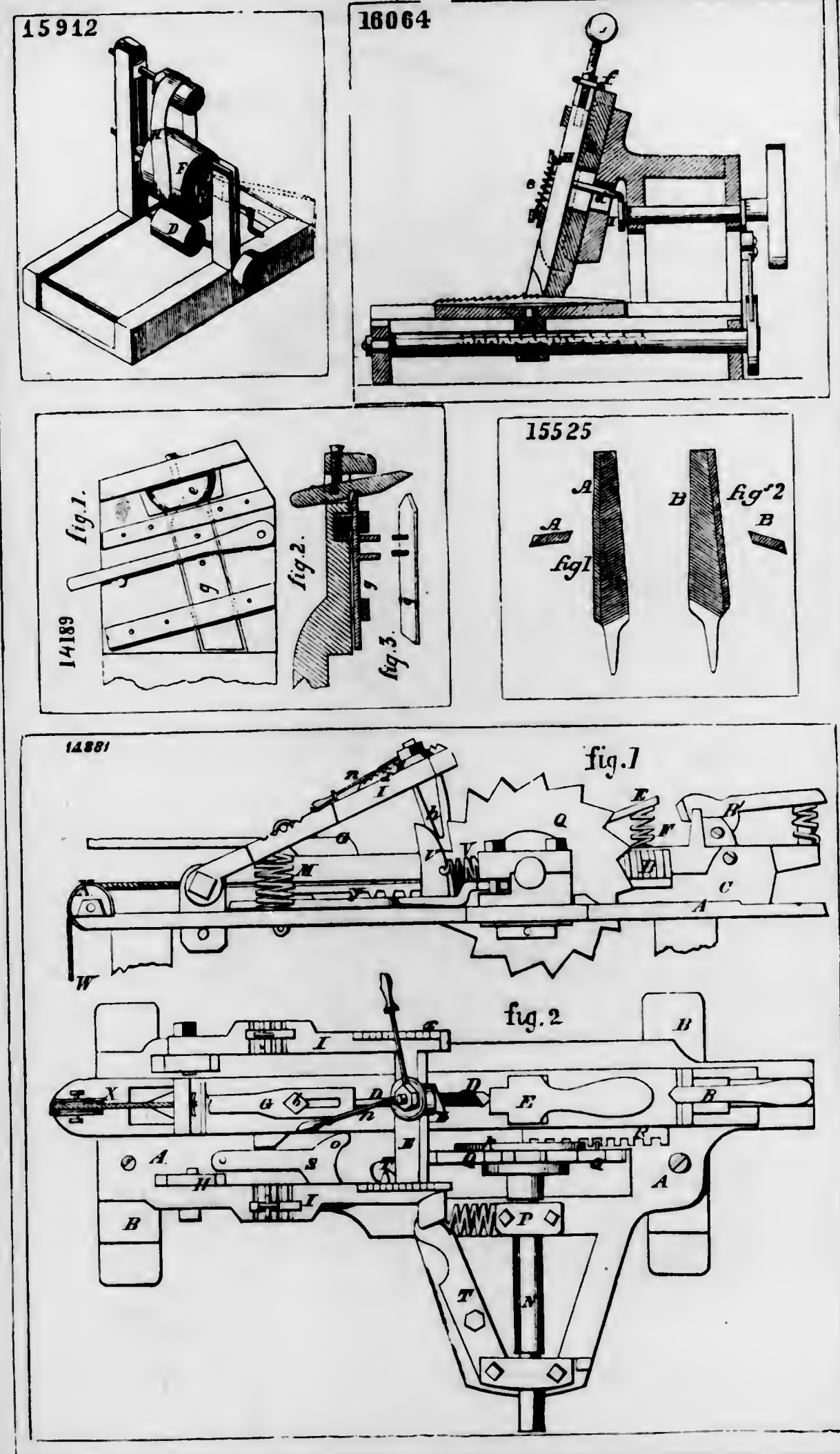
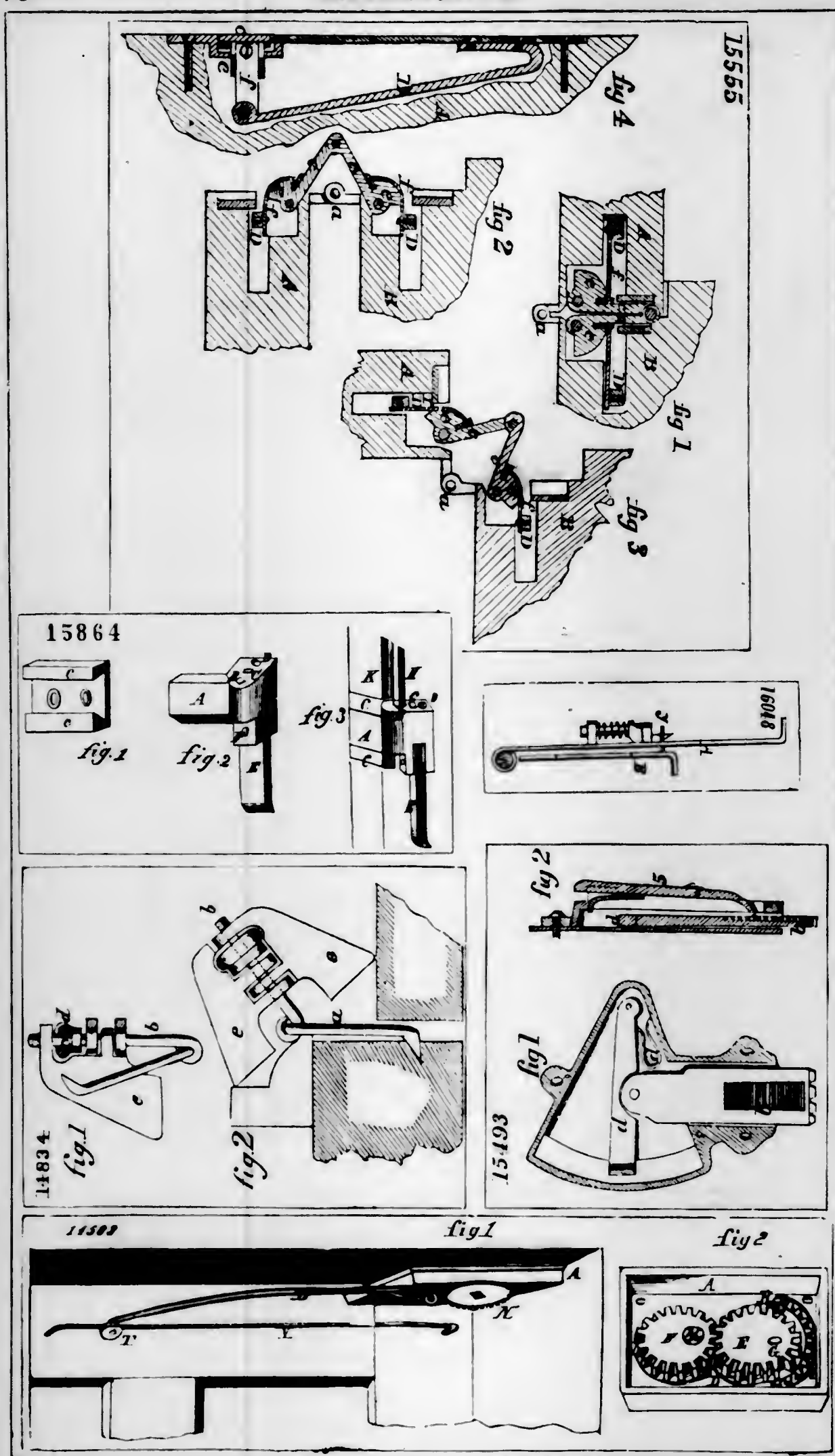




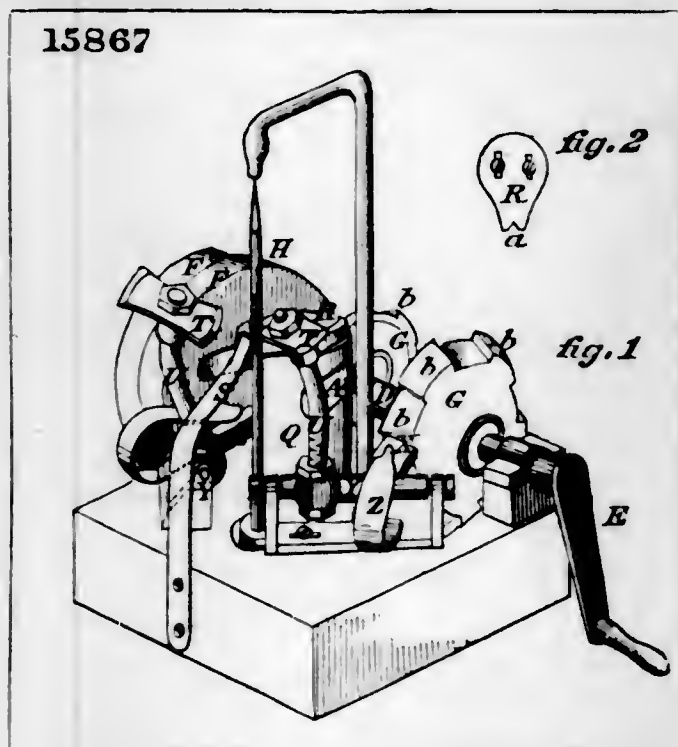




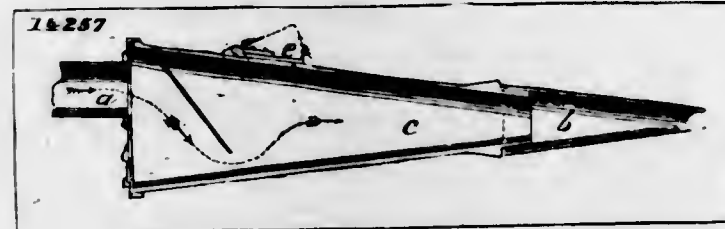
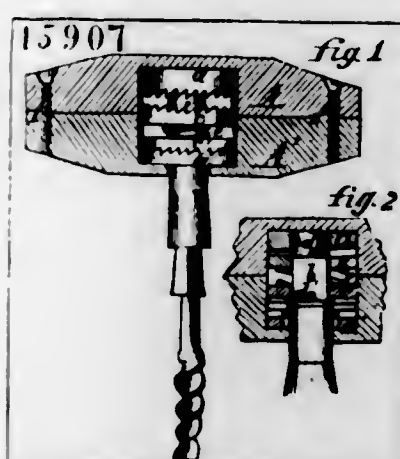
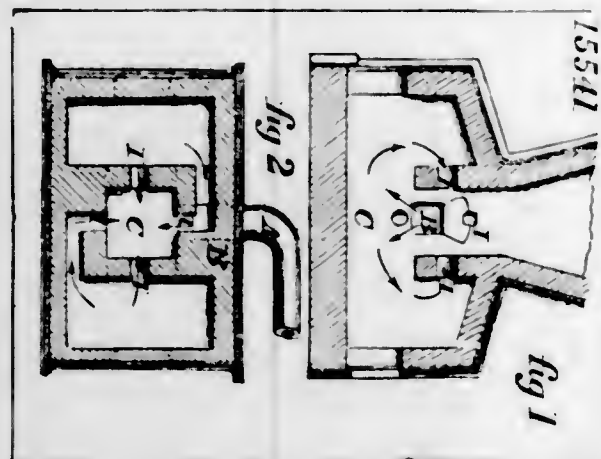
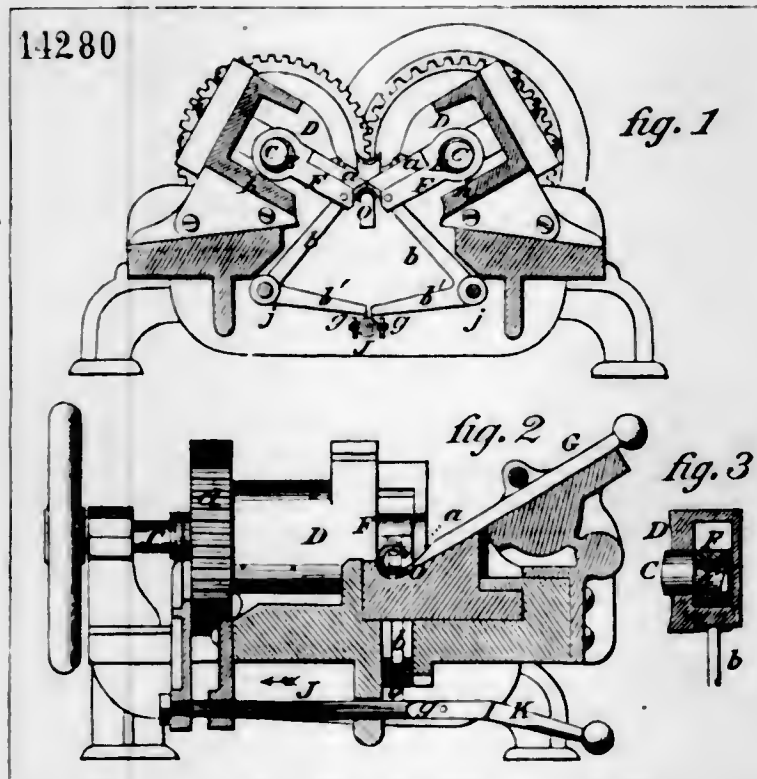




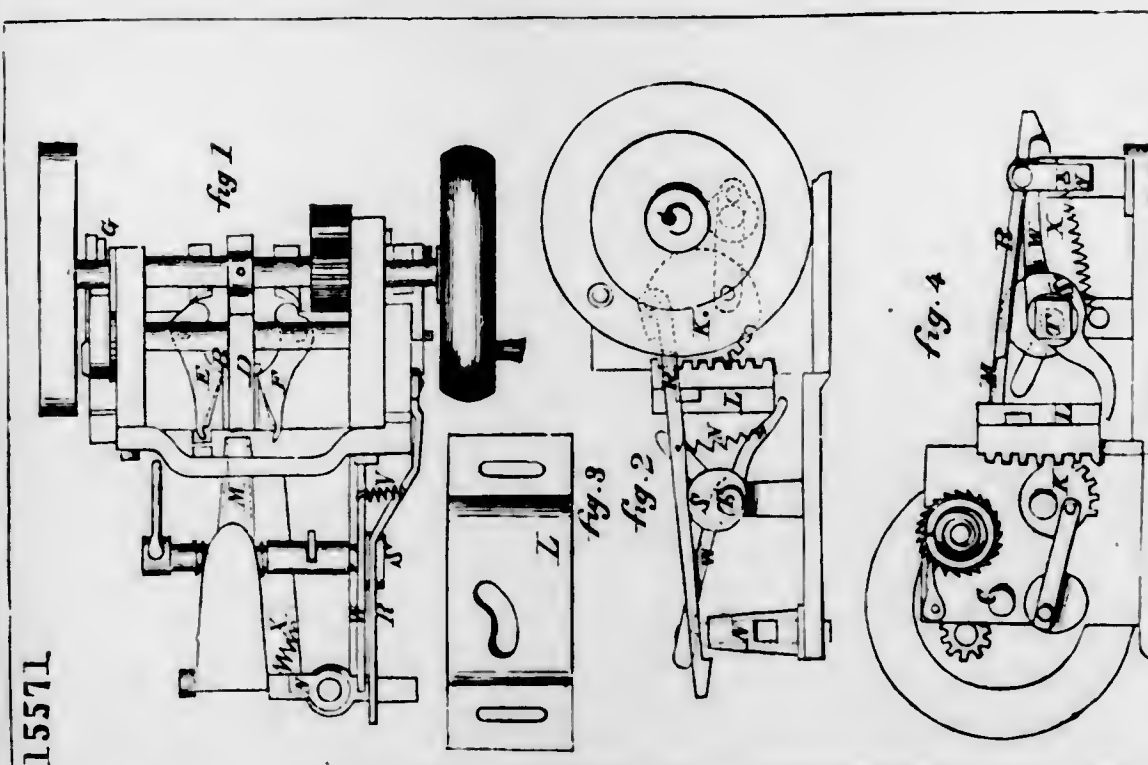
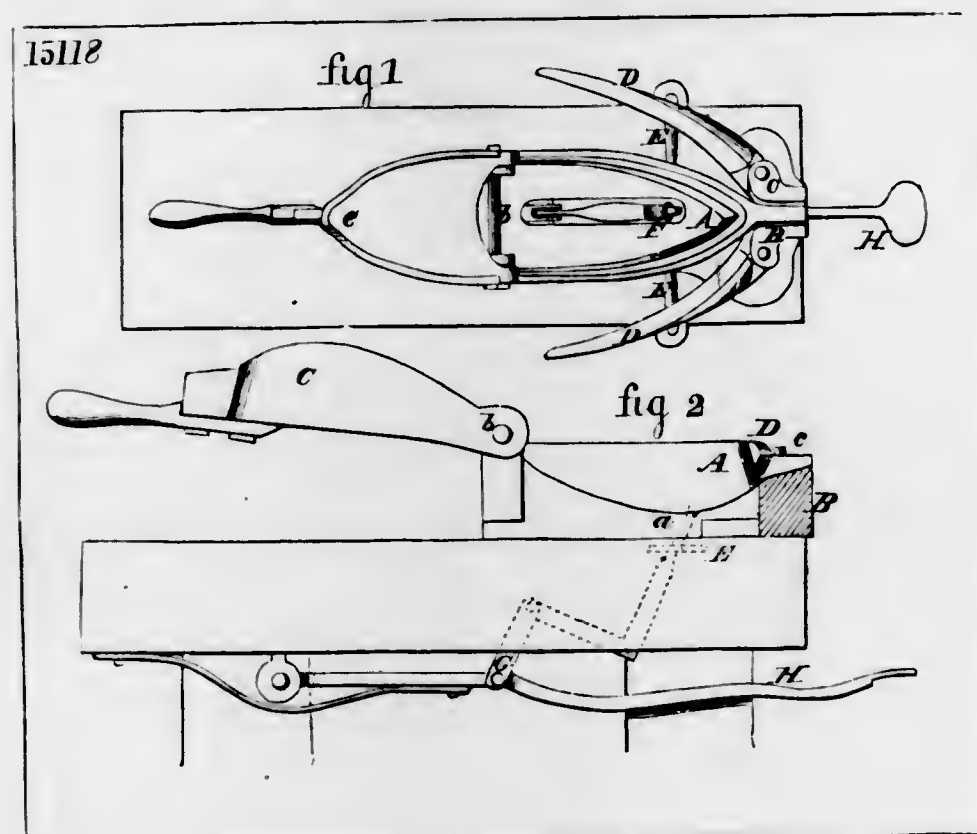
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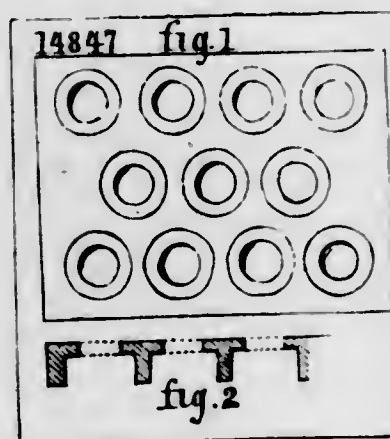
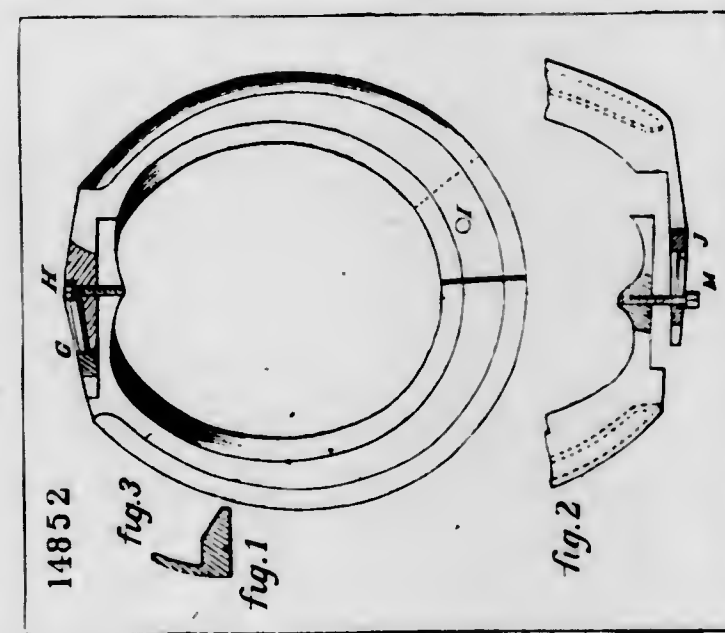
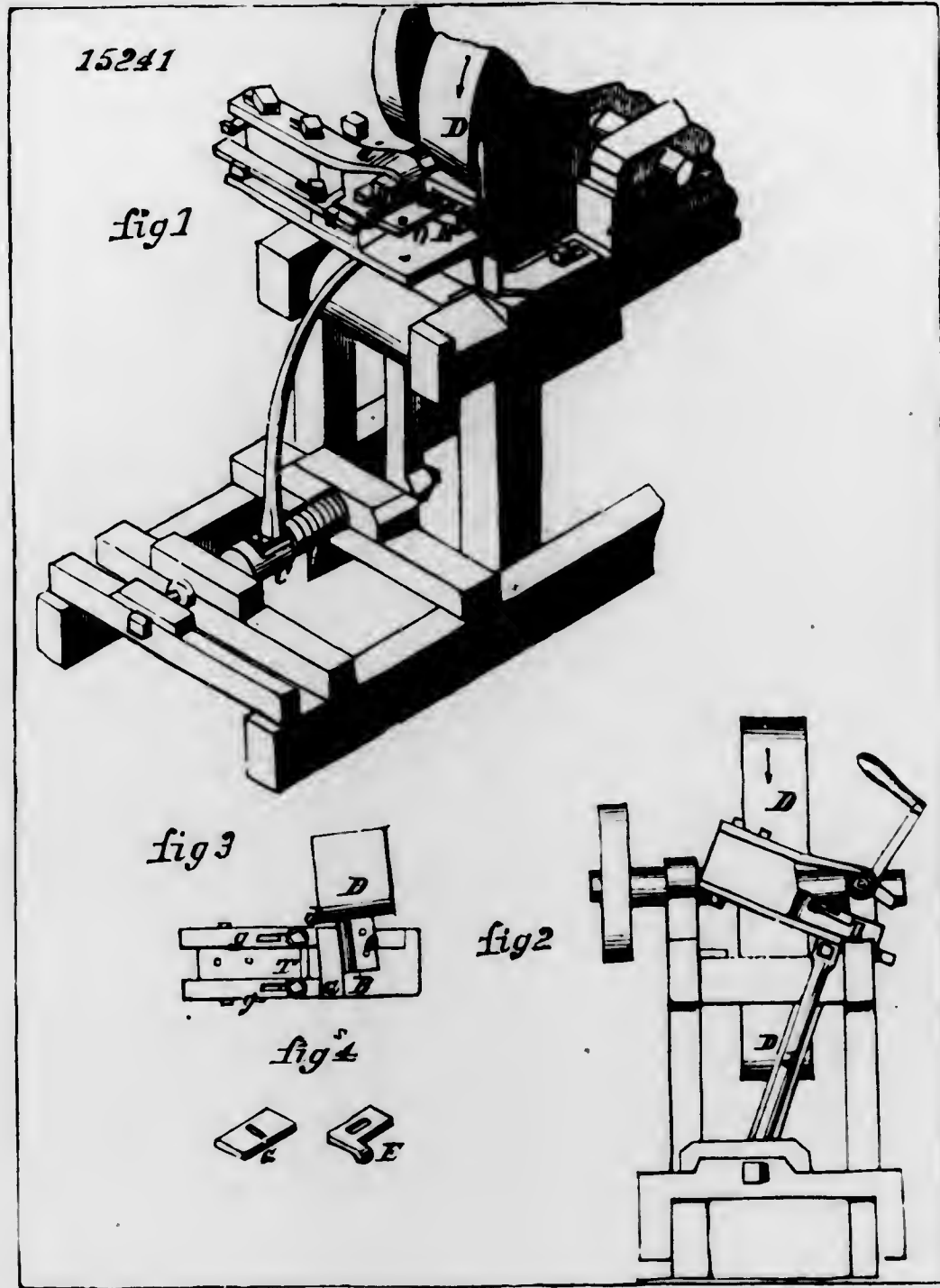
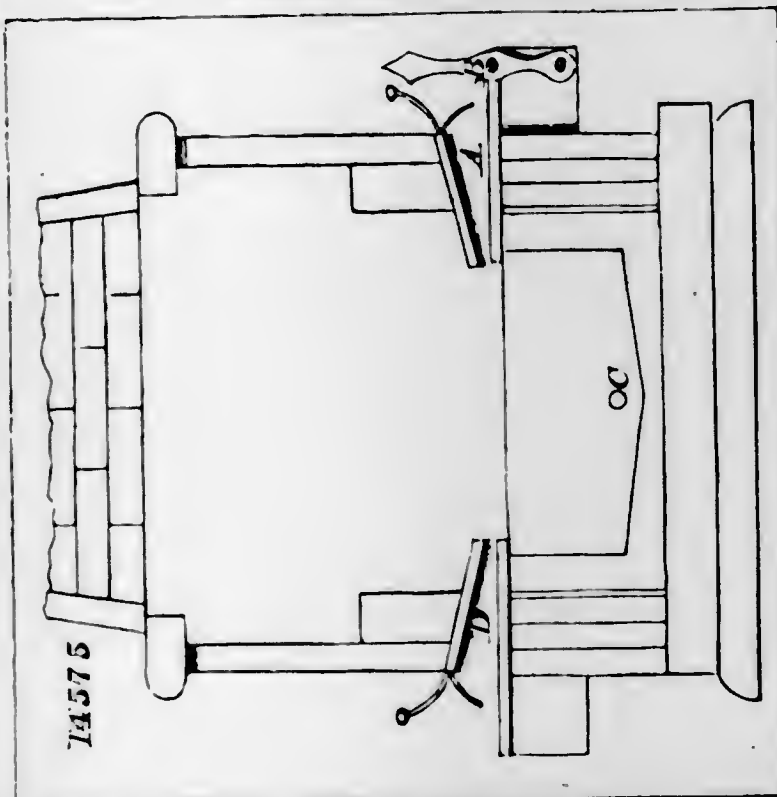
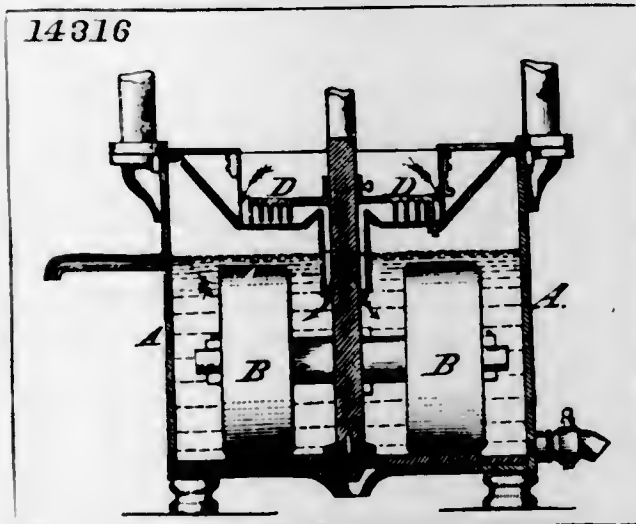
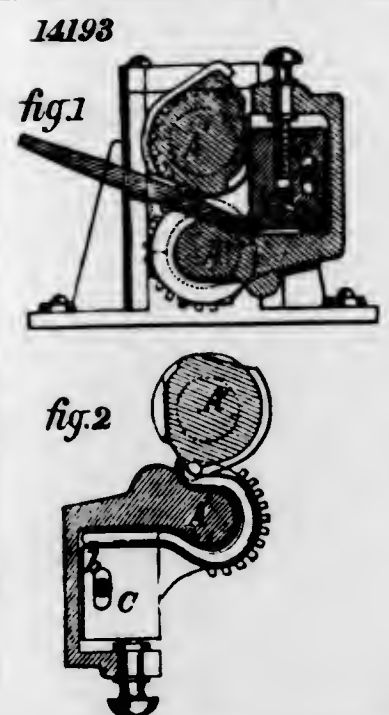
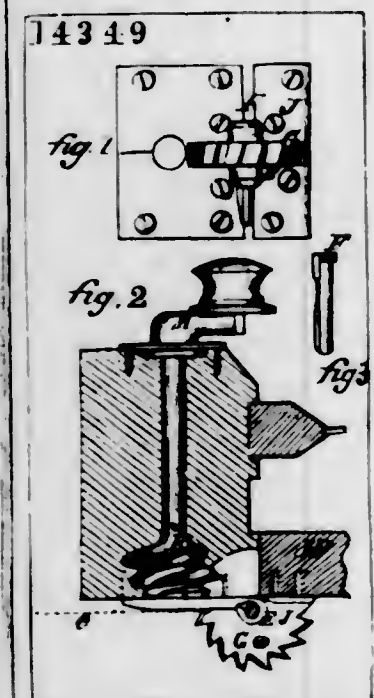
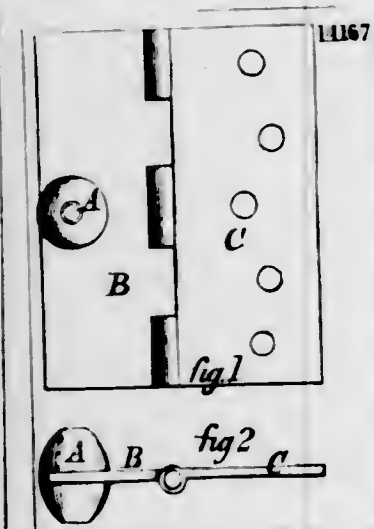
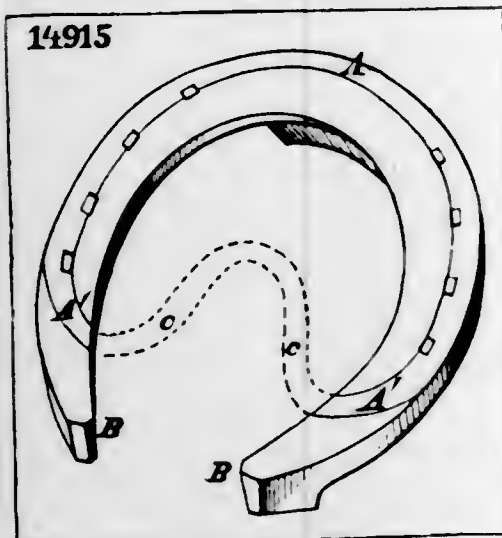


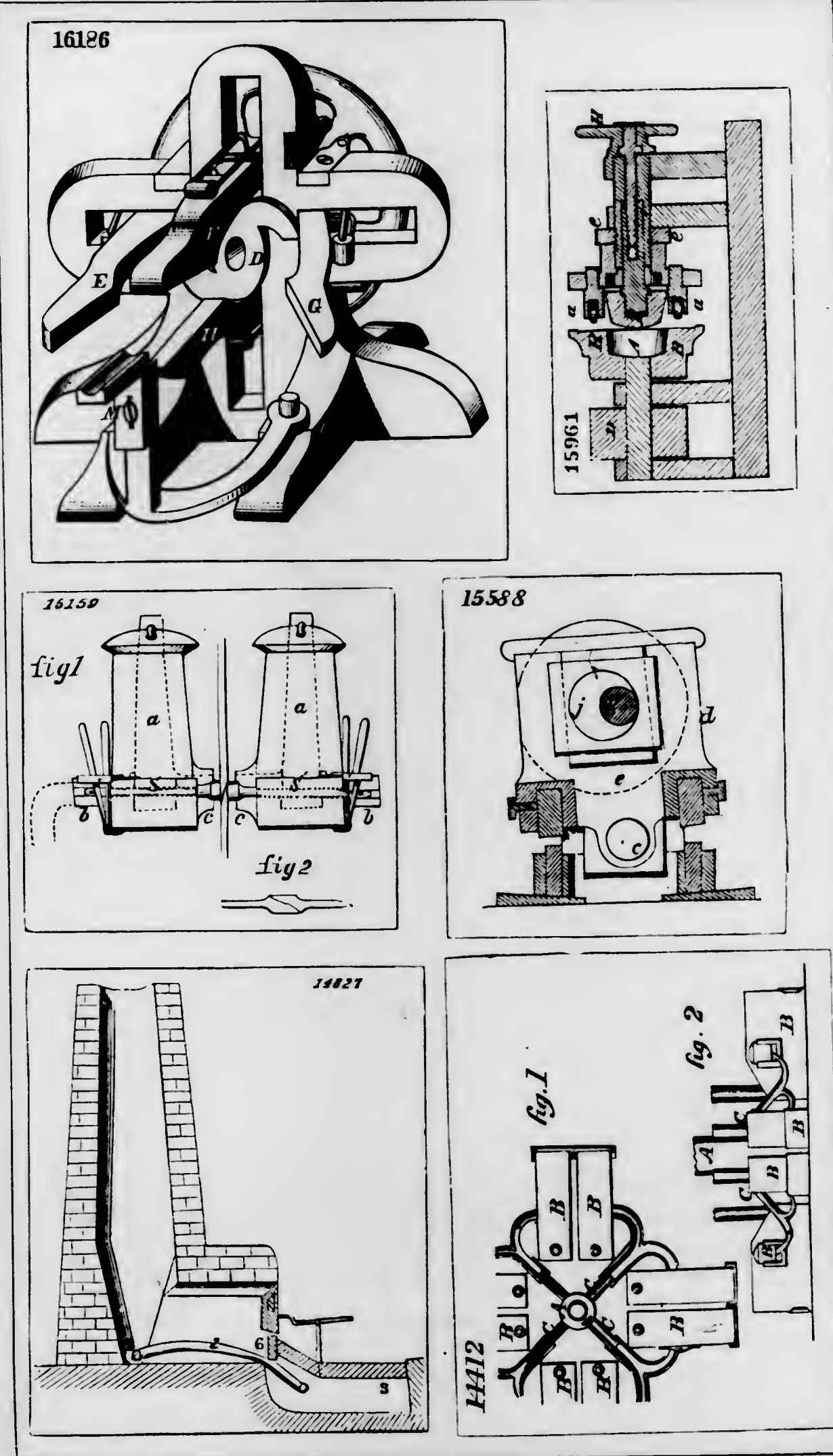
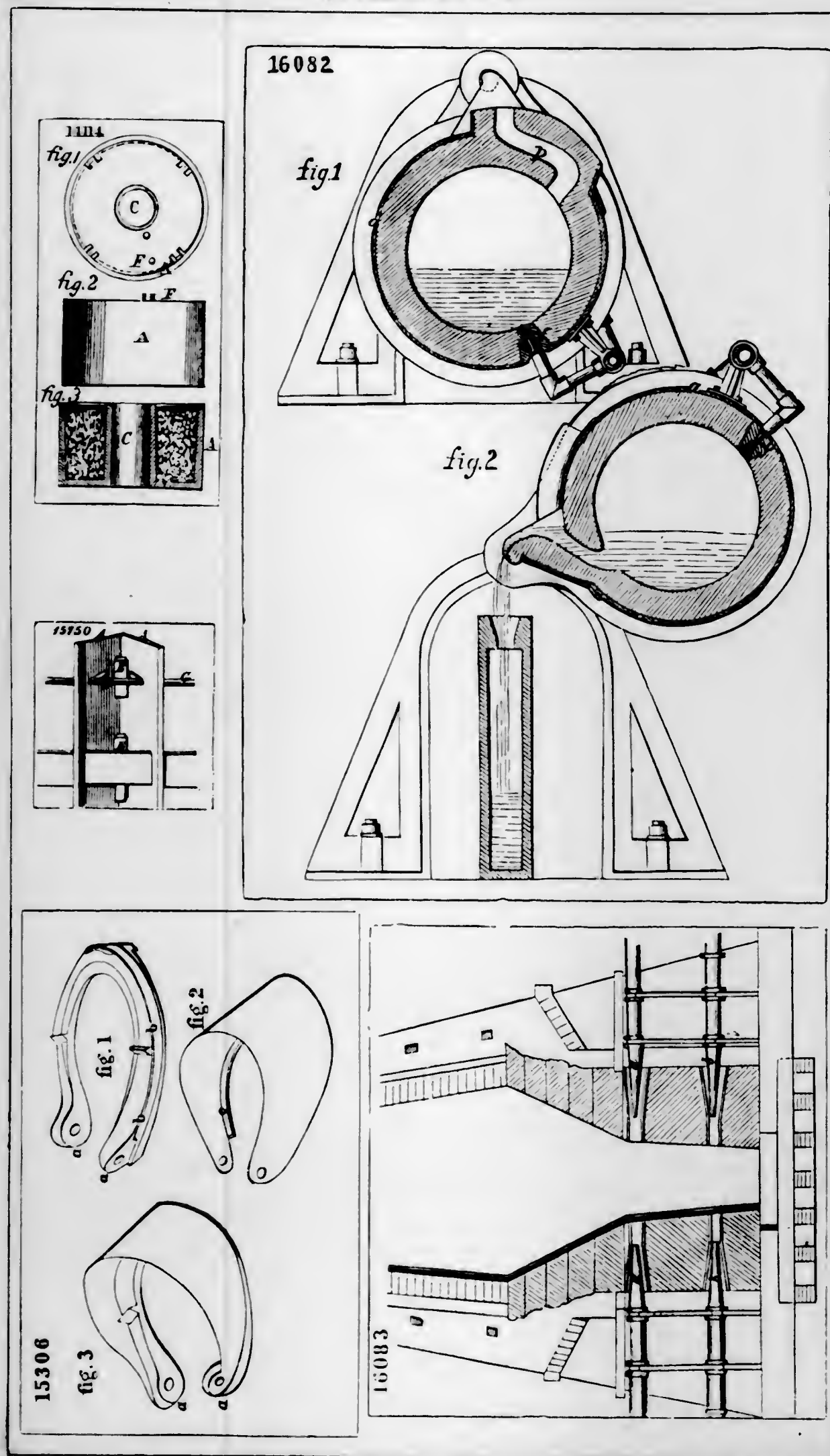
14280

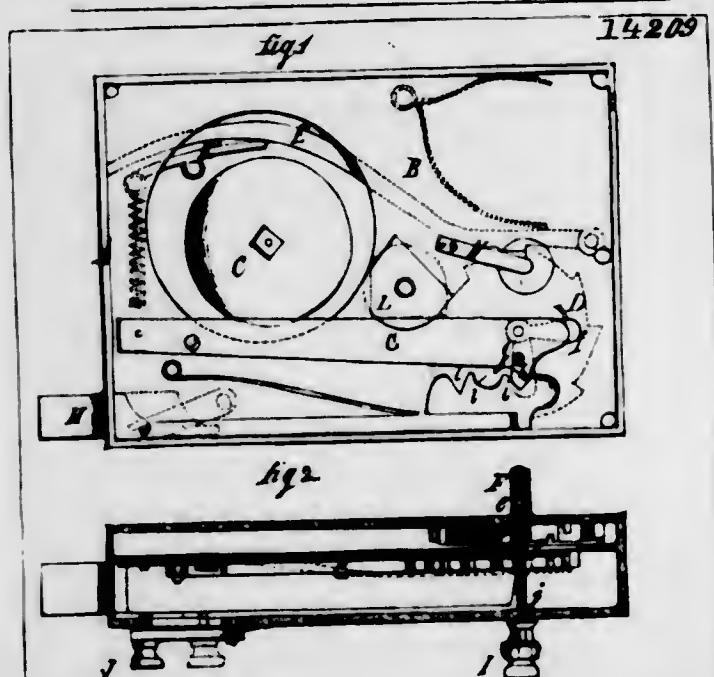
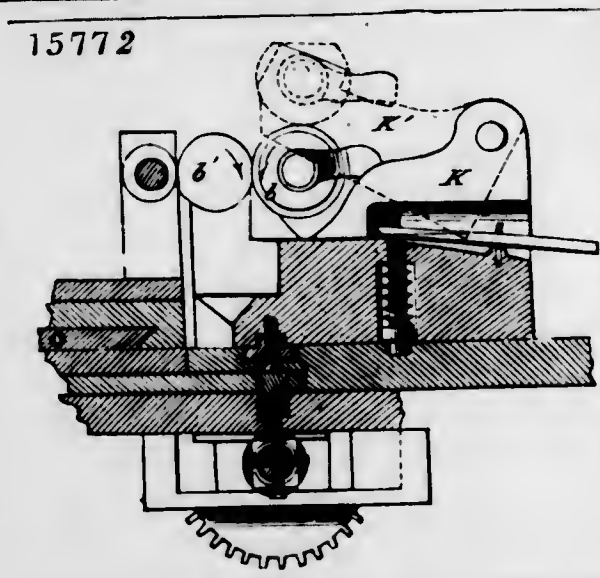
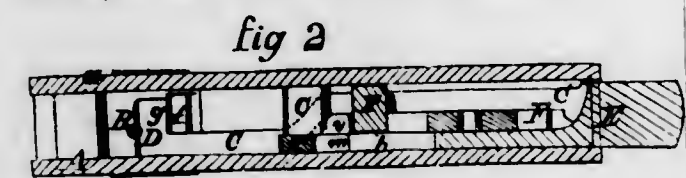
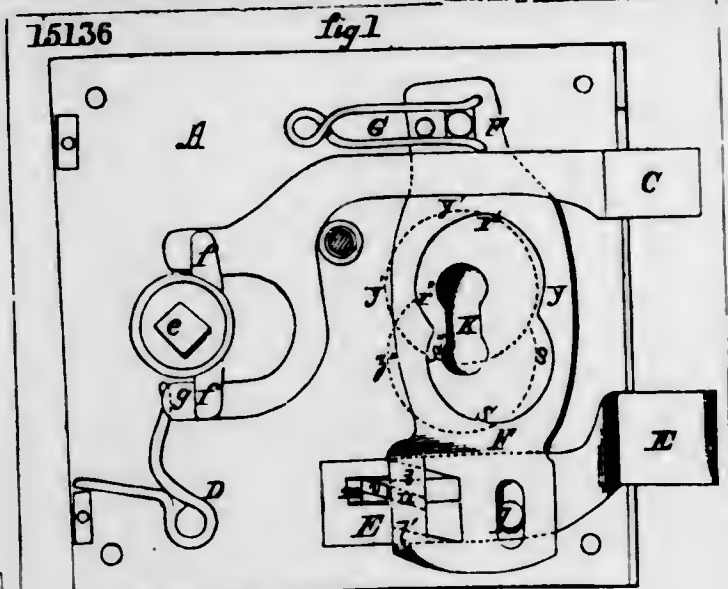
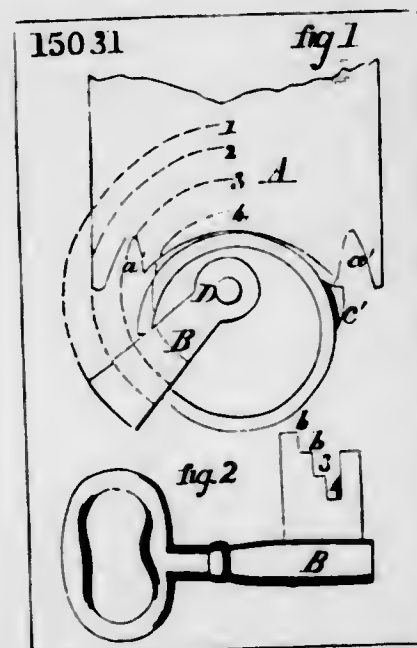
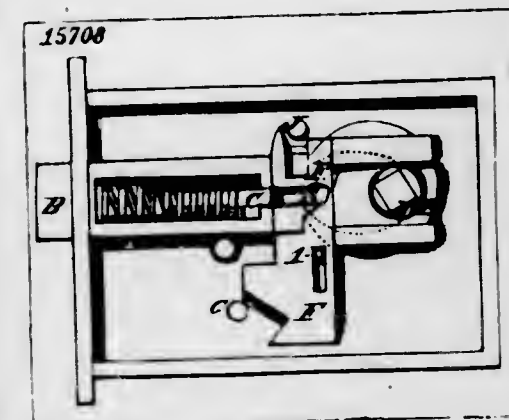
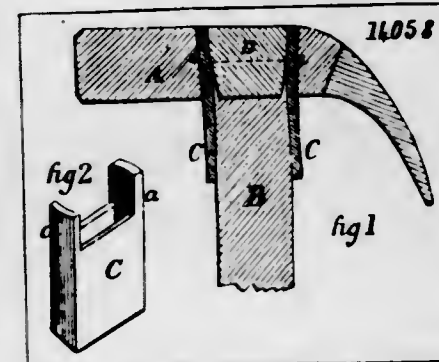
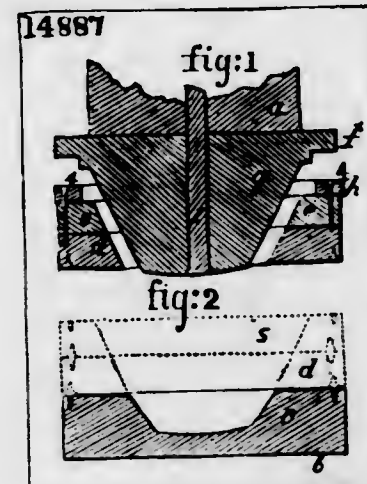
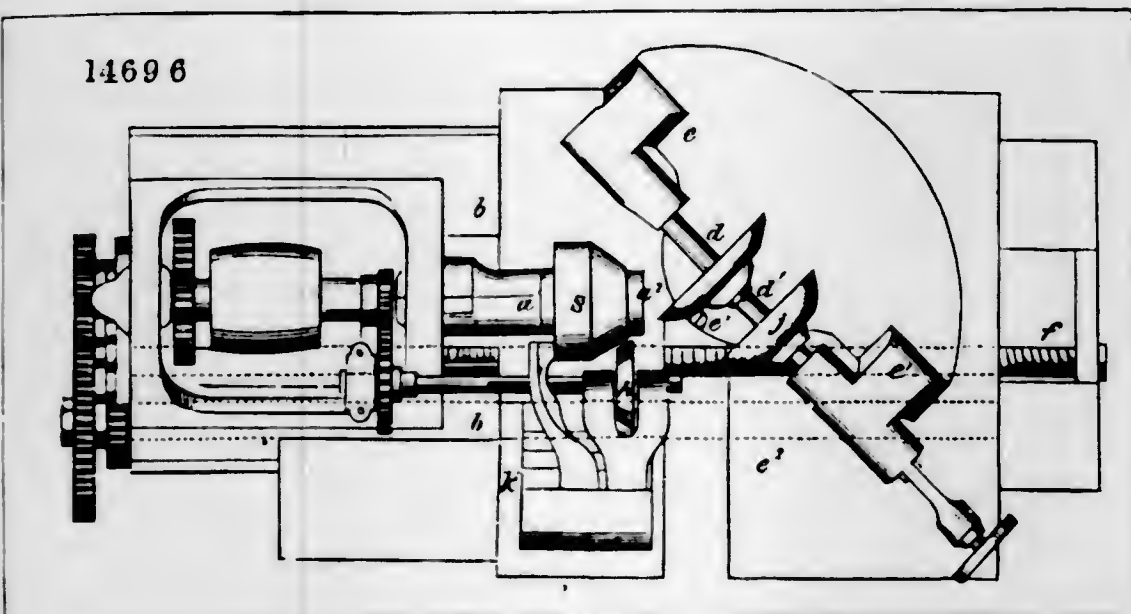
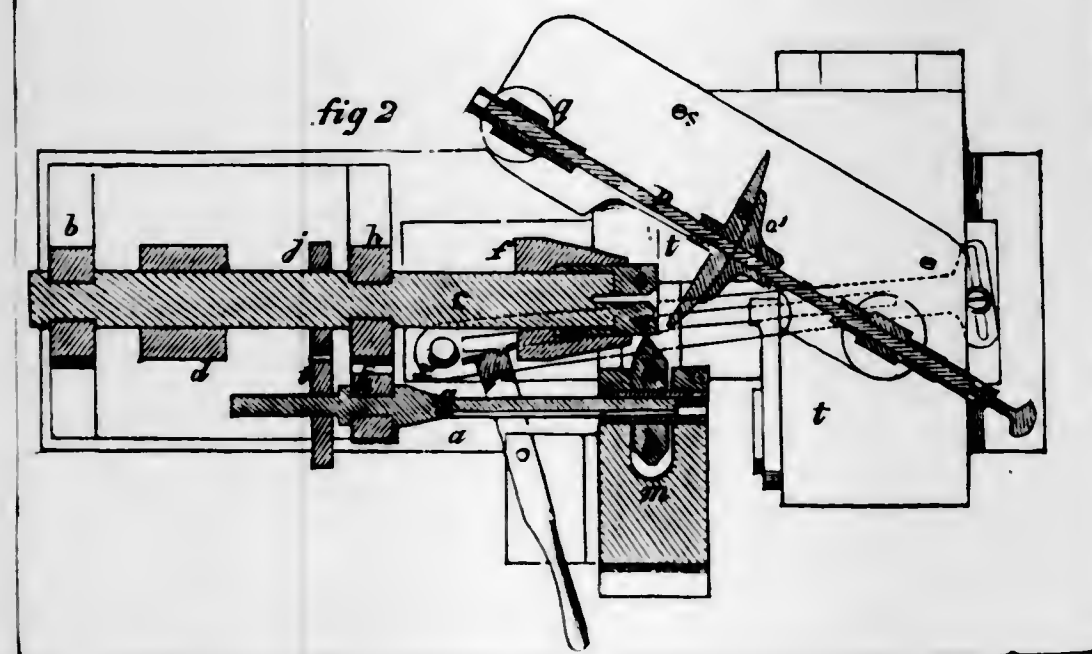
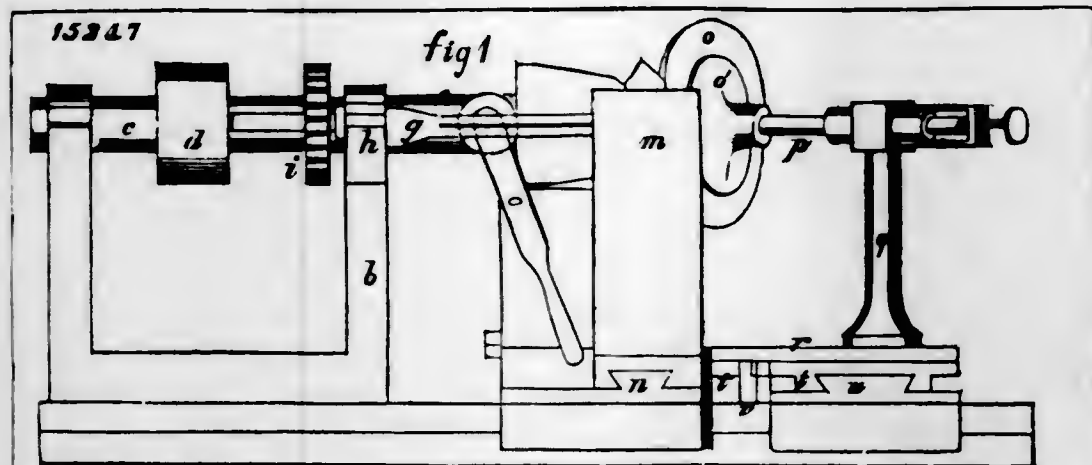


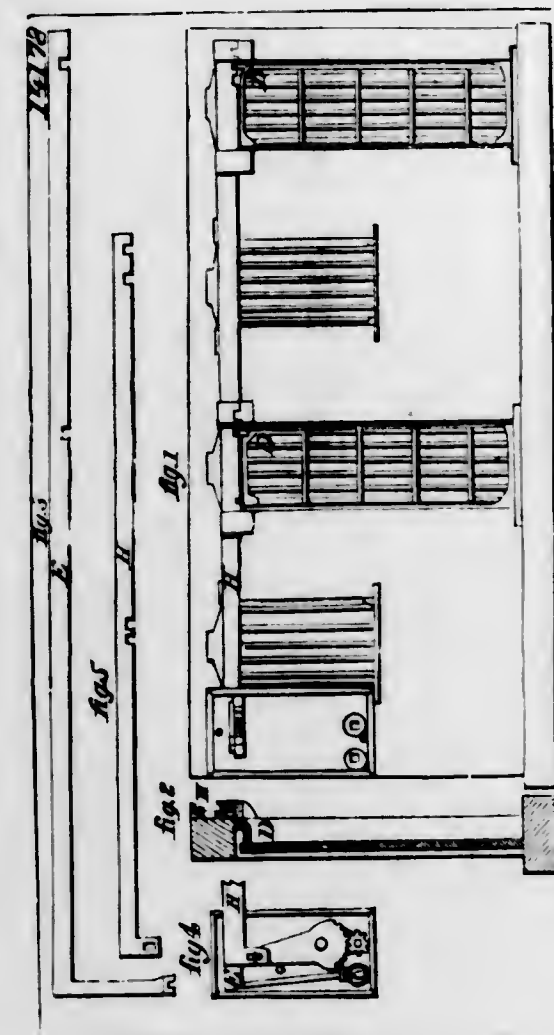
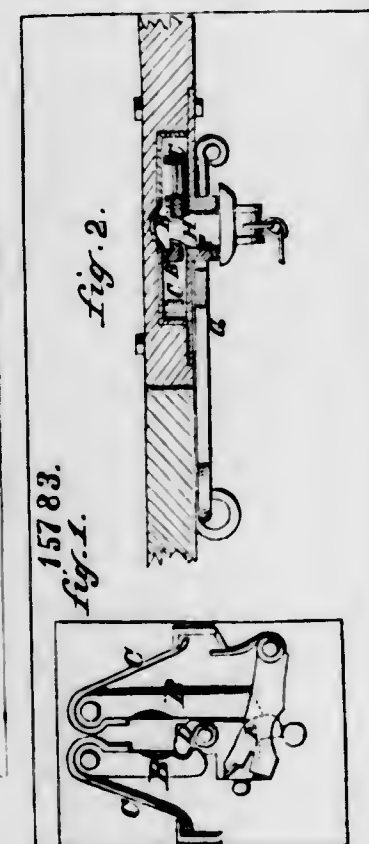
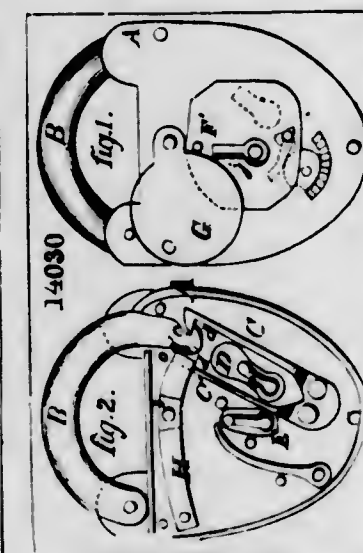
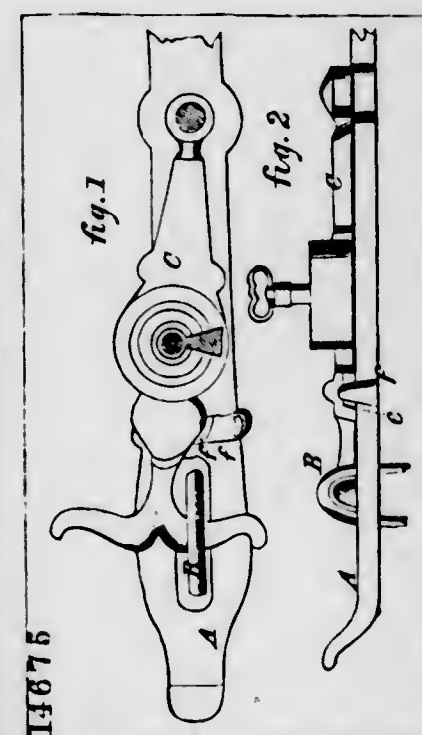
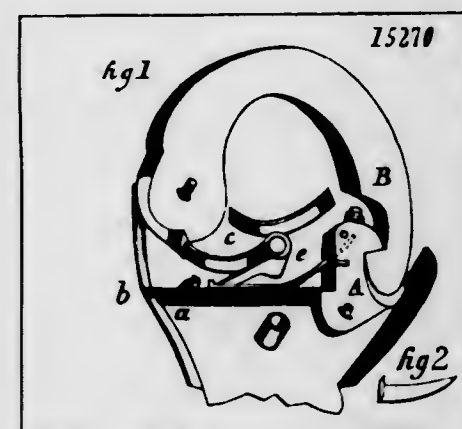
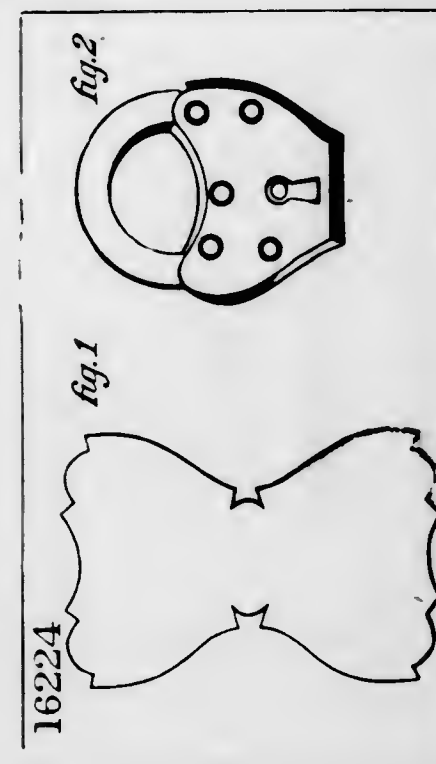
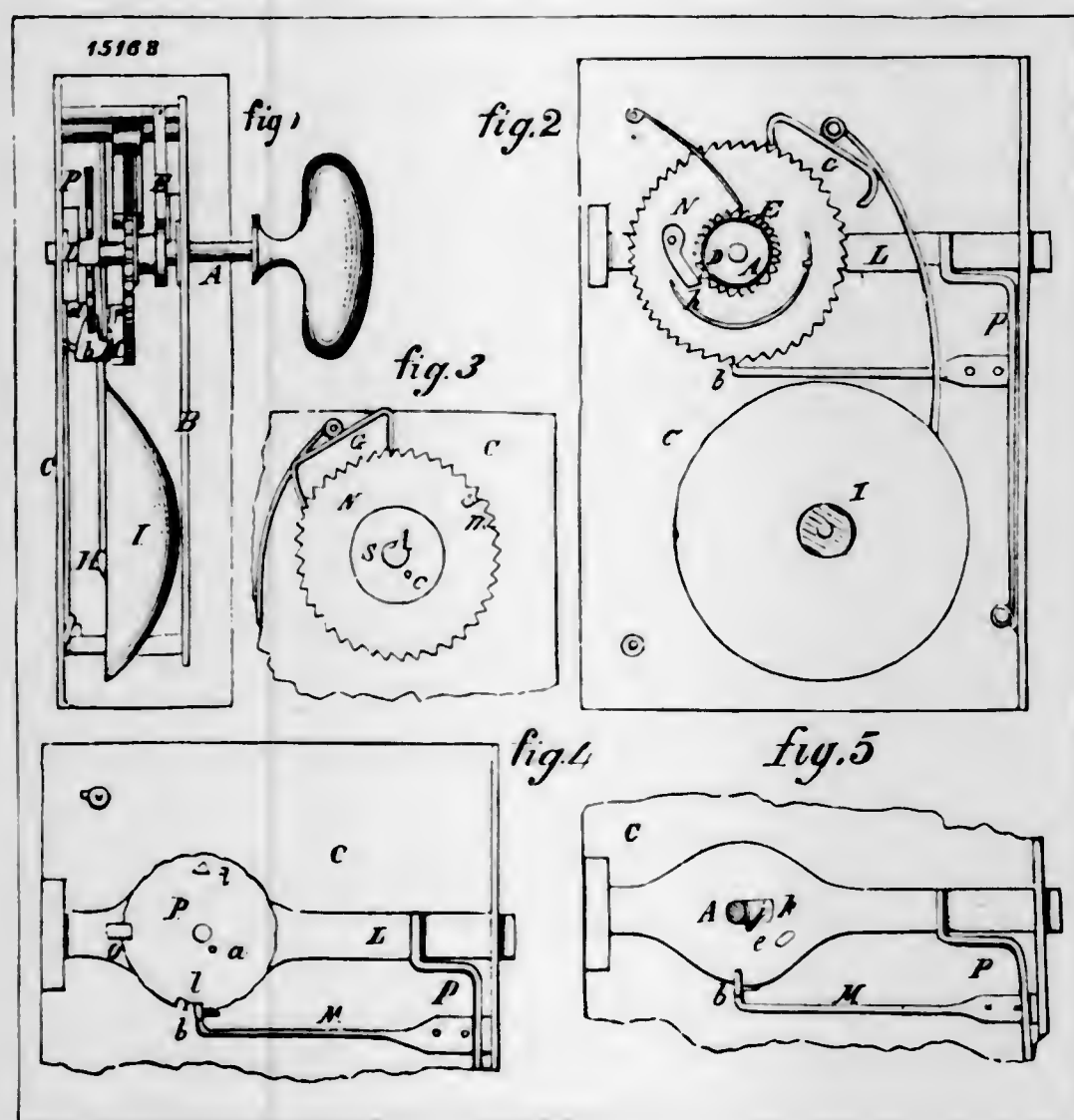
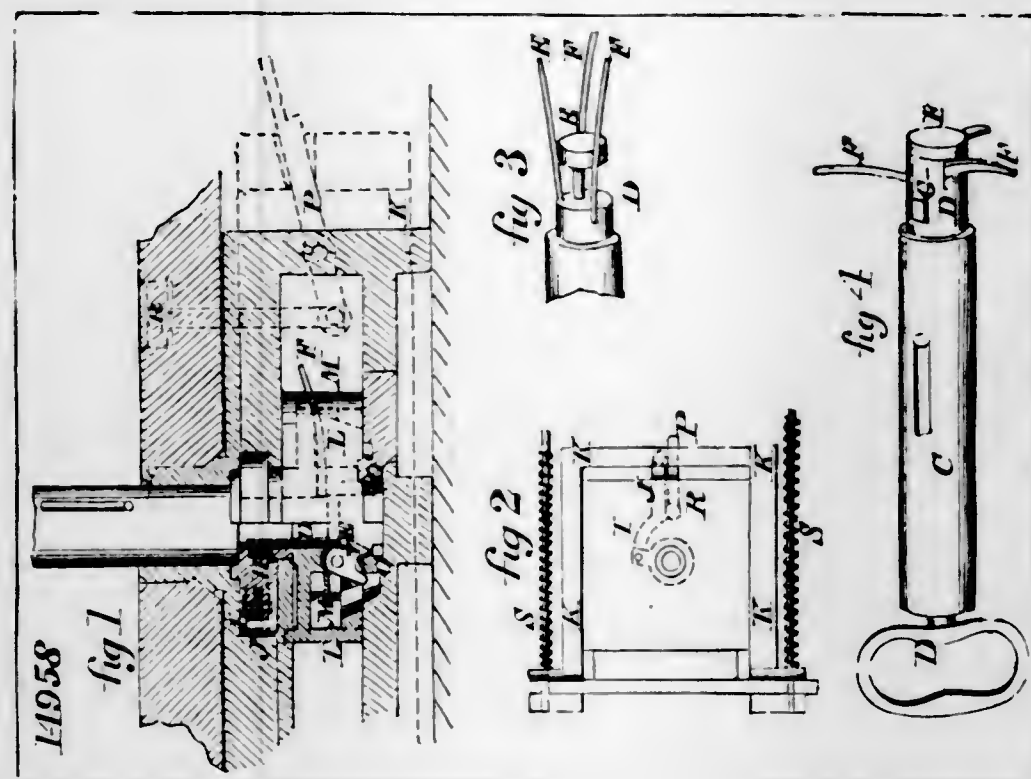
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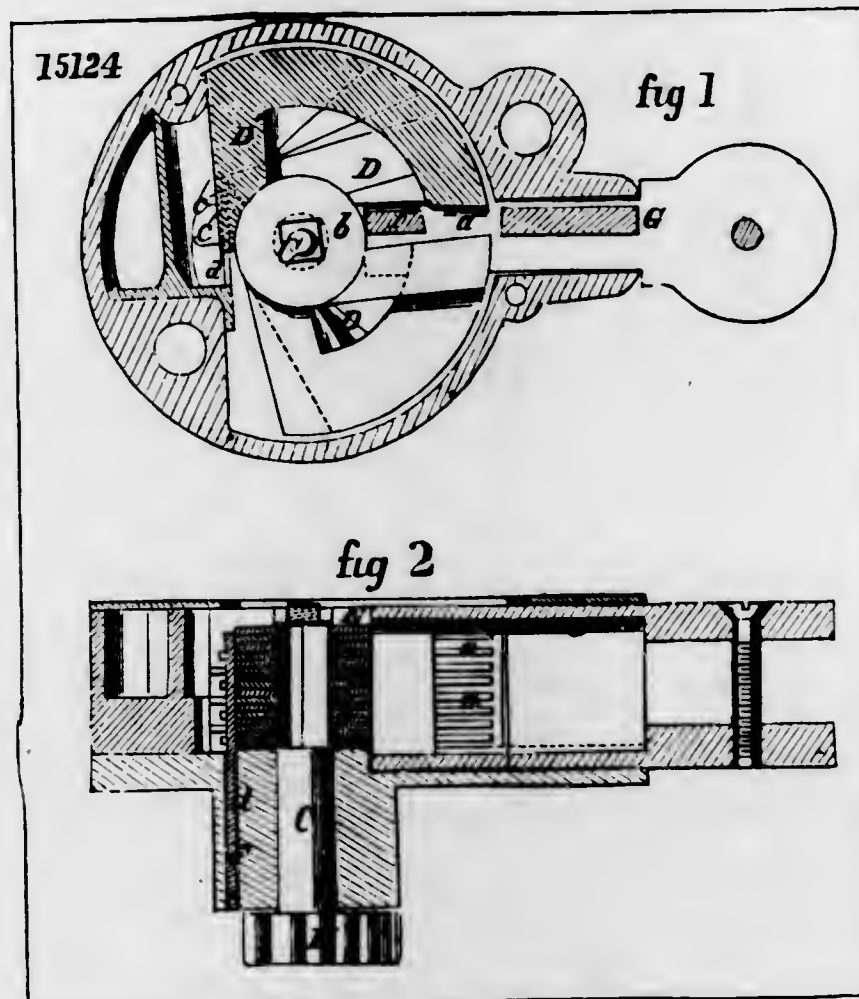
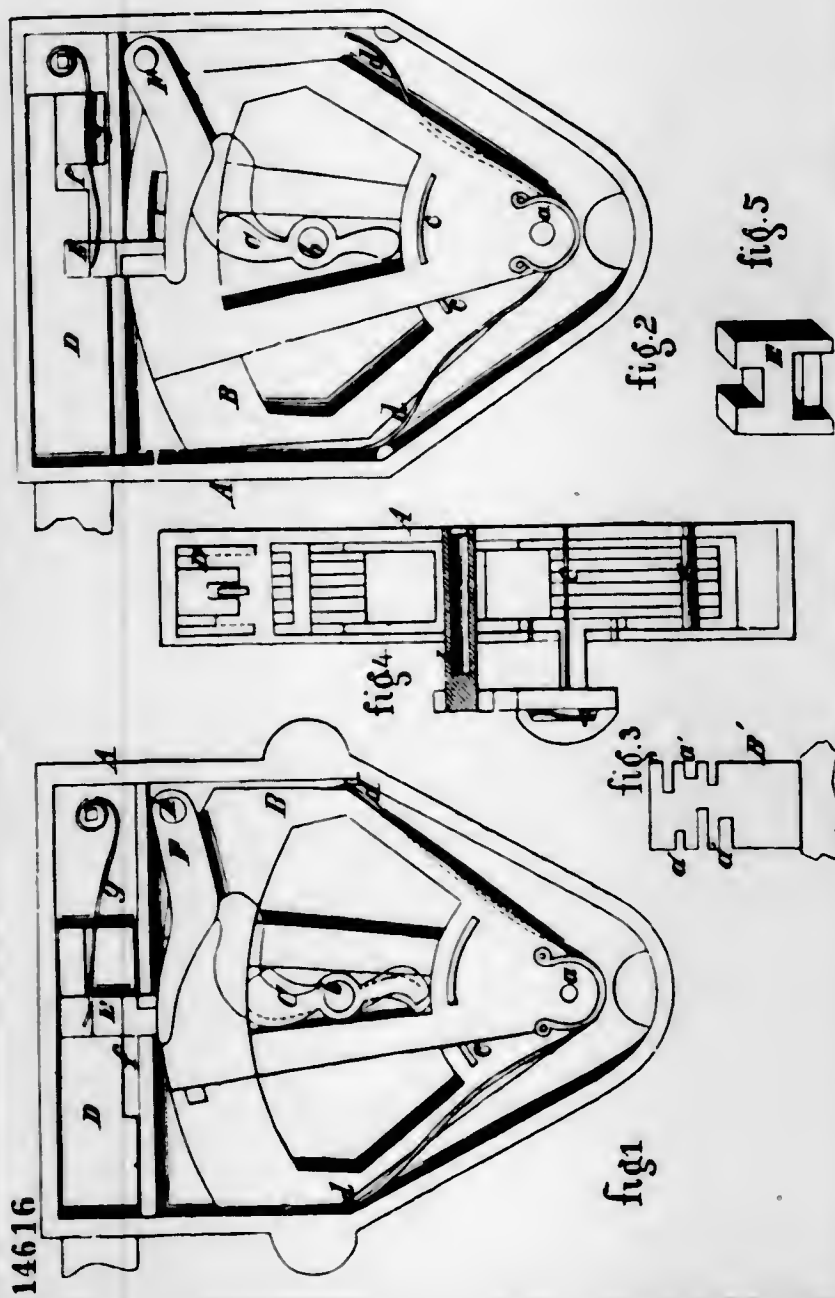
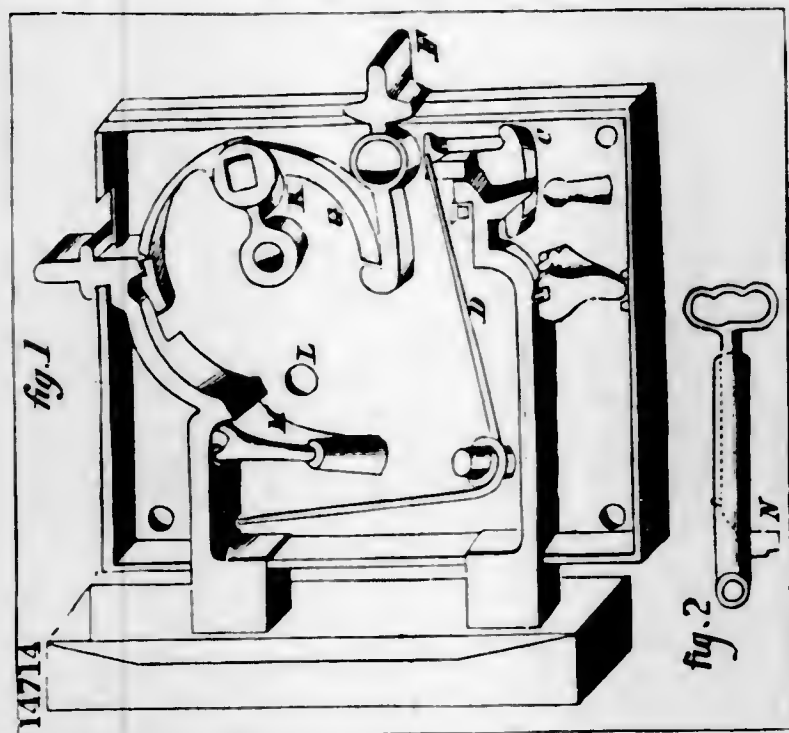




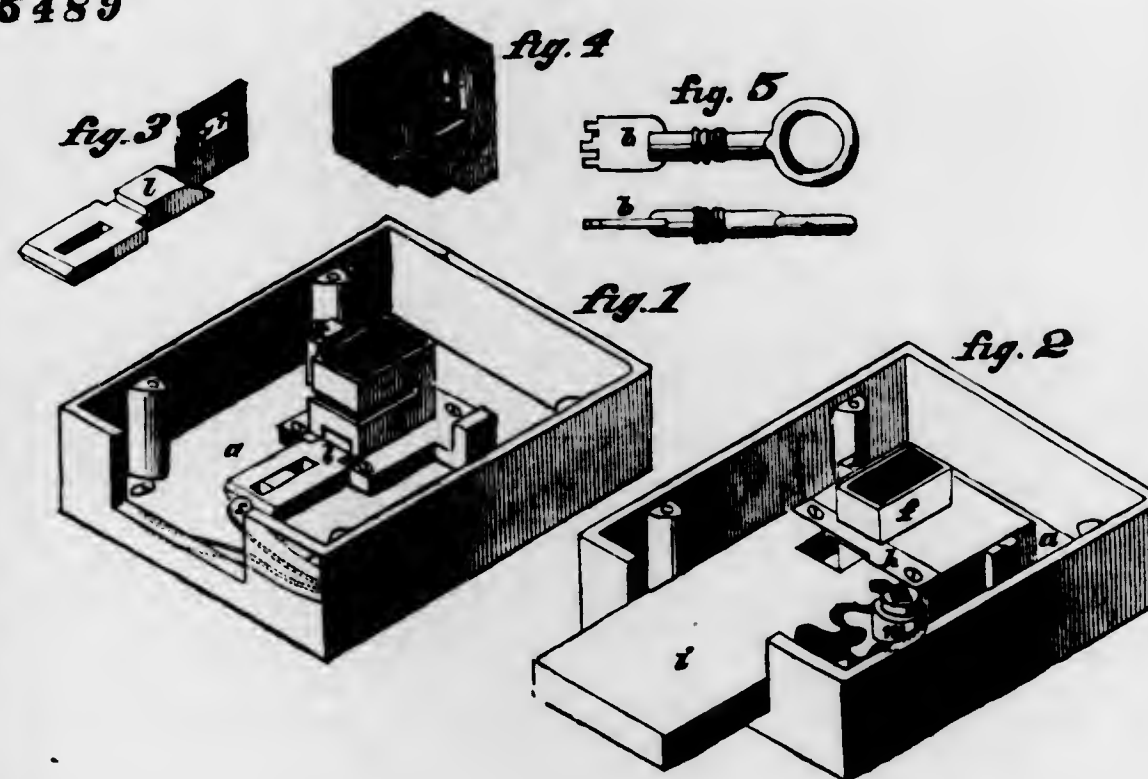




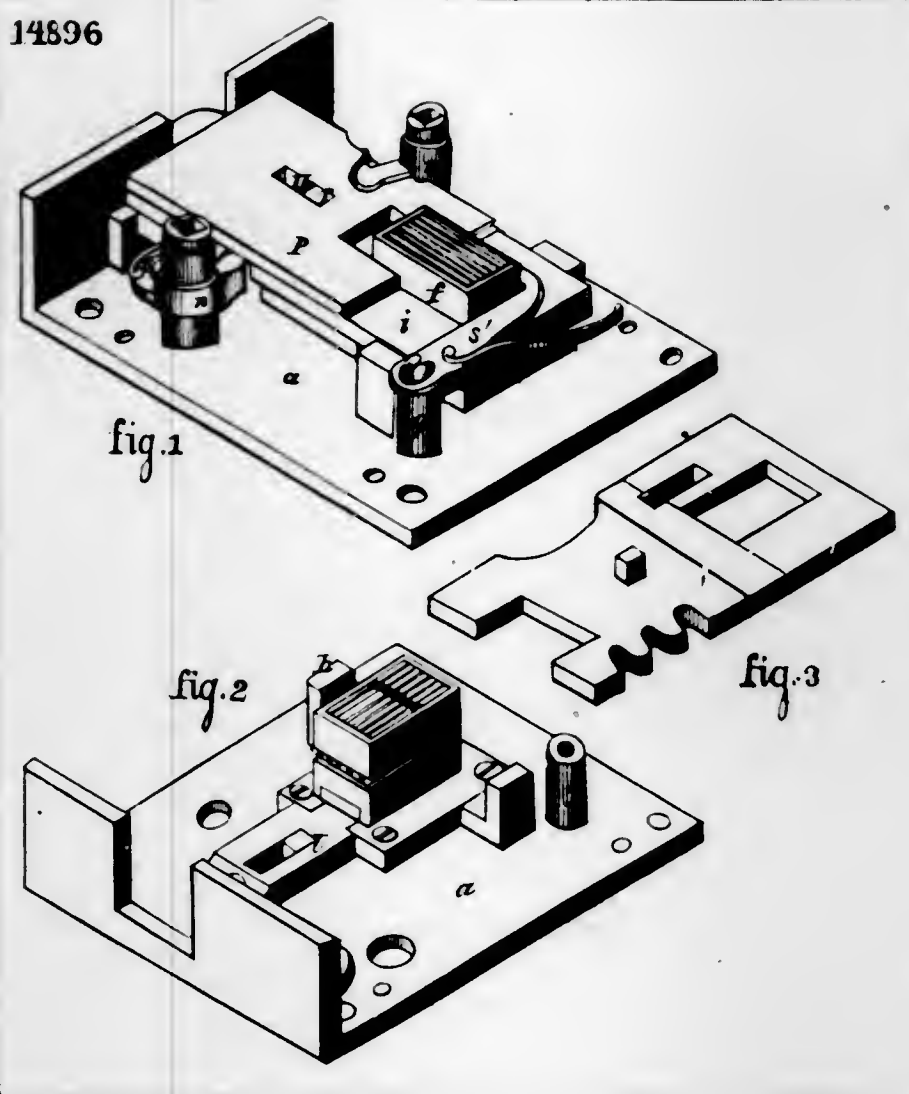




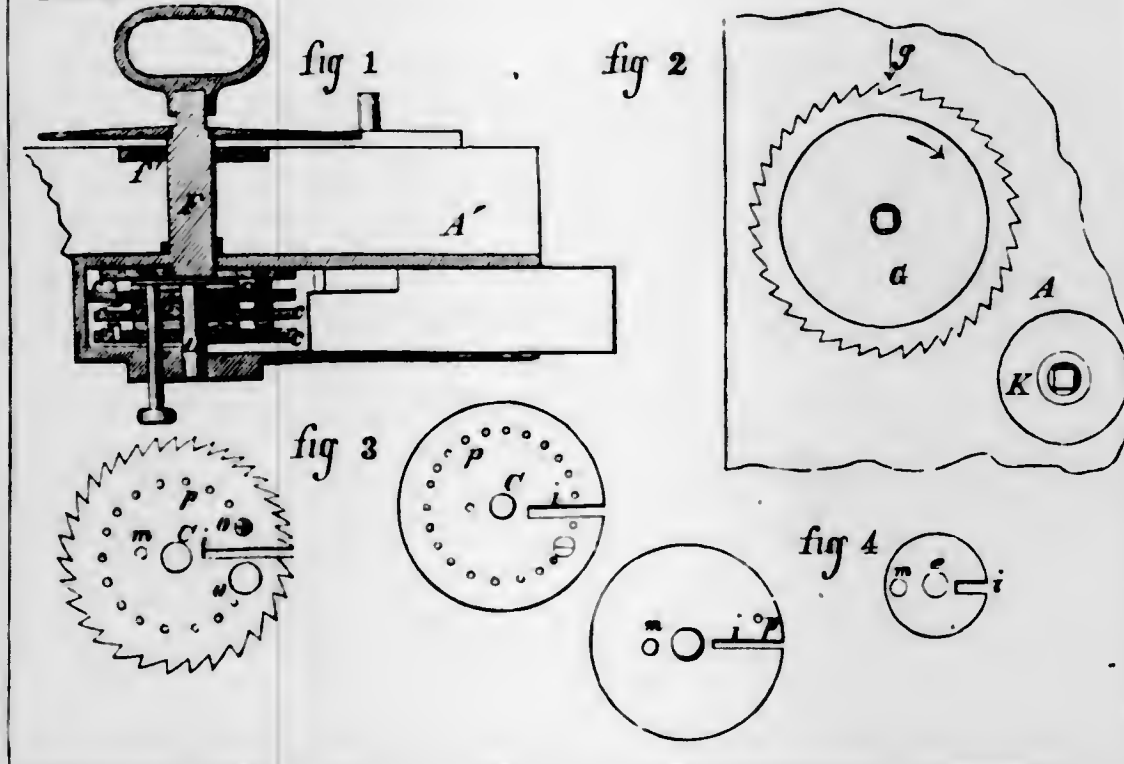
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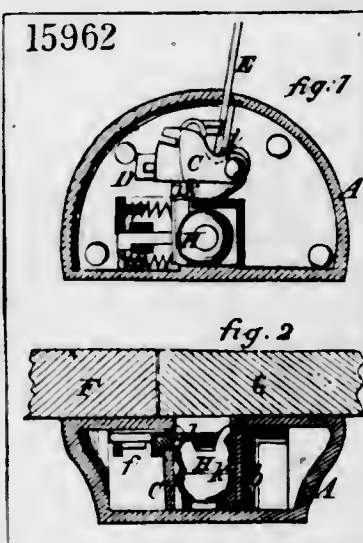
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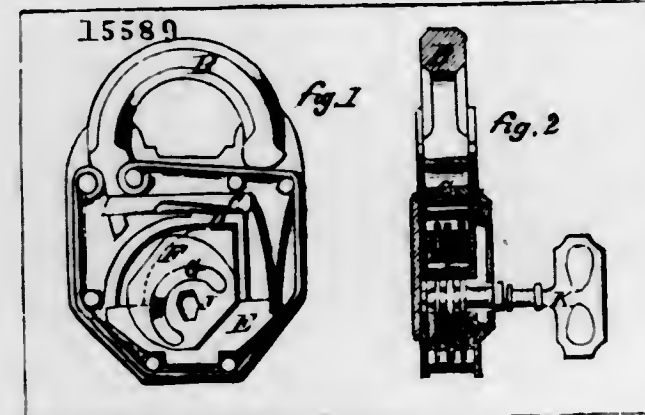
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15962



15589



15239

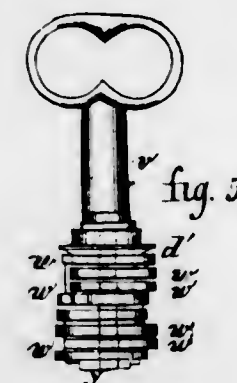
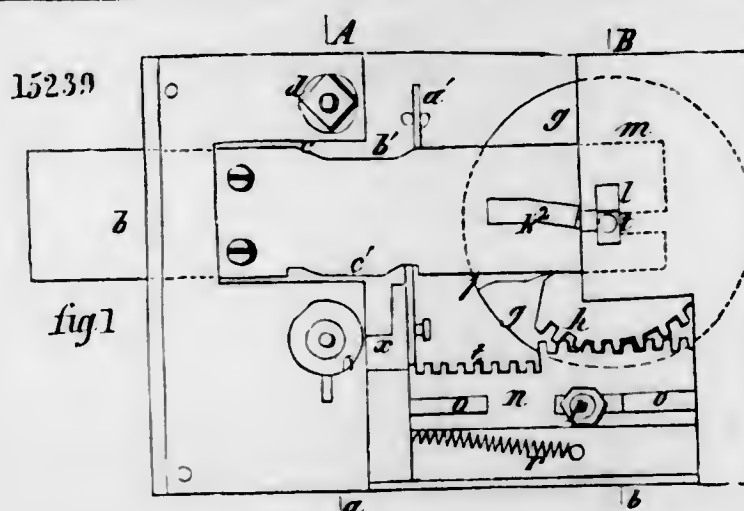


fig. 4c

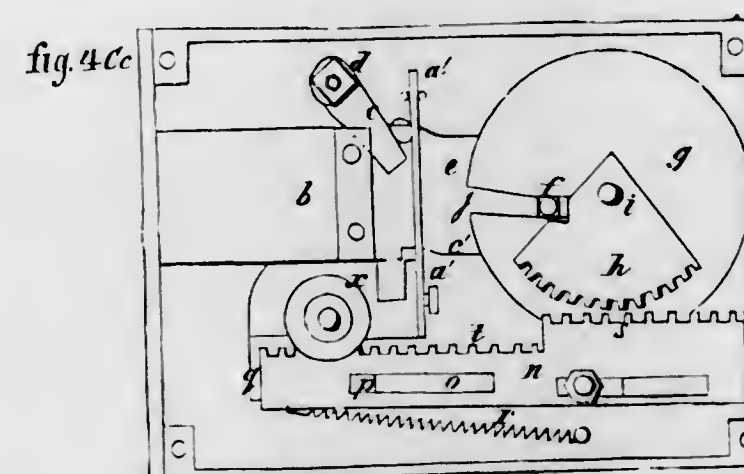


fig. 2 Aa

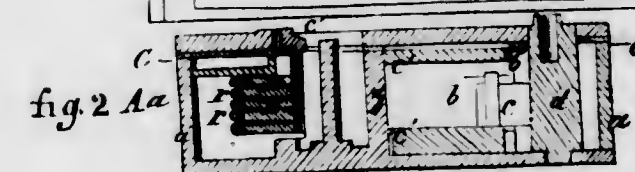
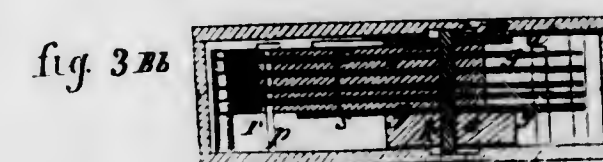
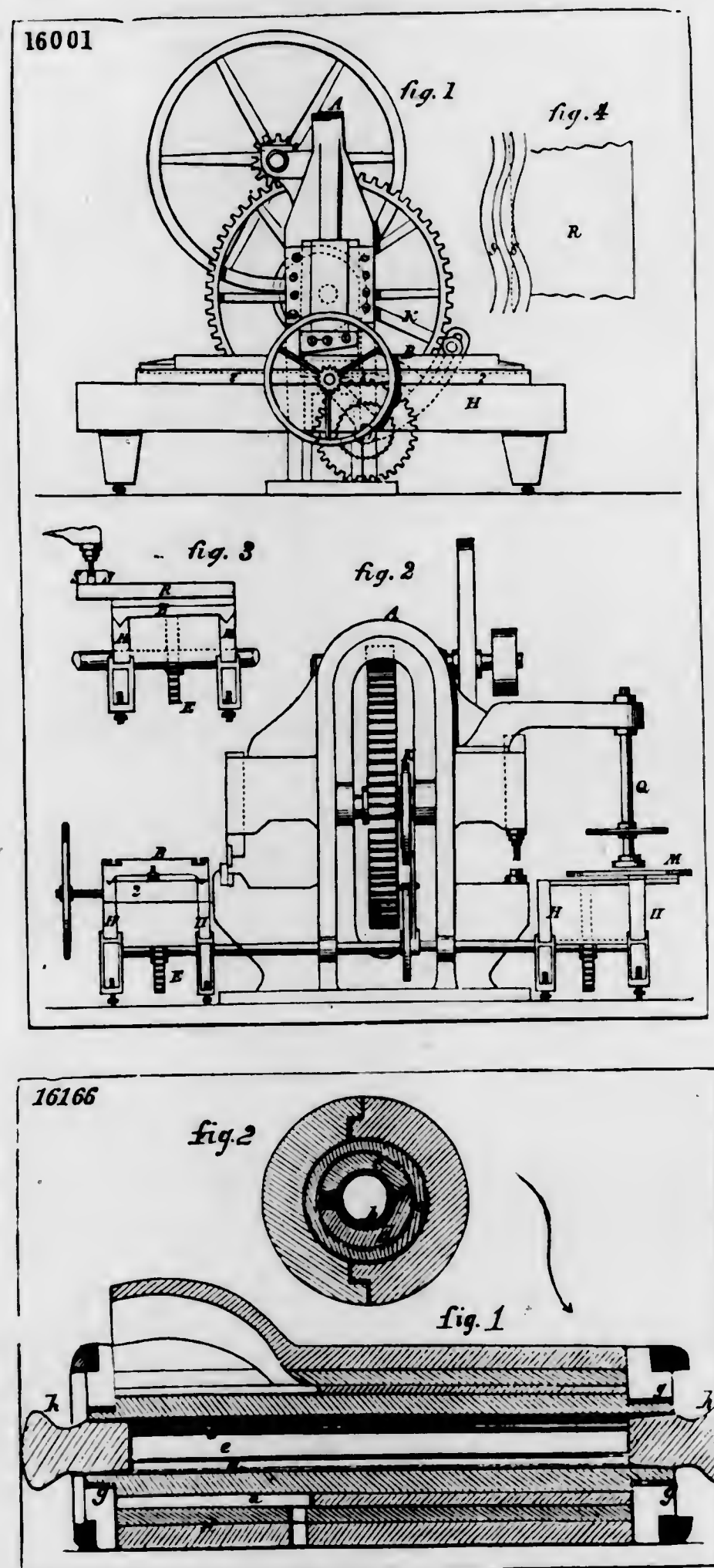
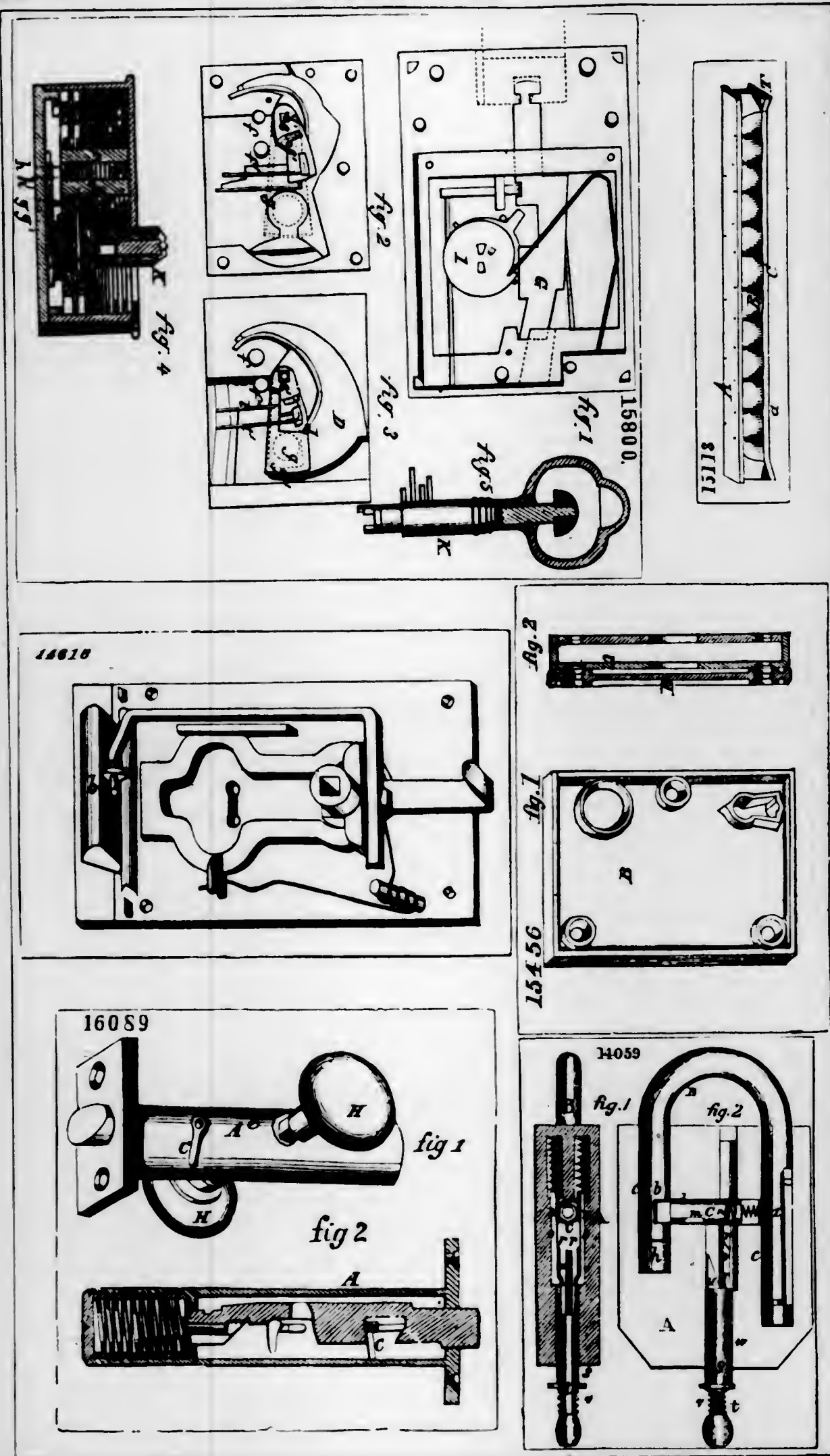
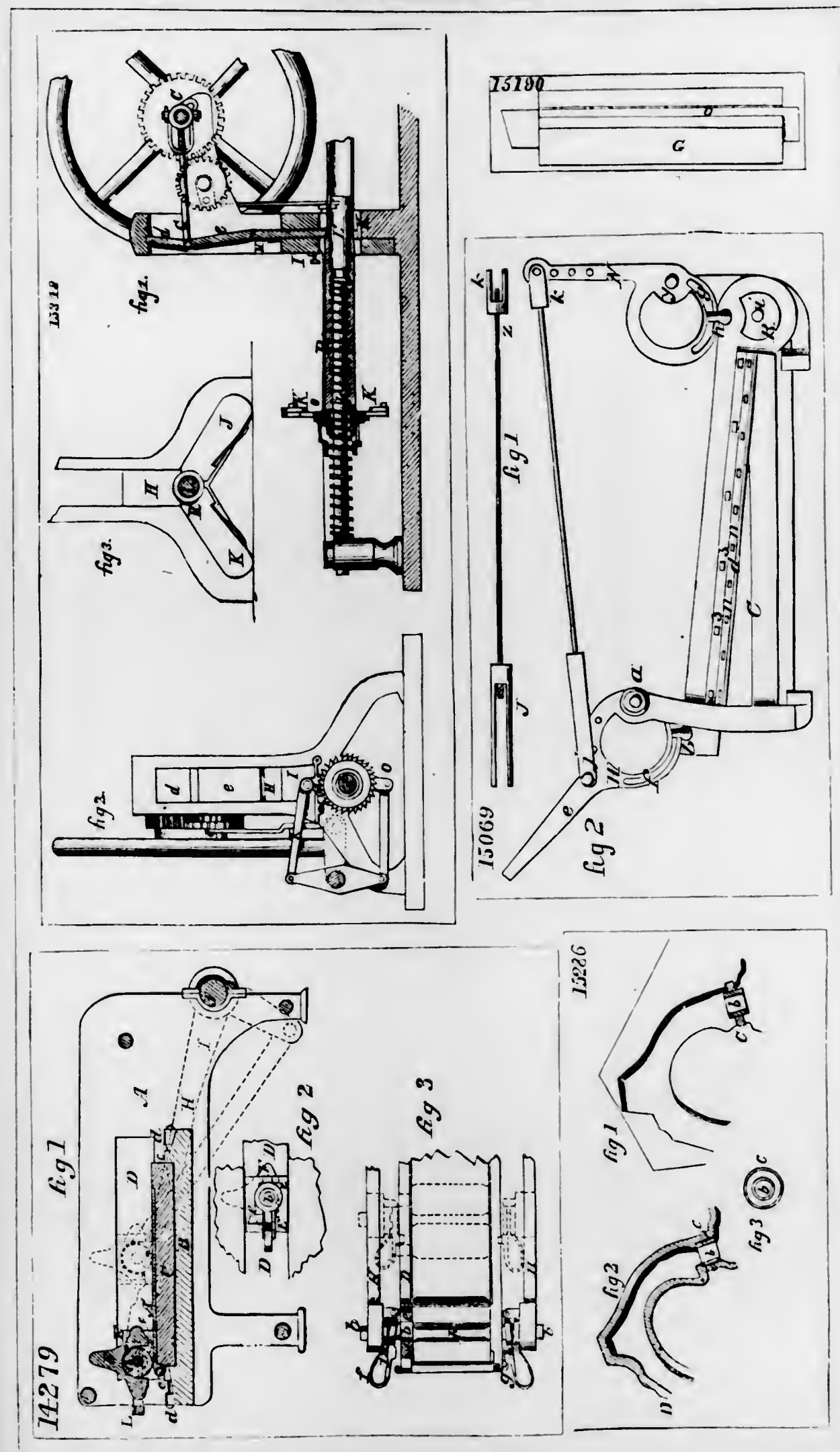
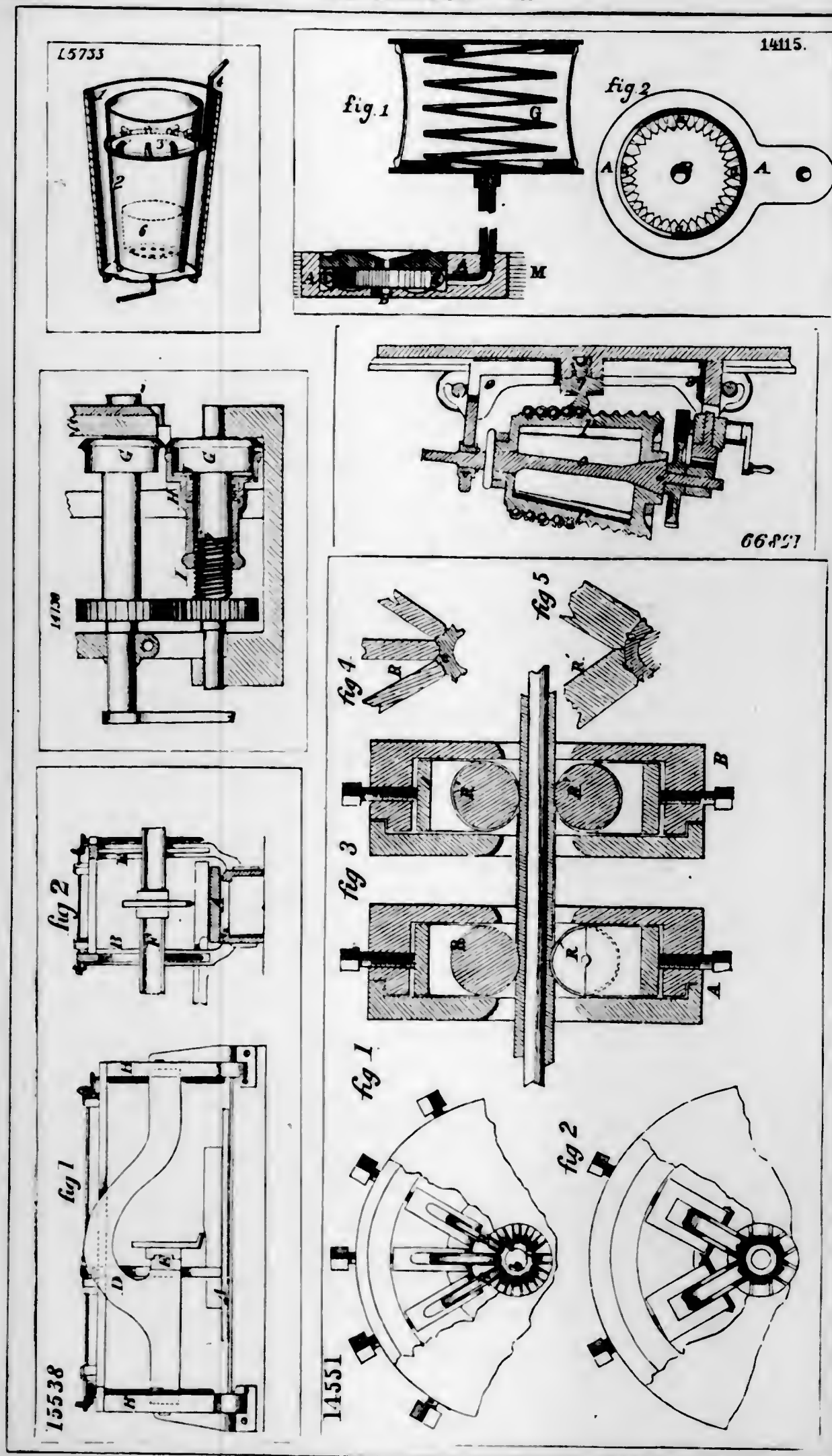
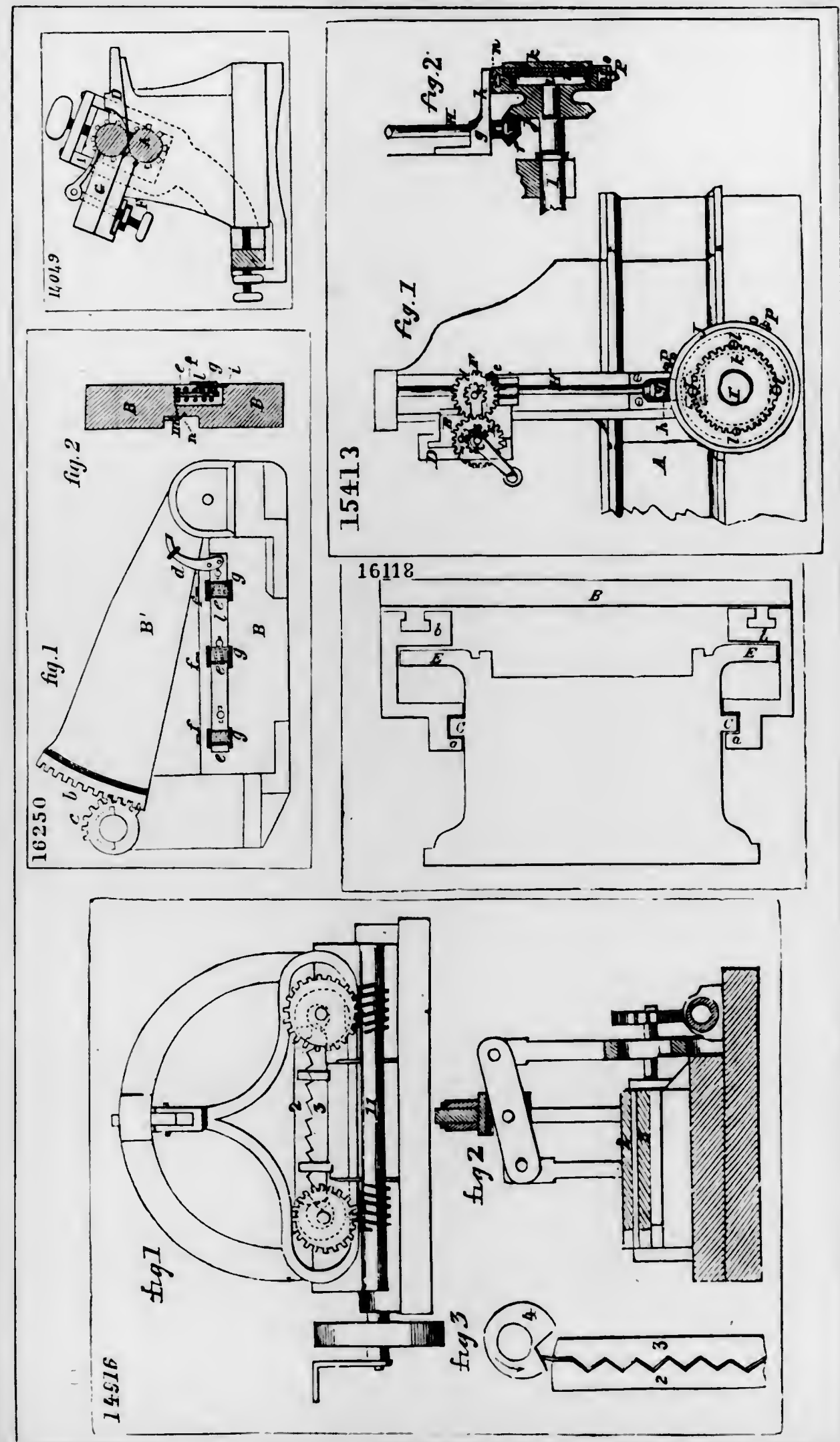
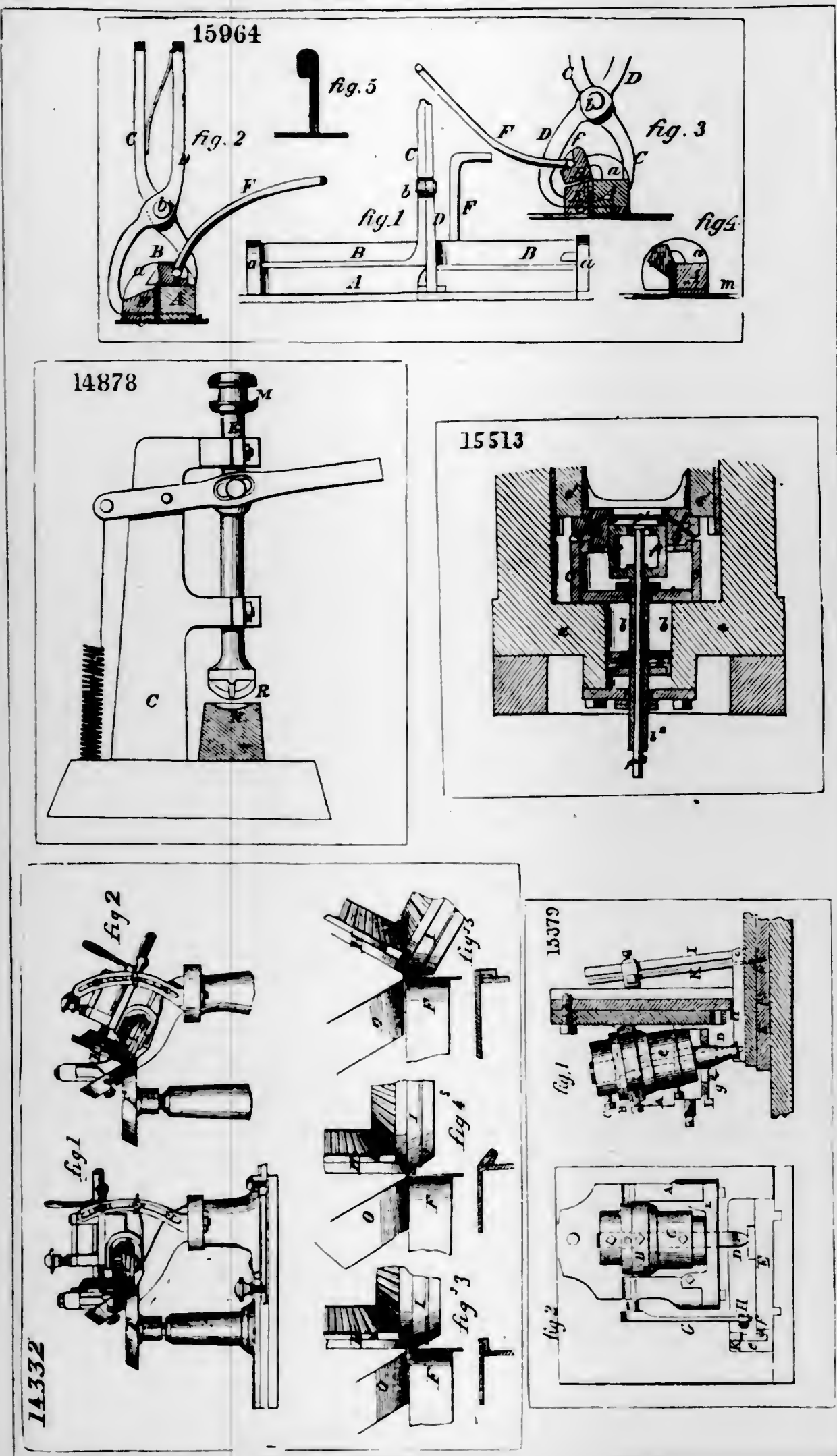


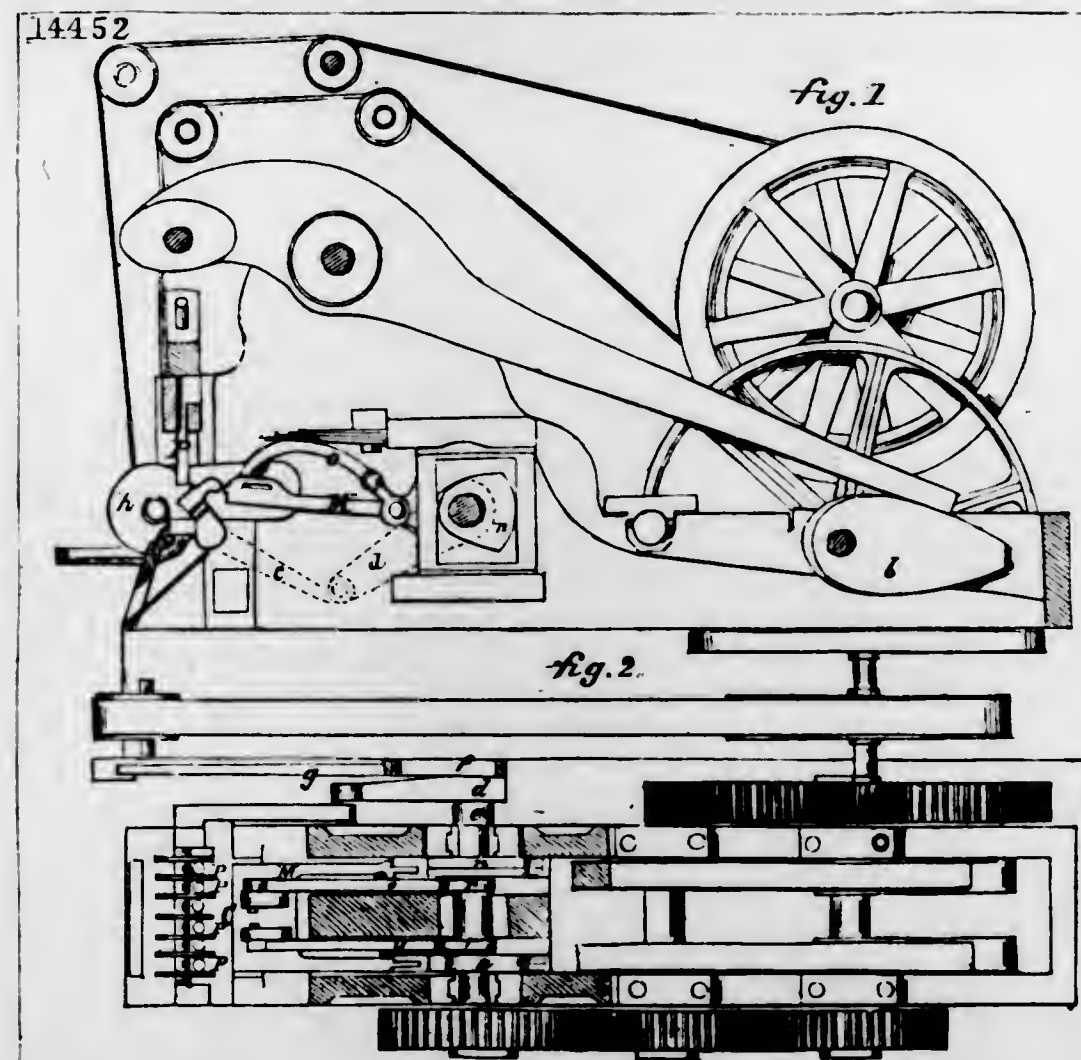
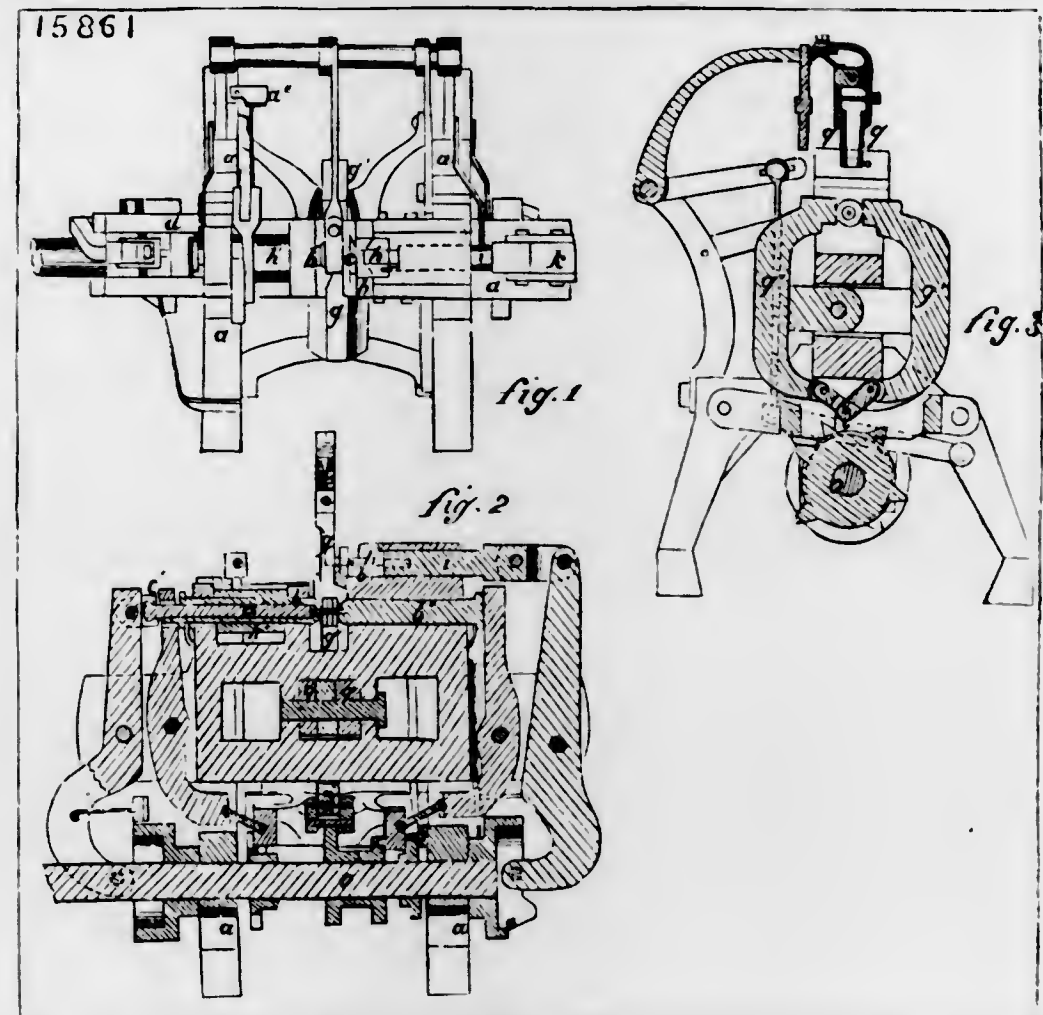
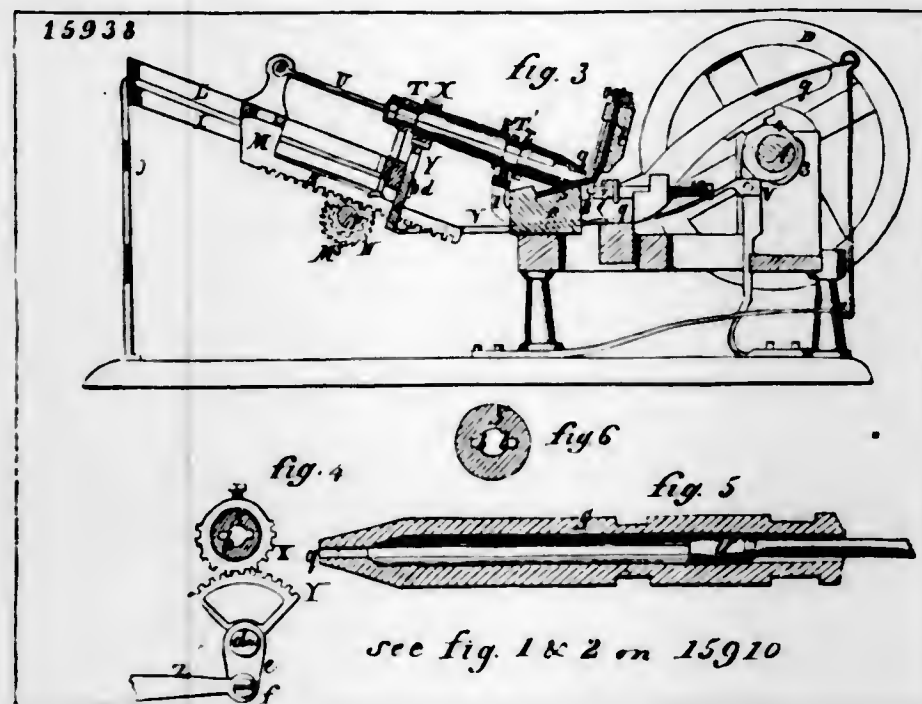
fig. 3 Bb



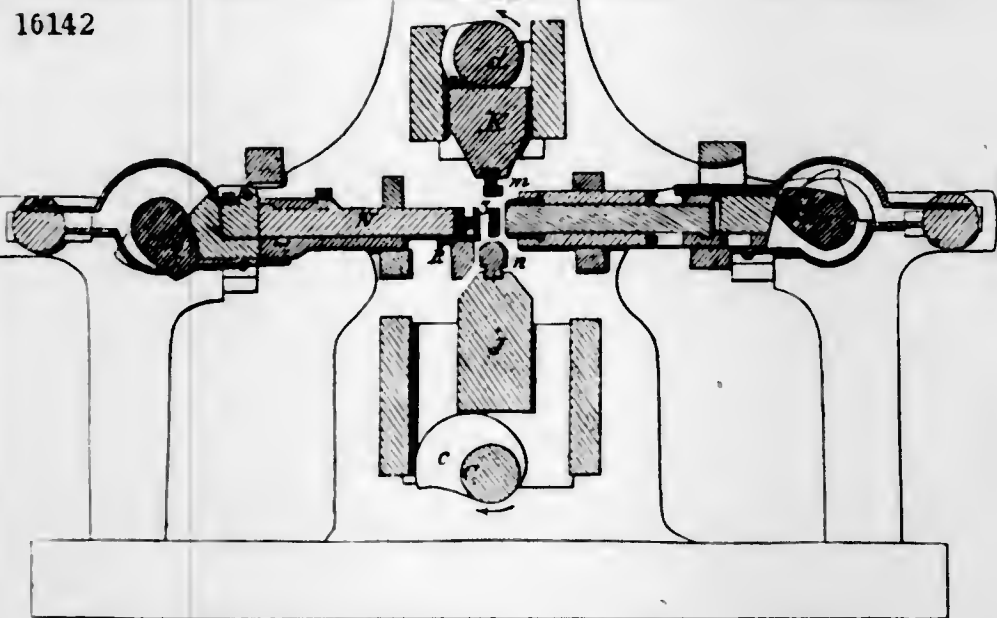








16142



15003

fig 1

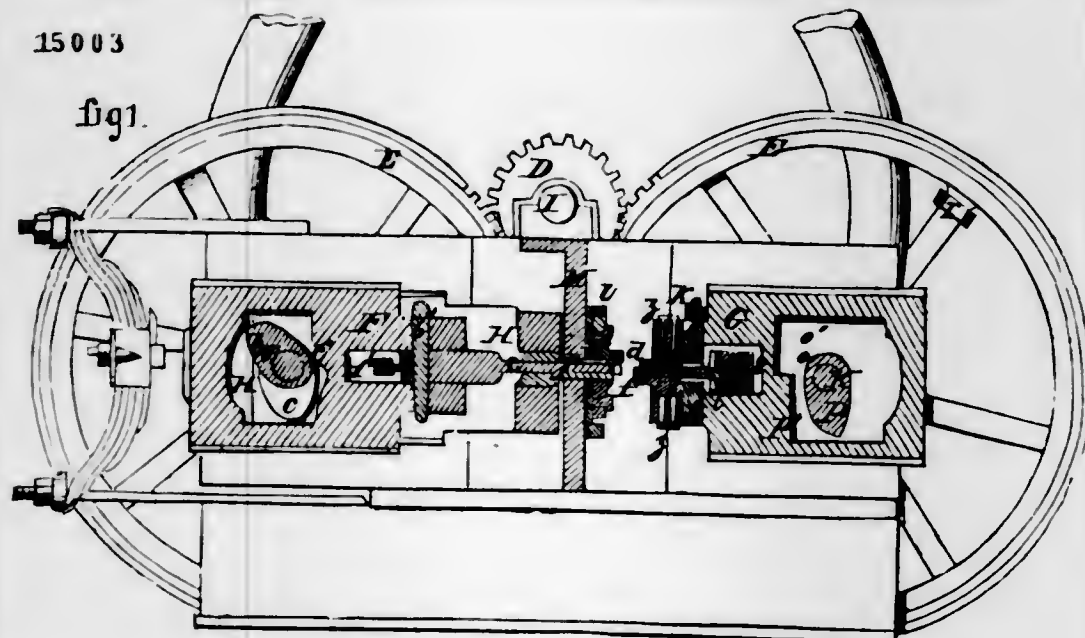


fig 2

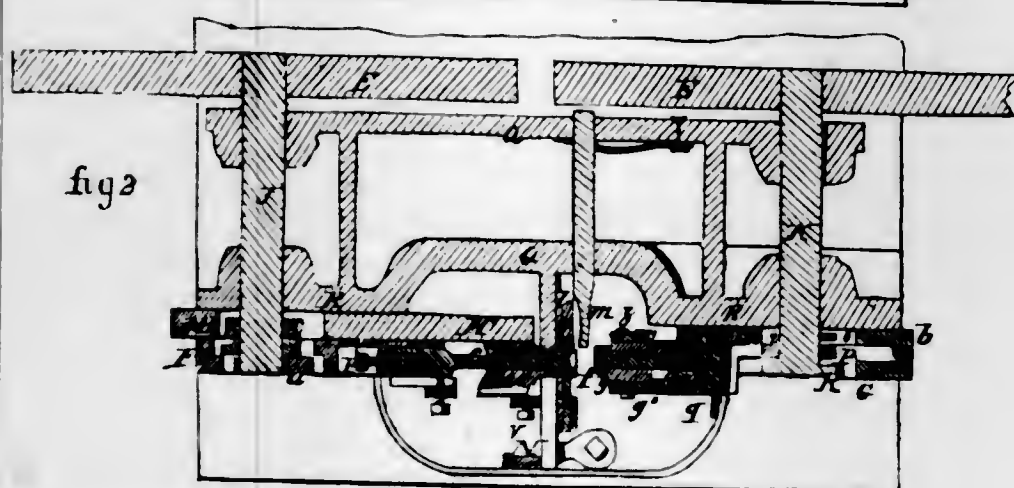


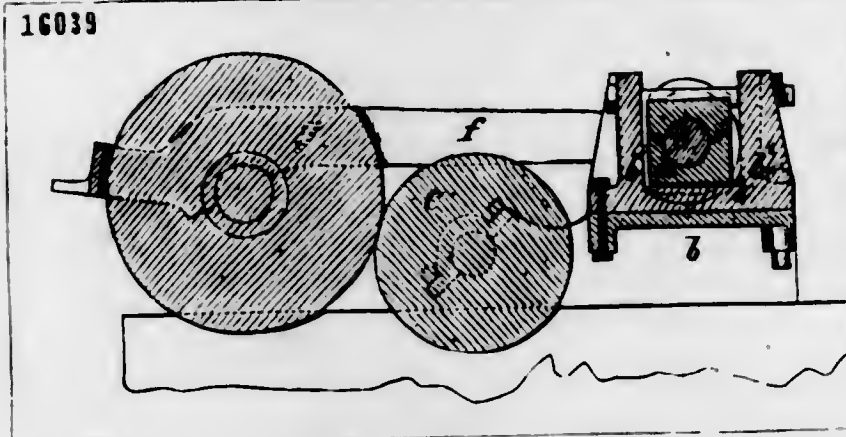
fig 3



fig 4



16039



15515

fig 1

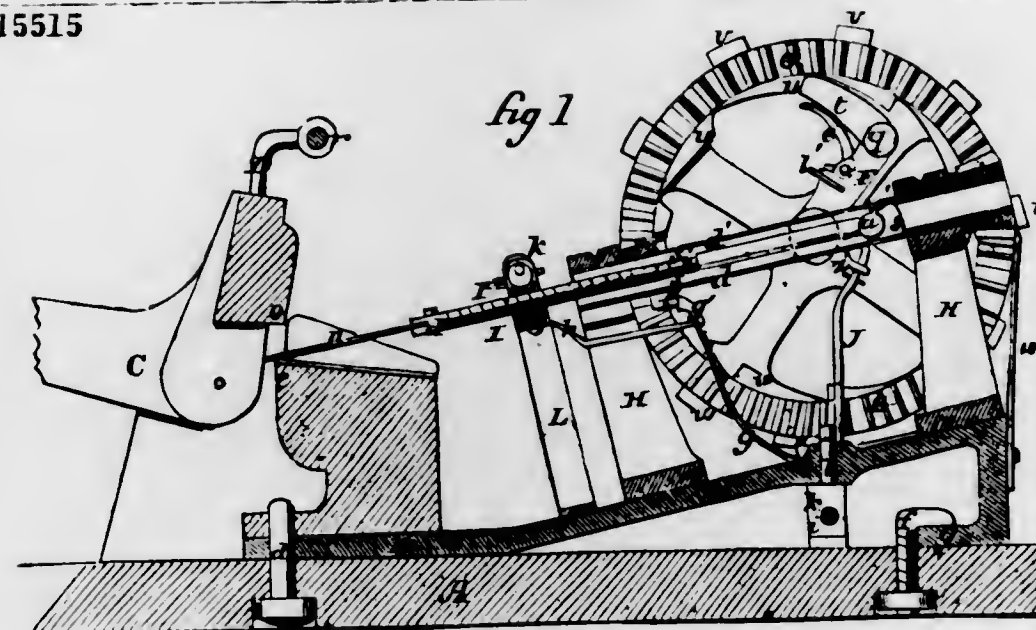
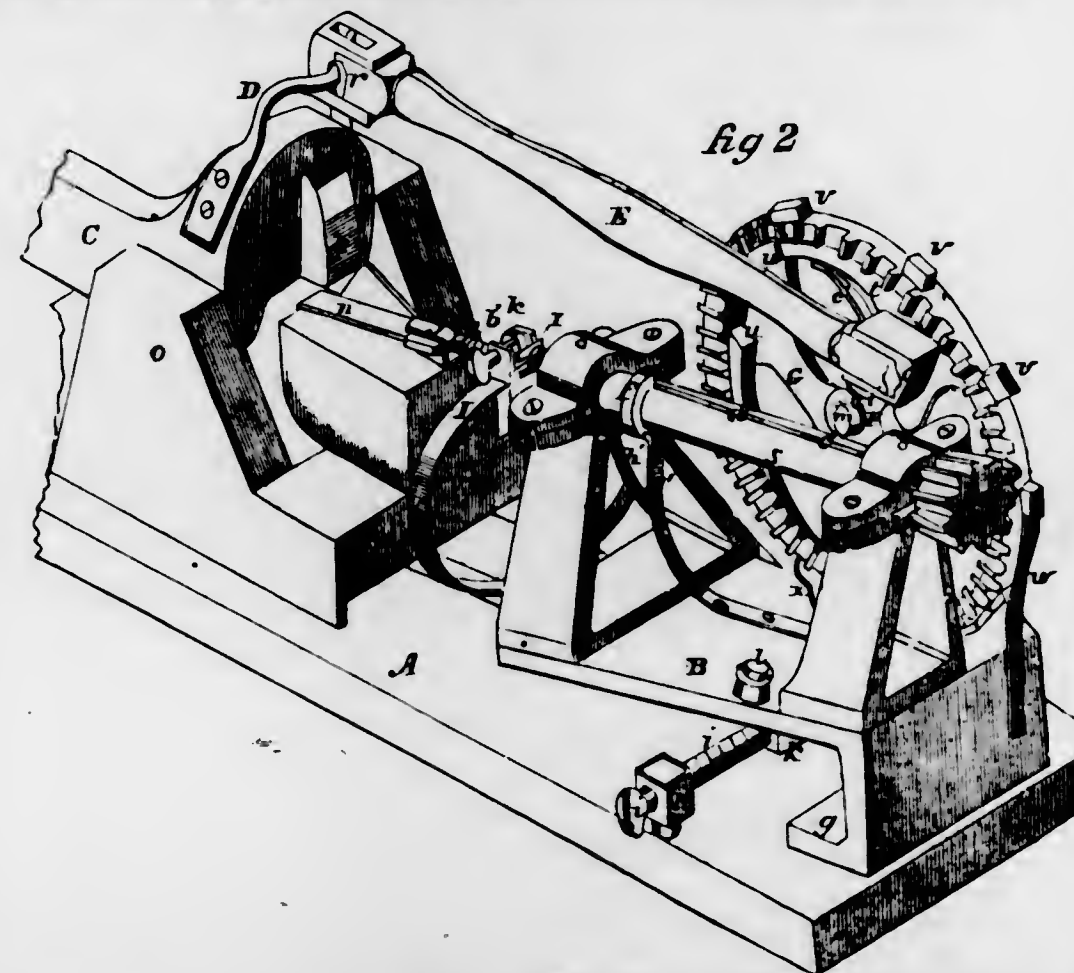
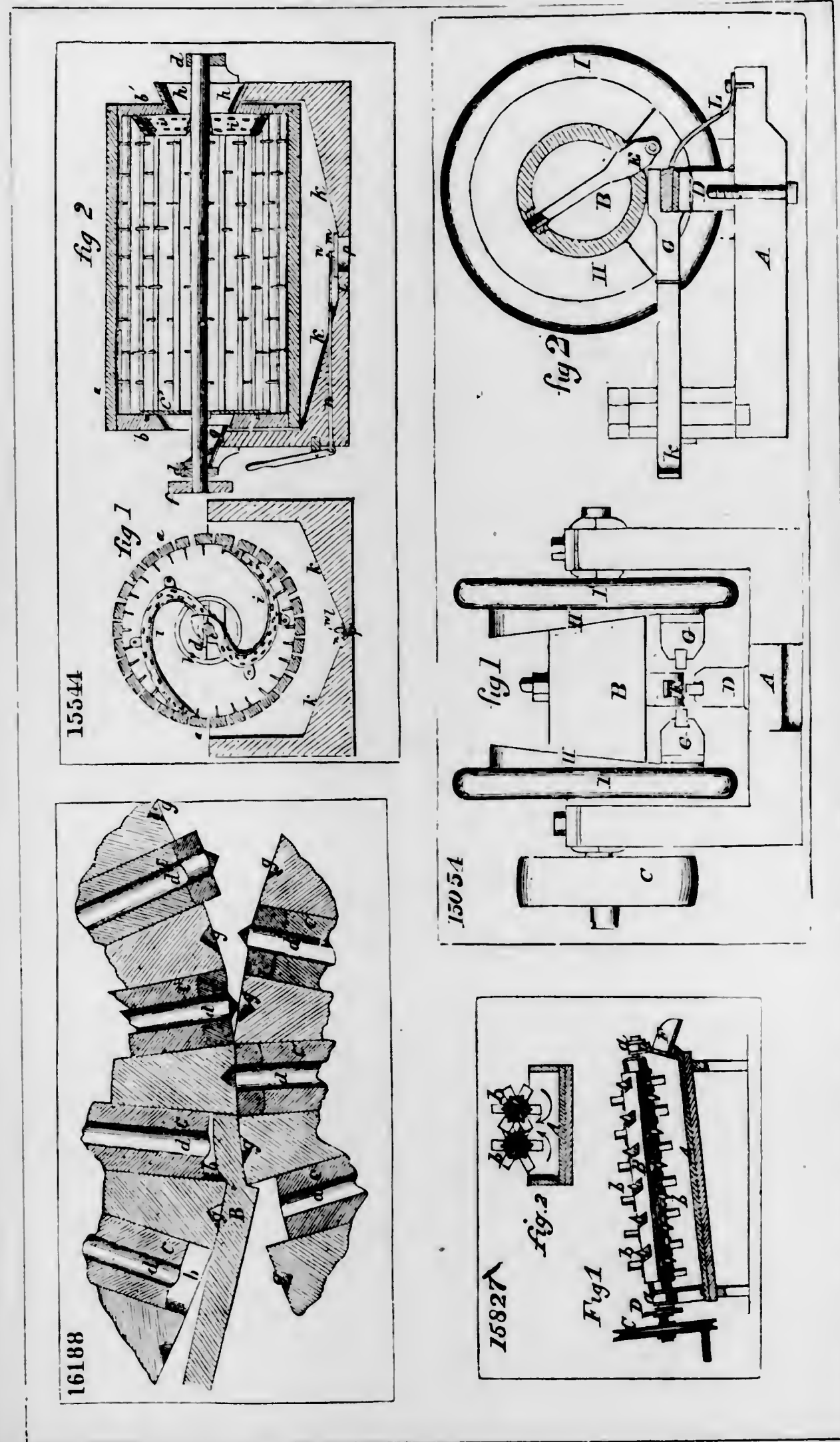
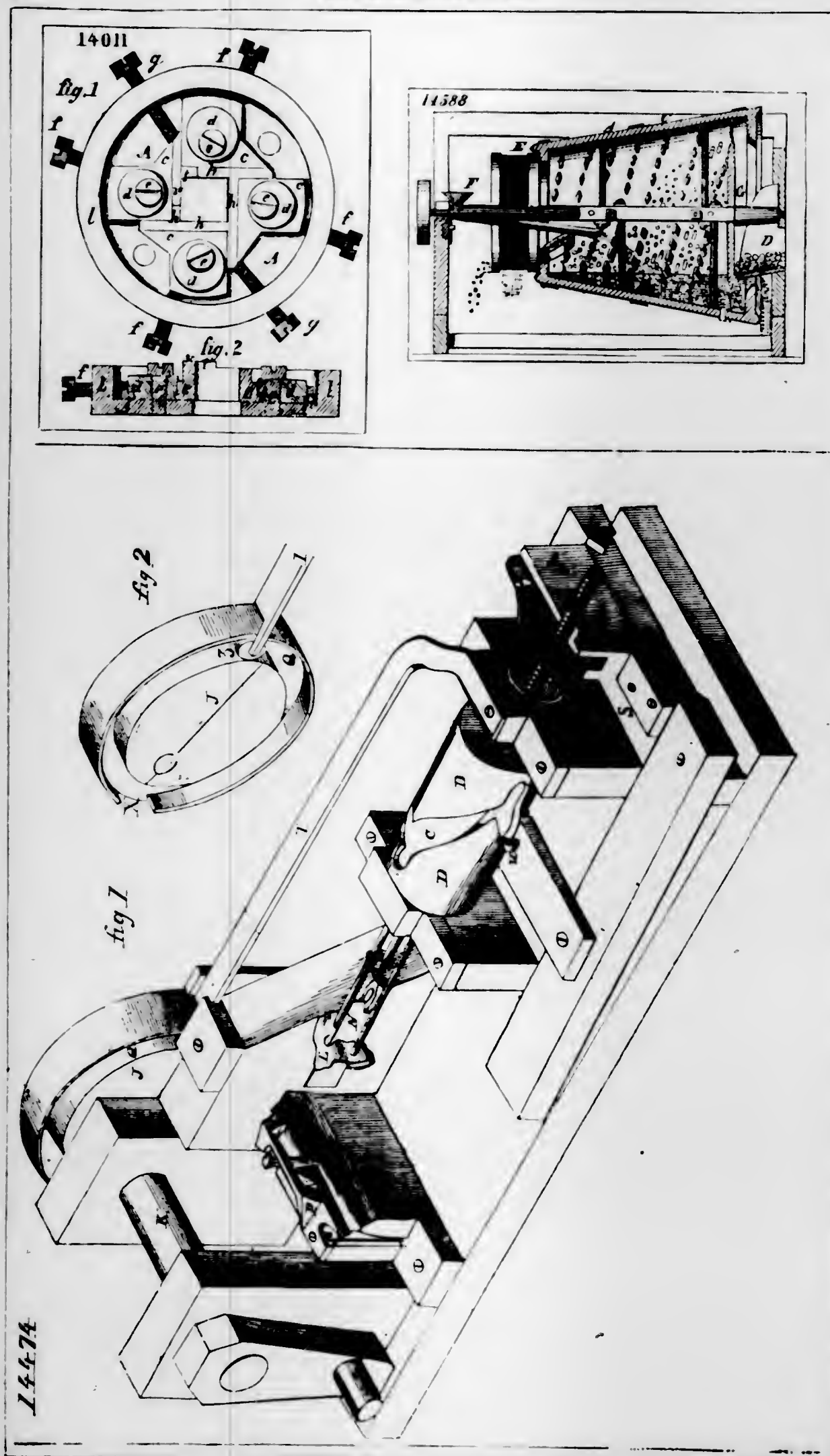
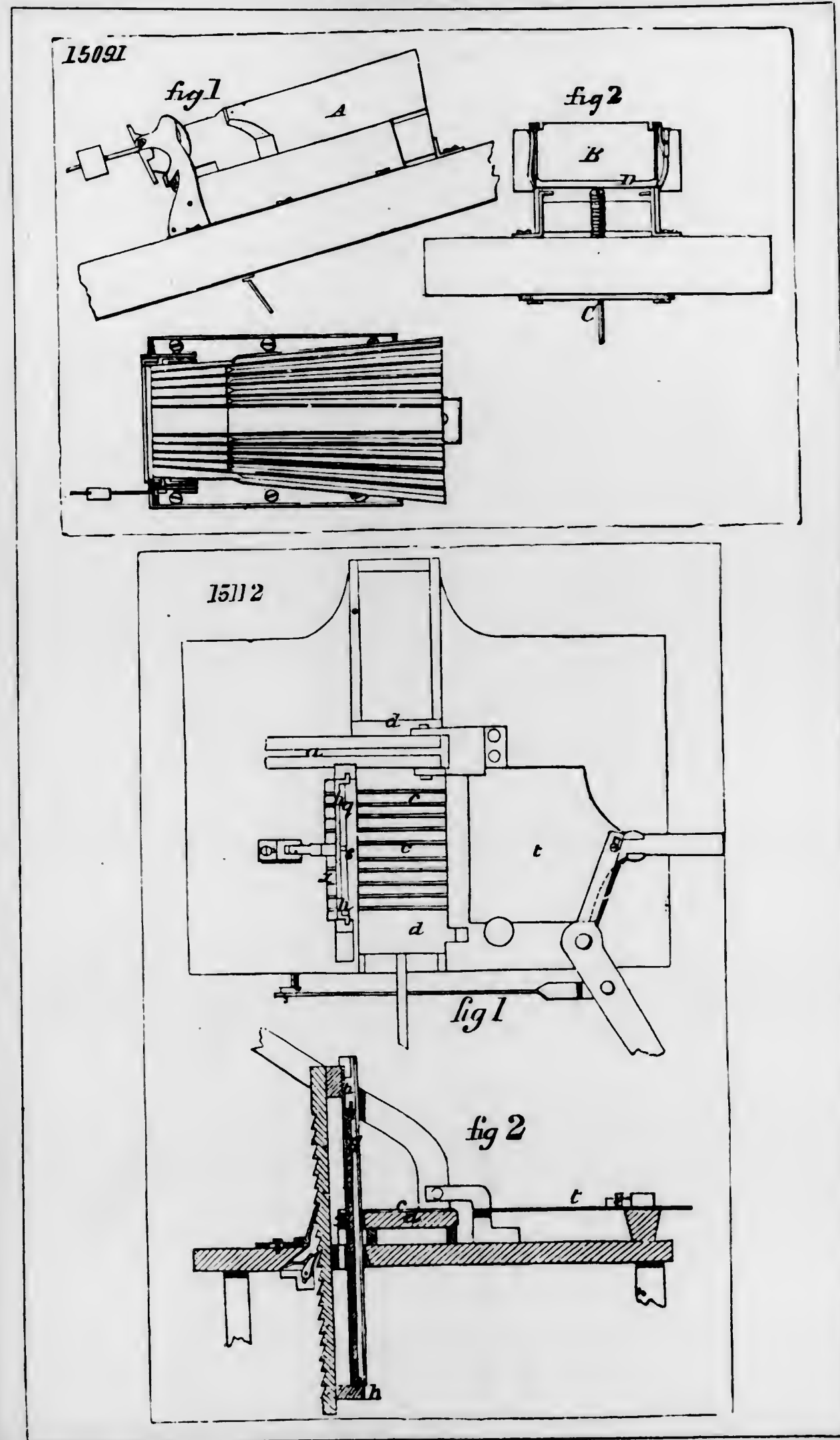
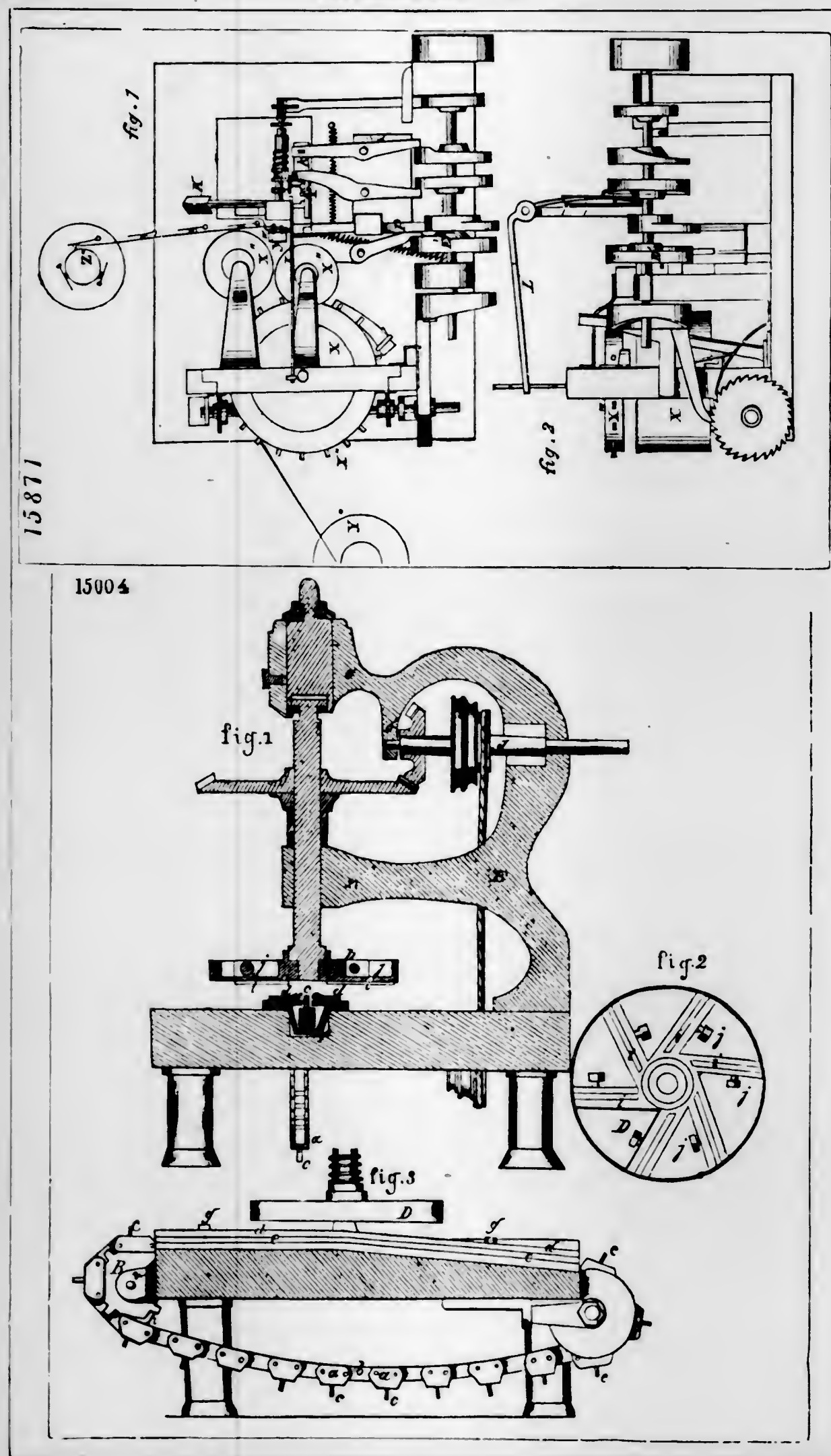
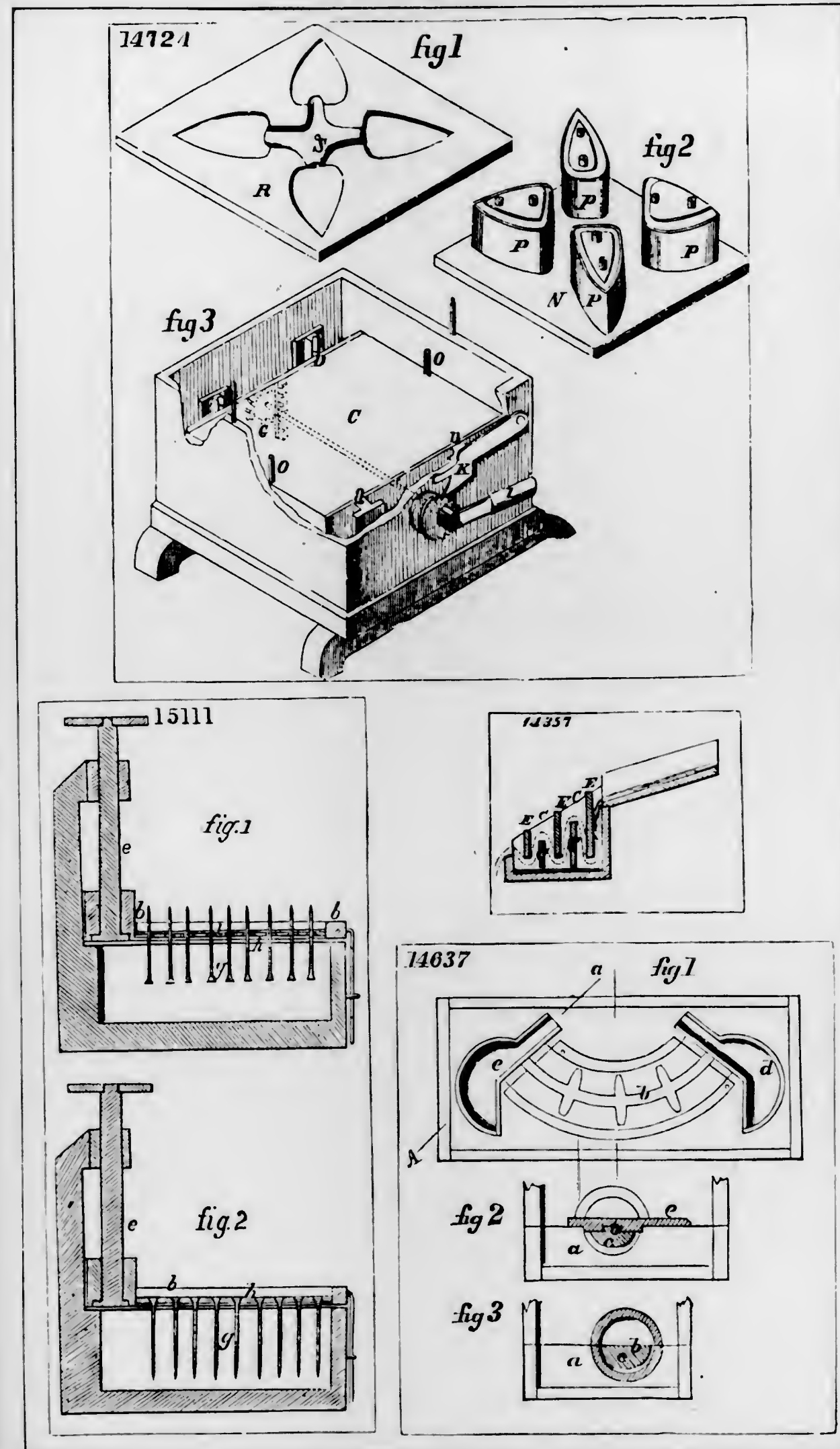
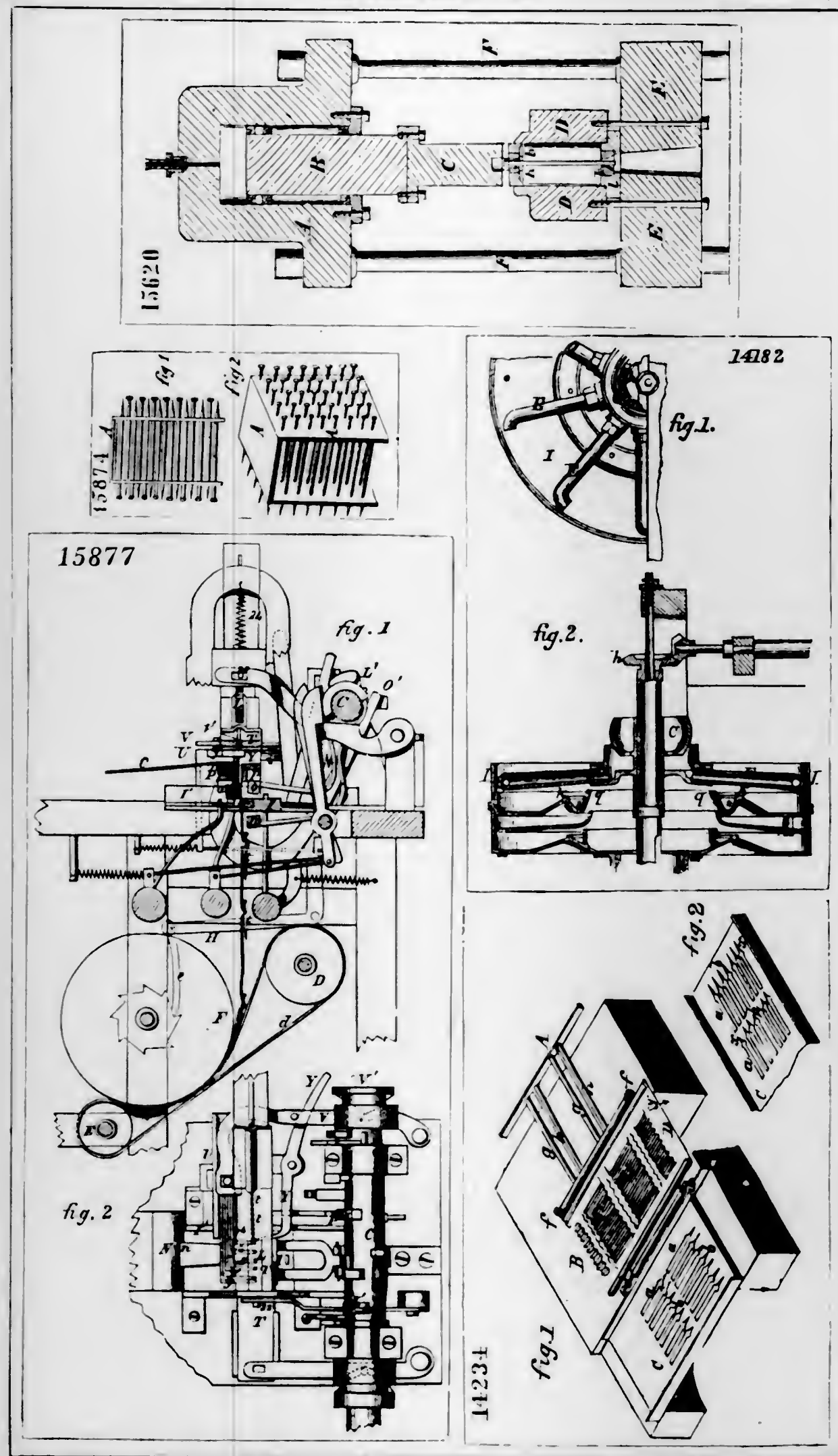


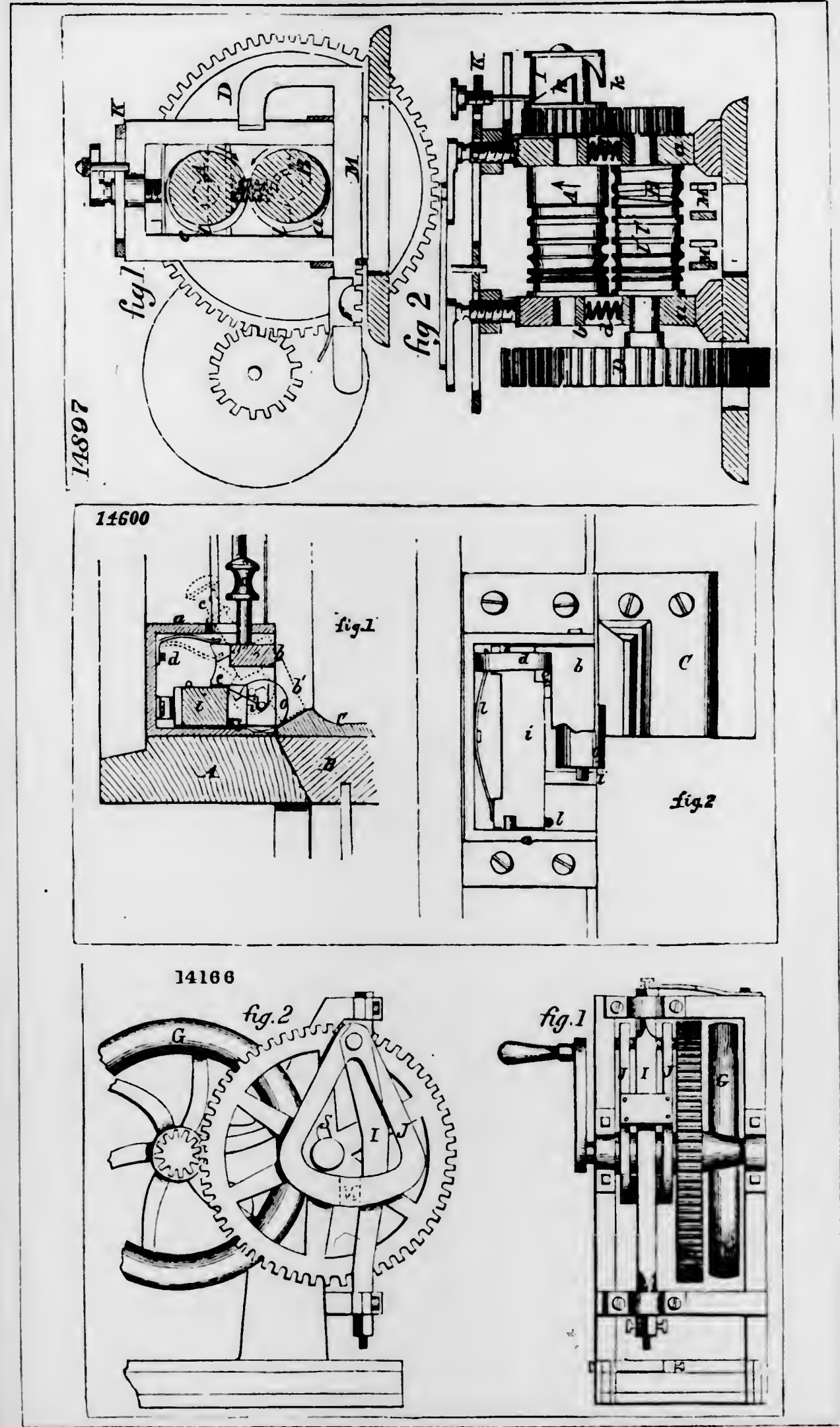
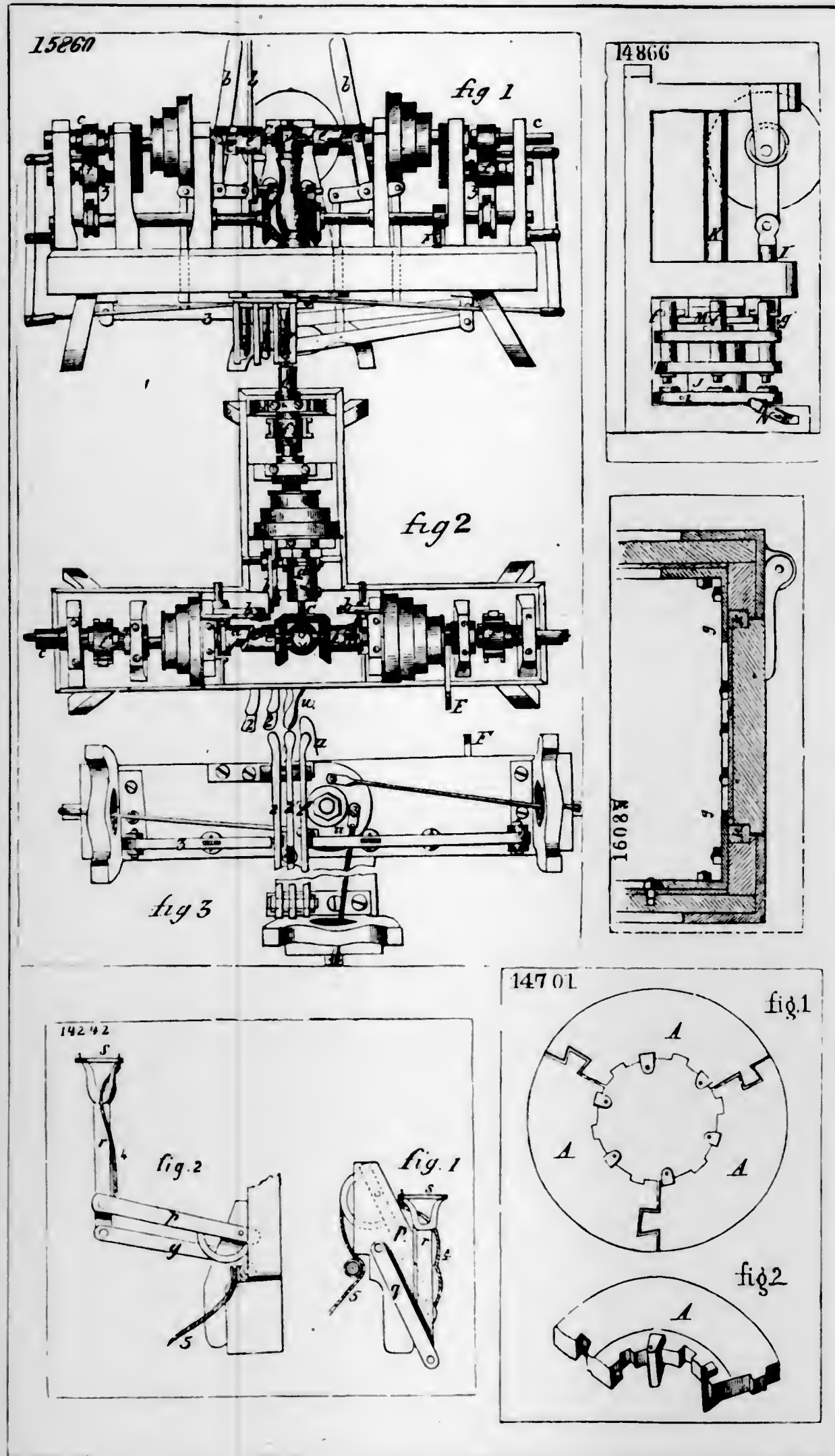
fig 2



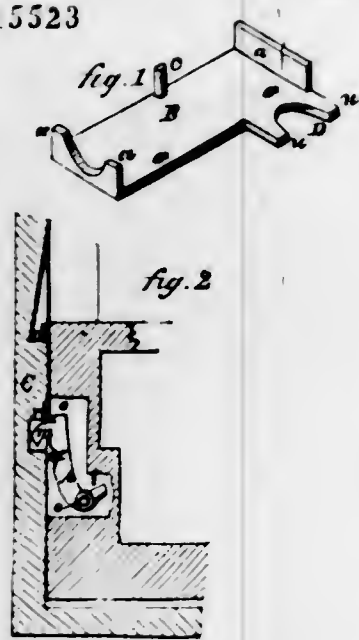




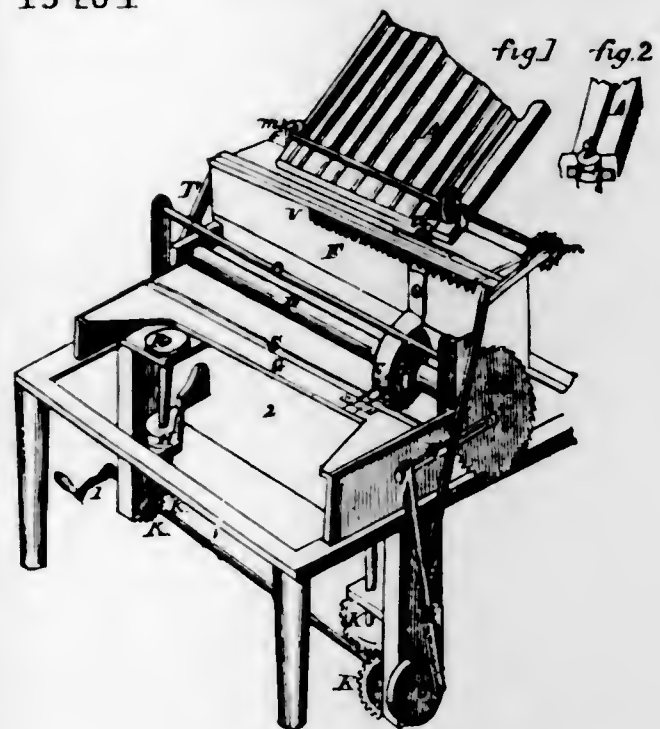




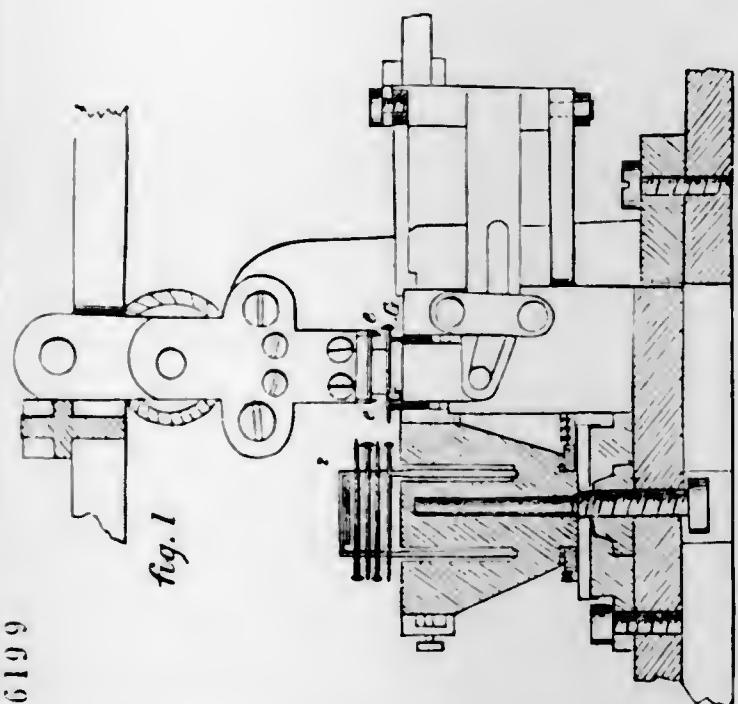
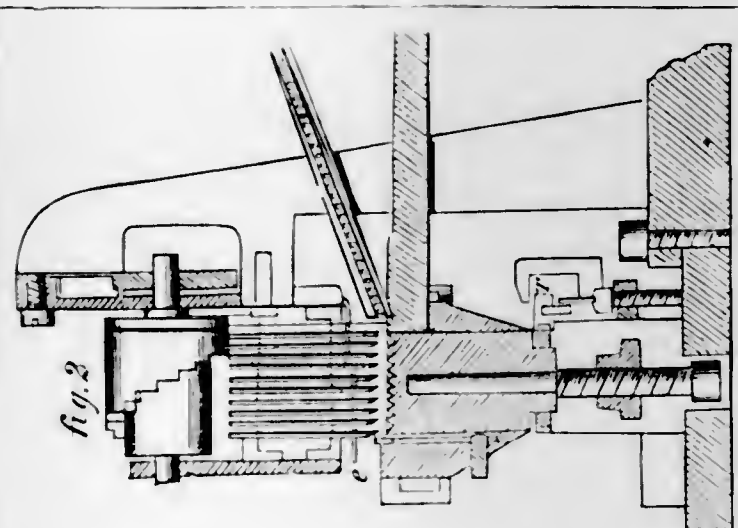
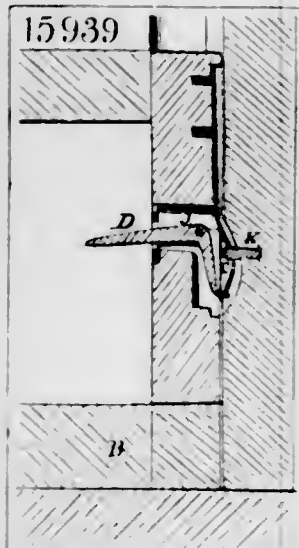
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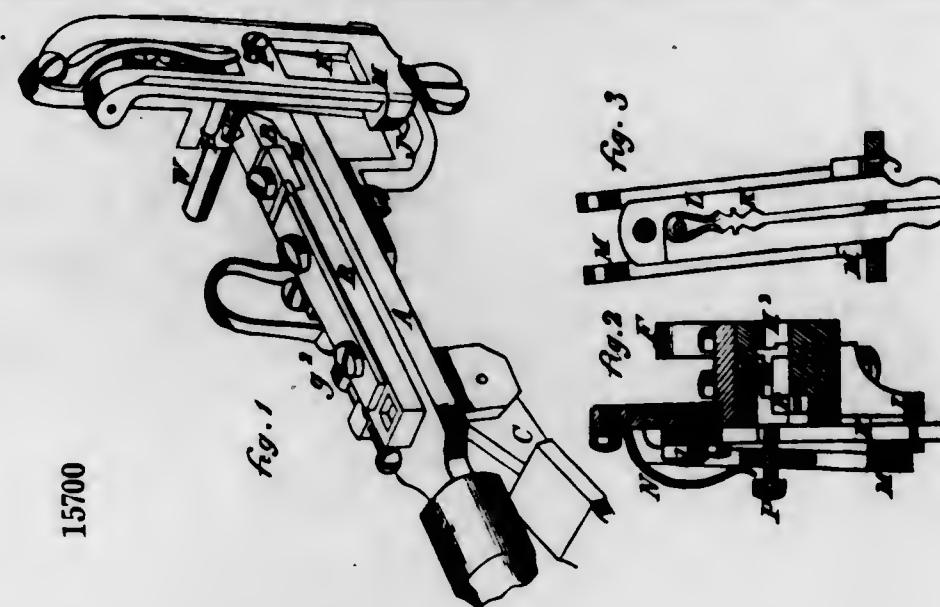
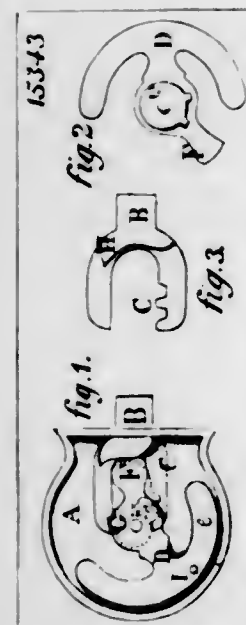


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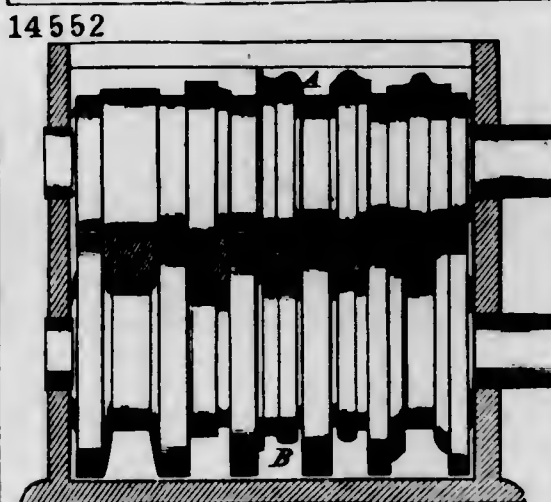
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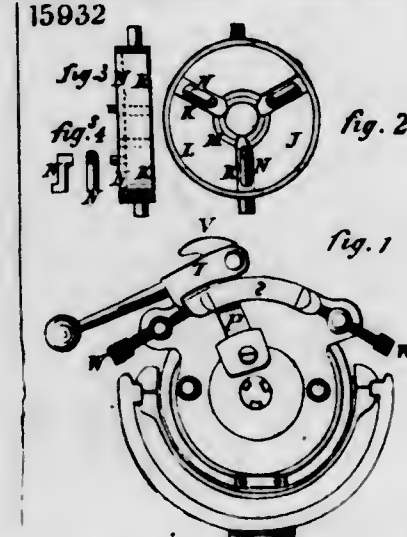


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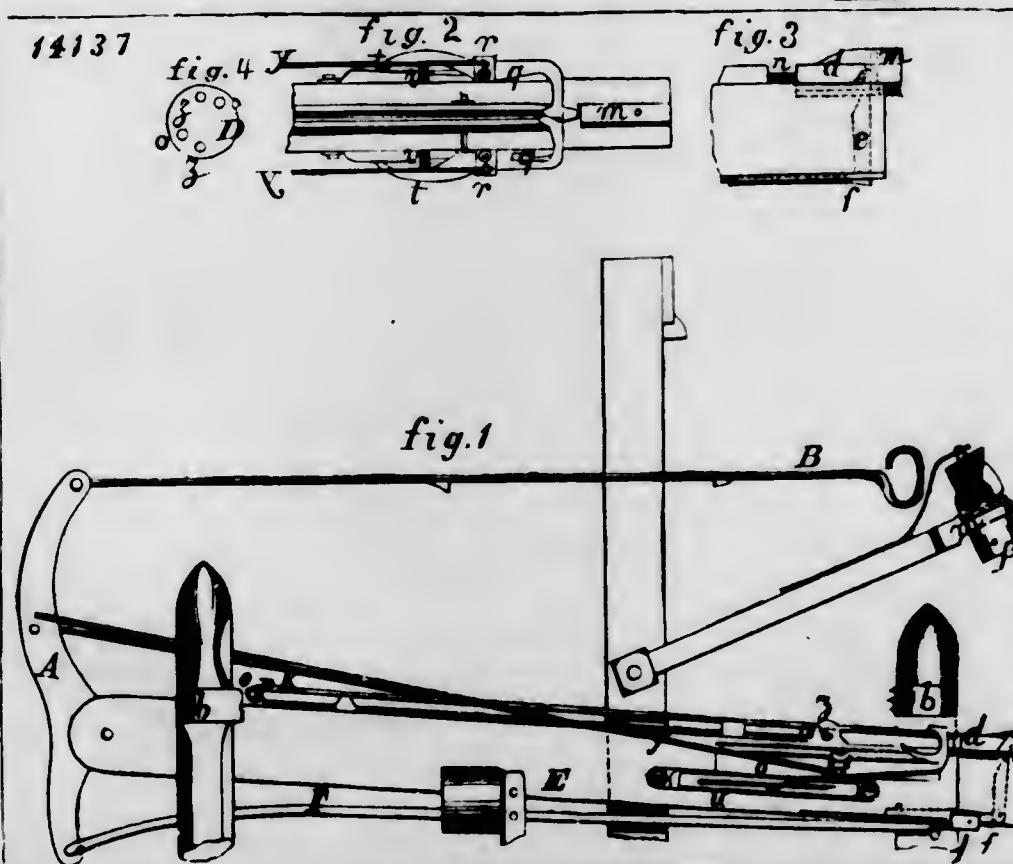
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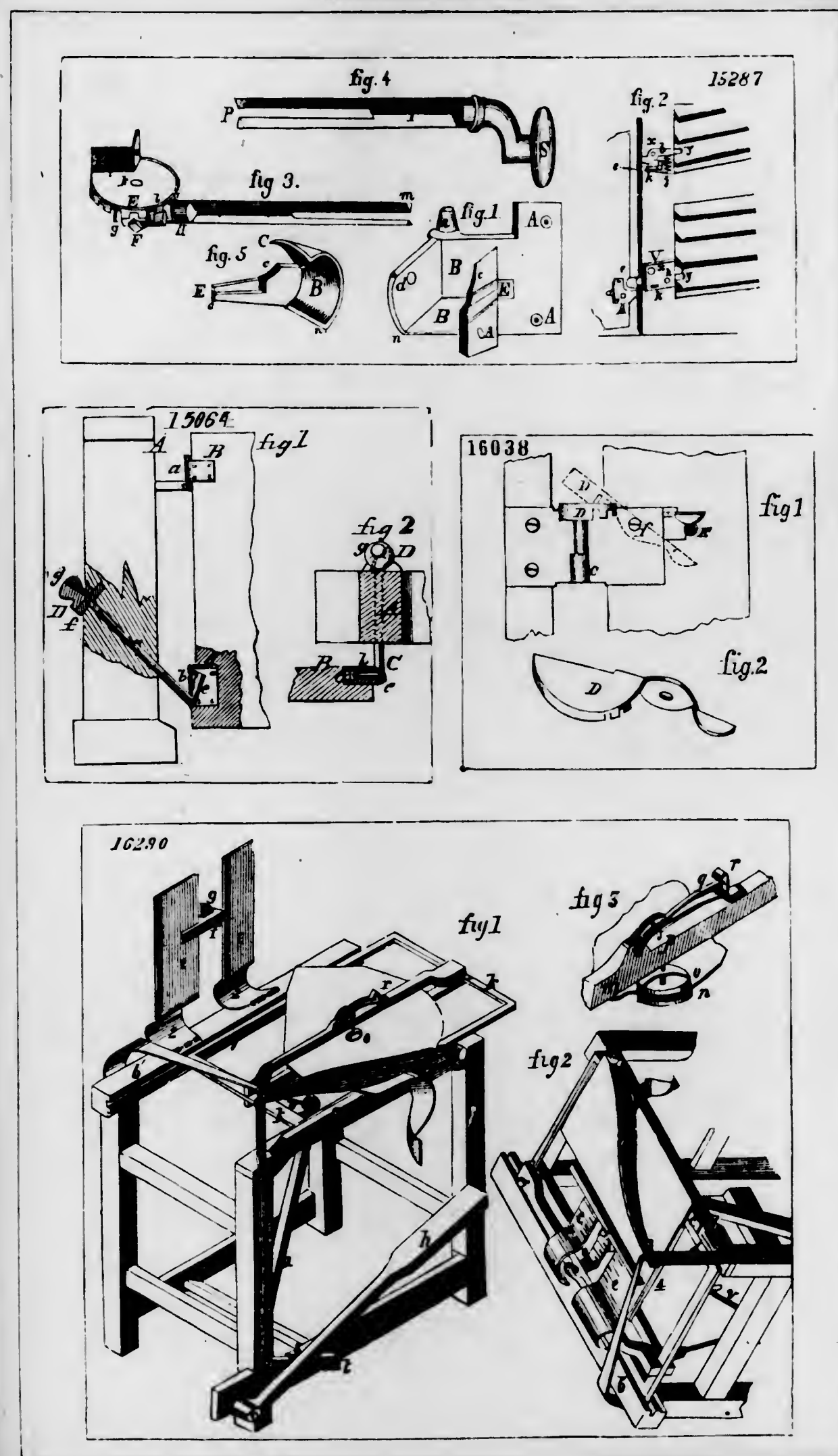
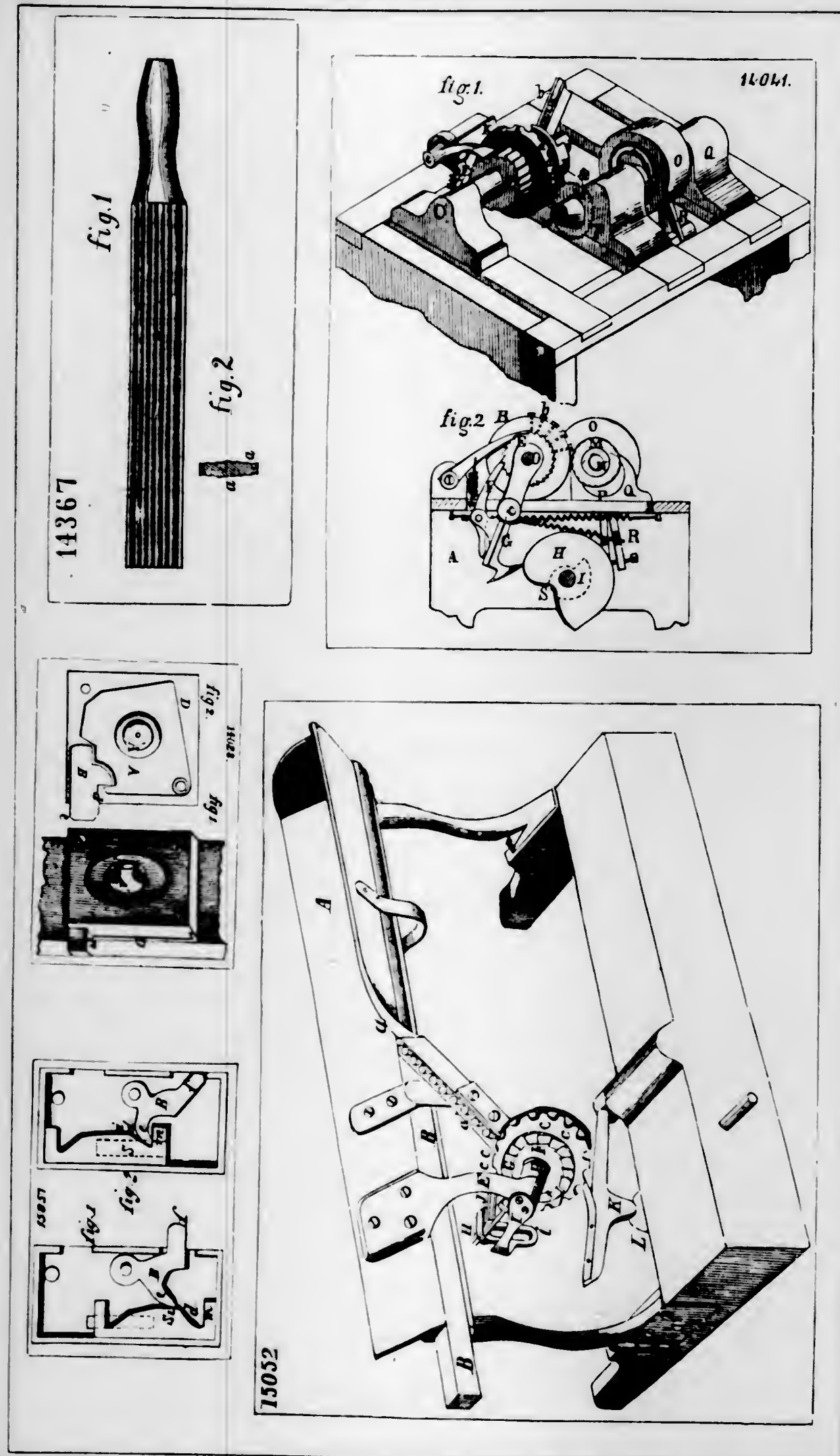
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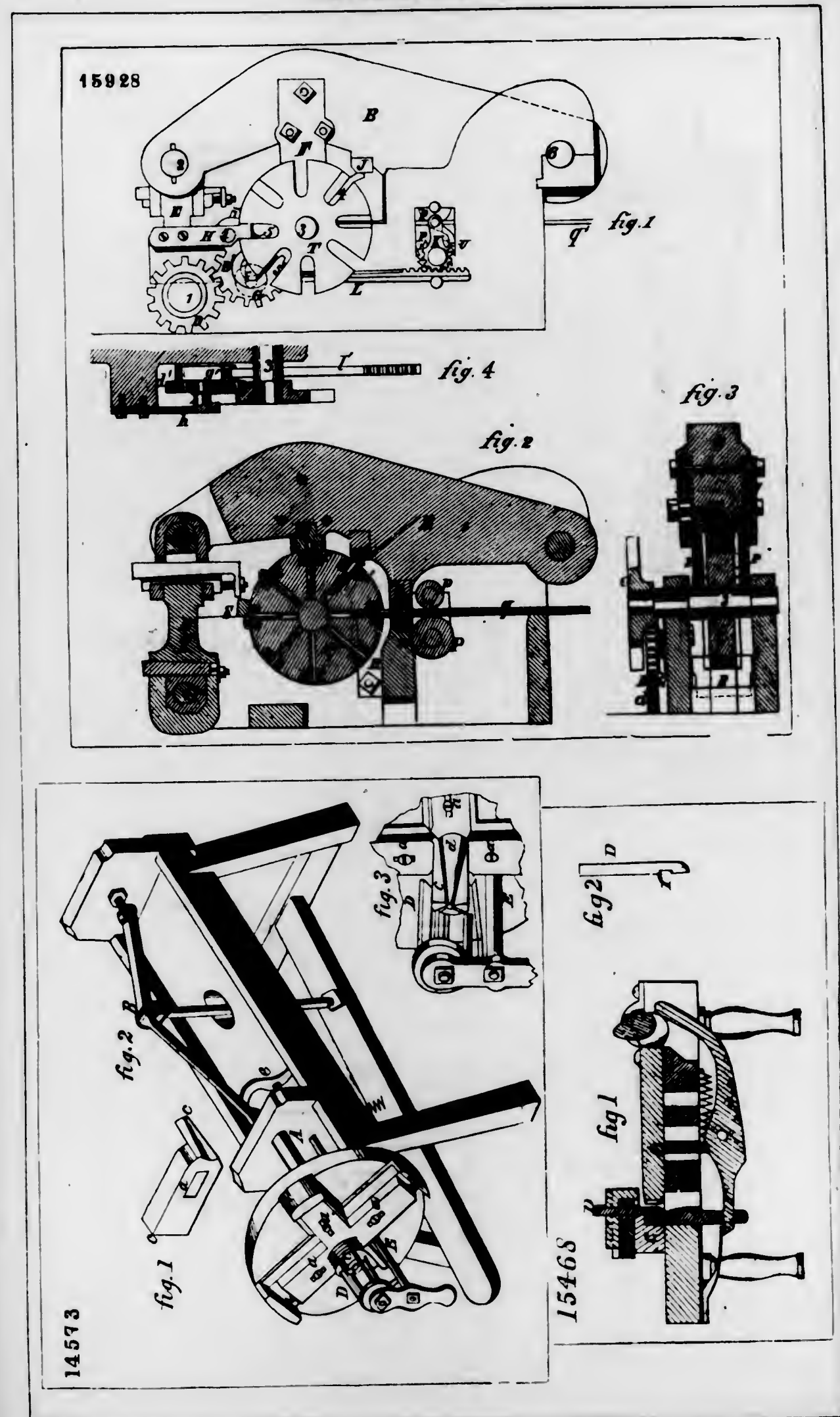
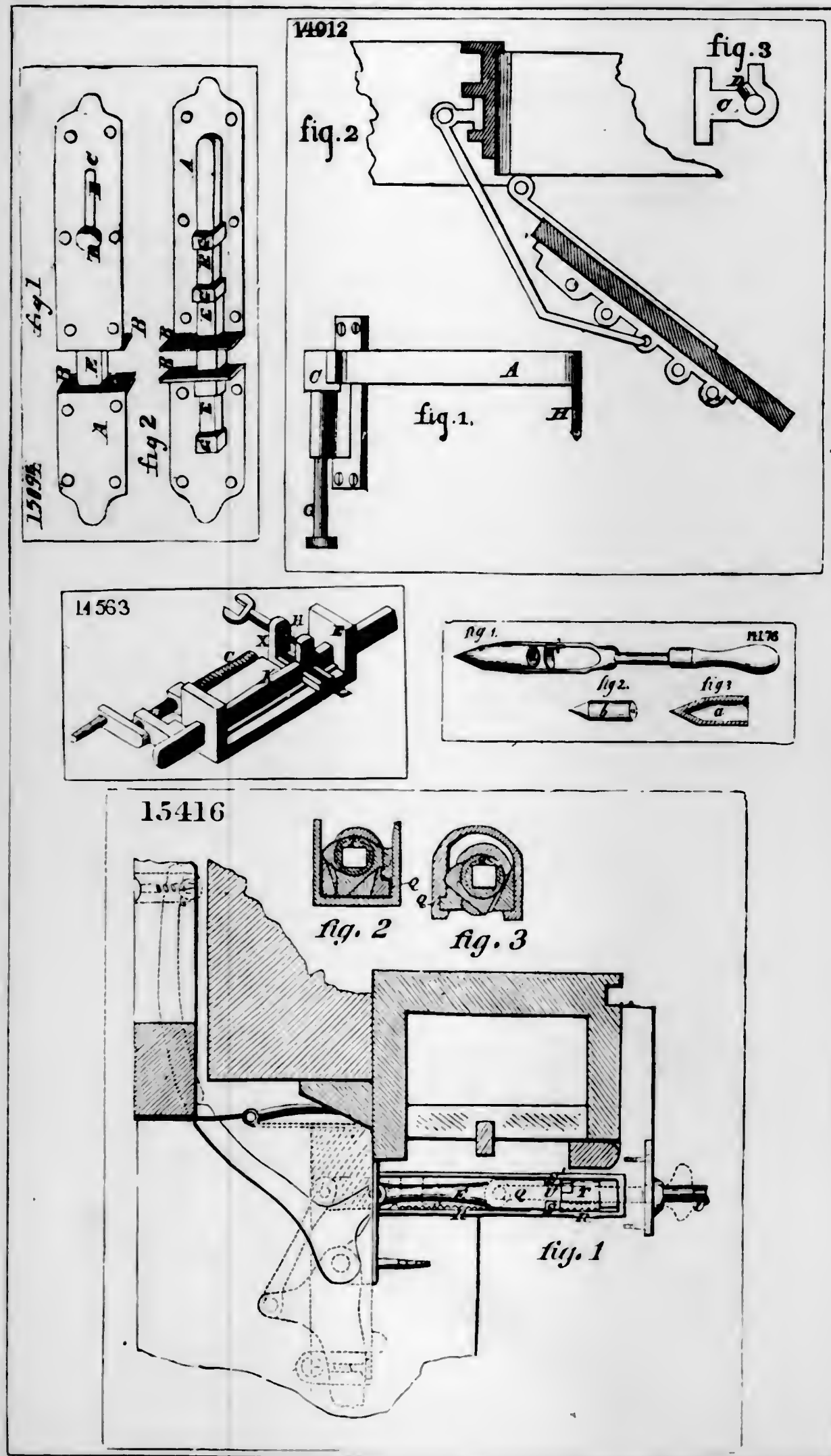


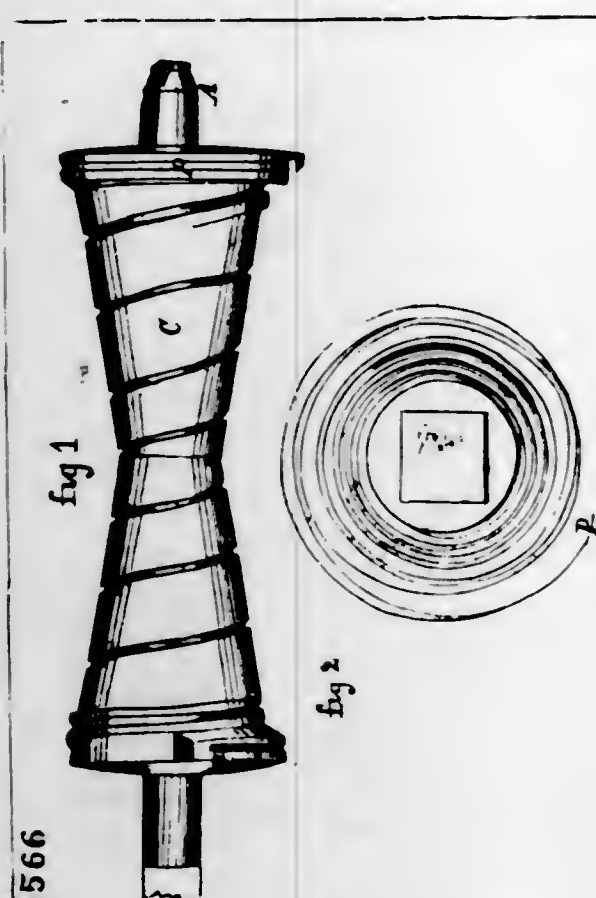
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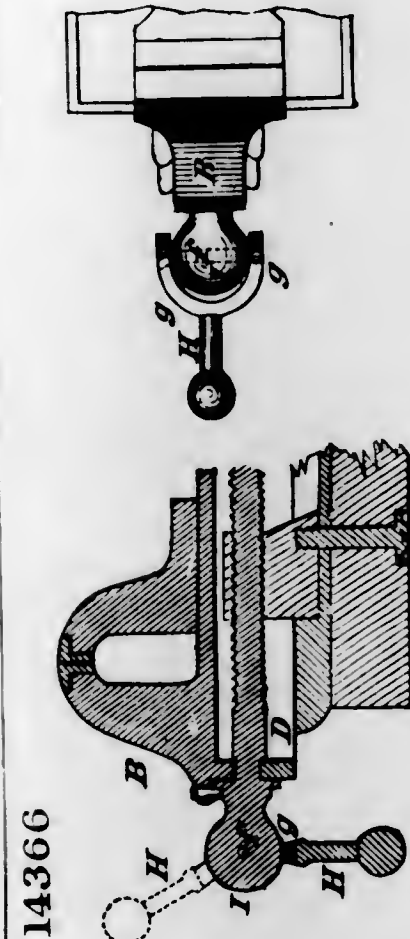
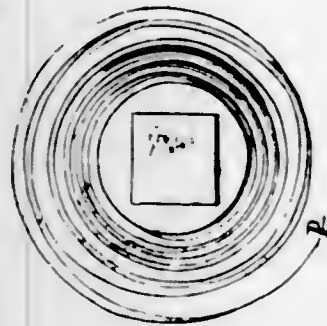
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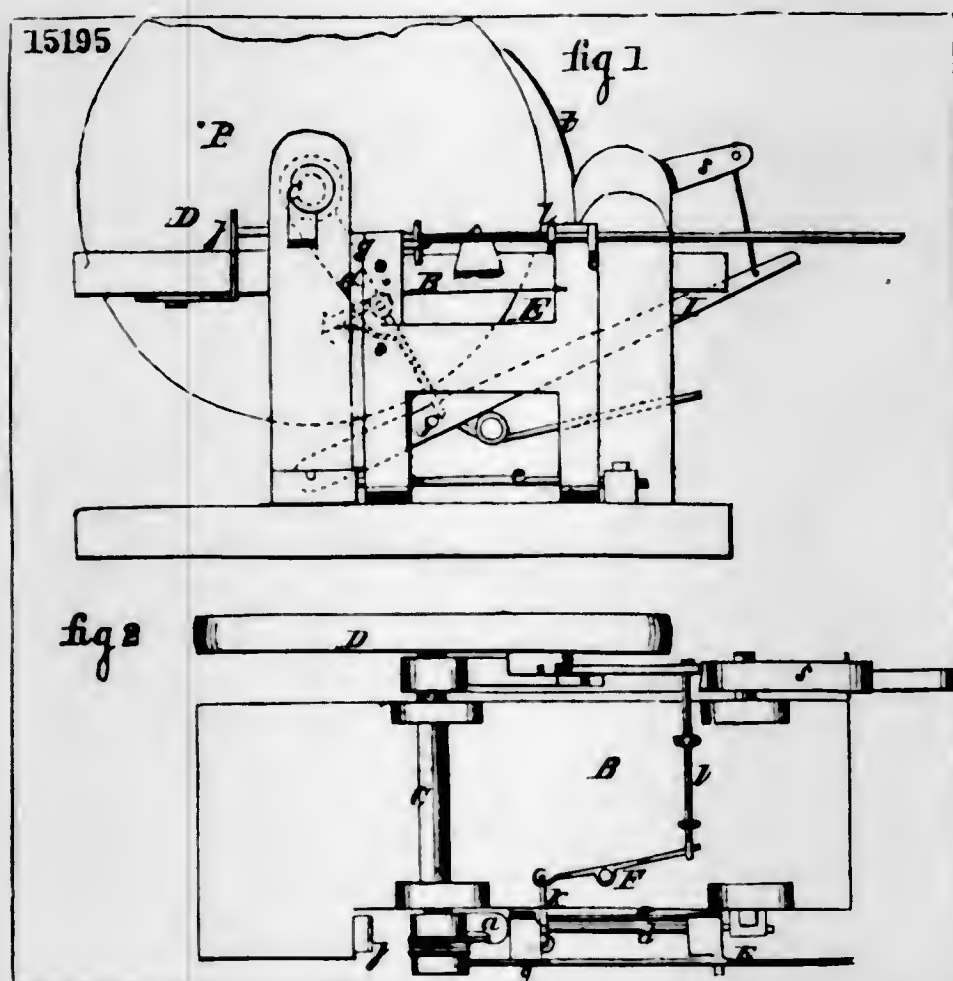




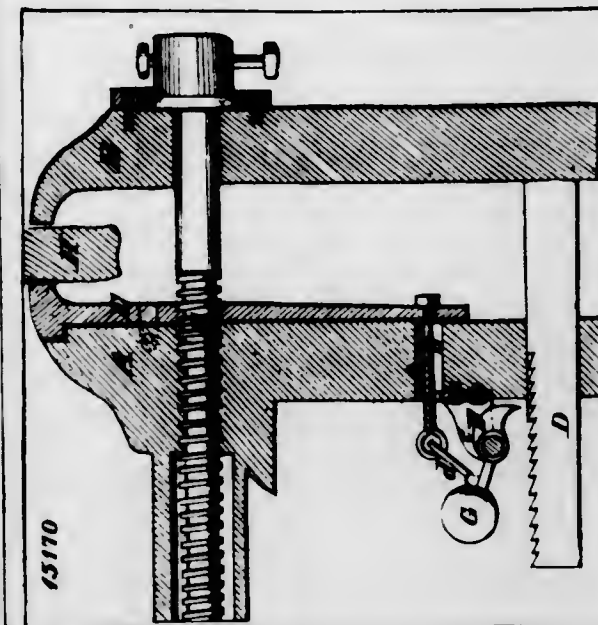
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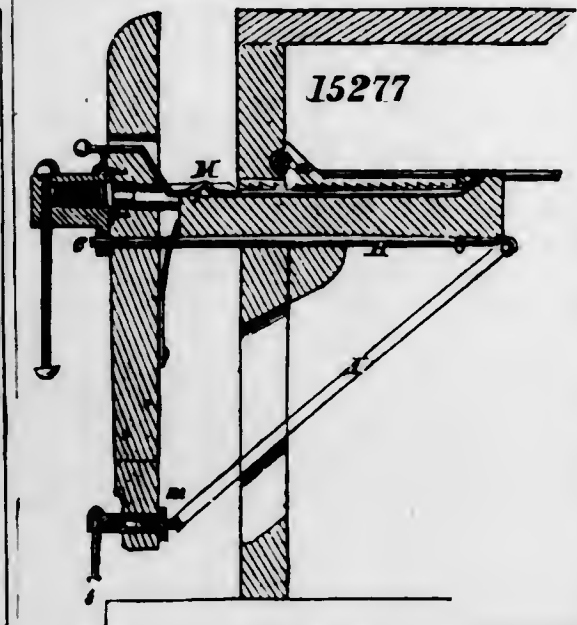
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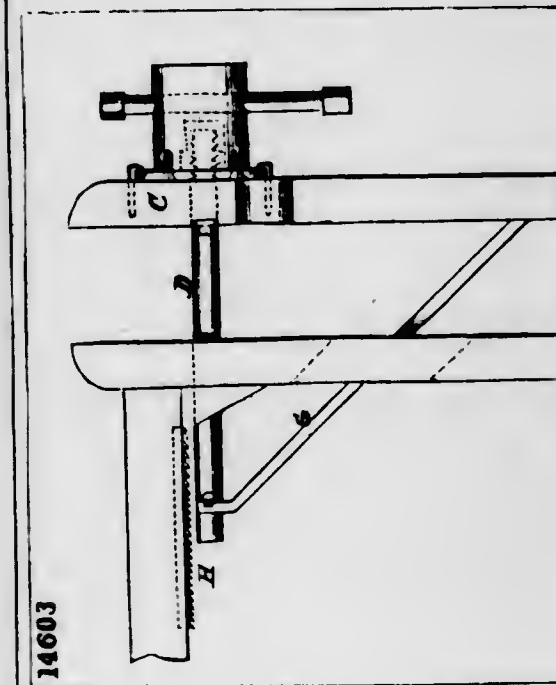
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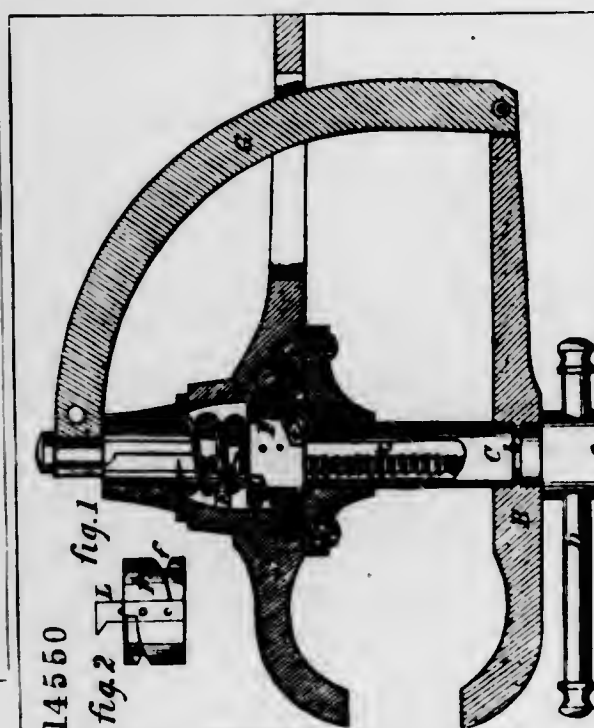
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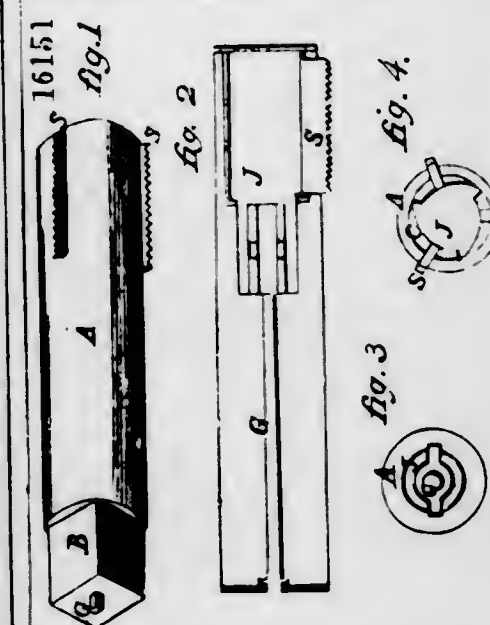
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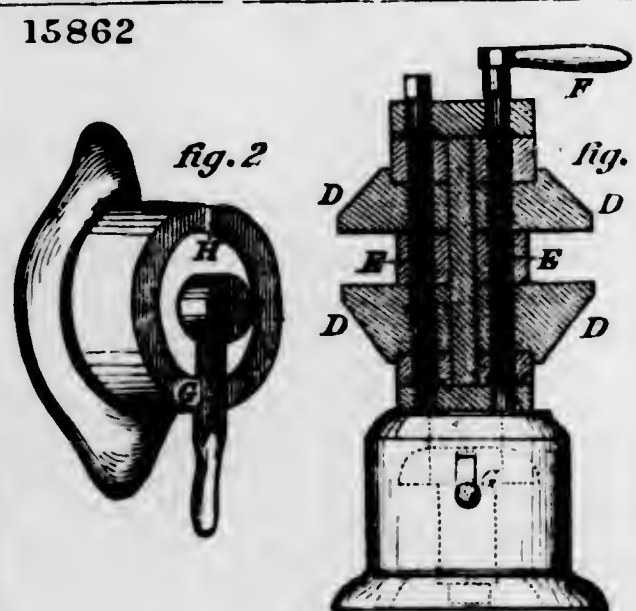
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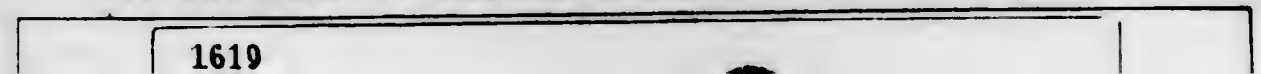
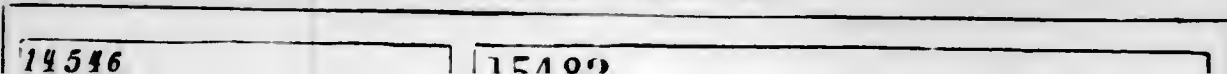
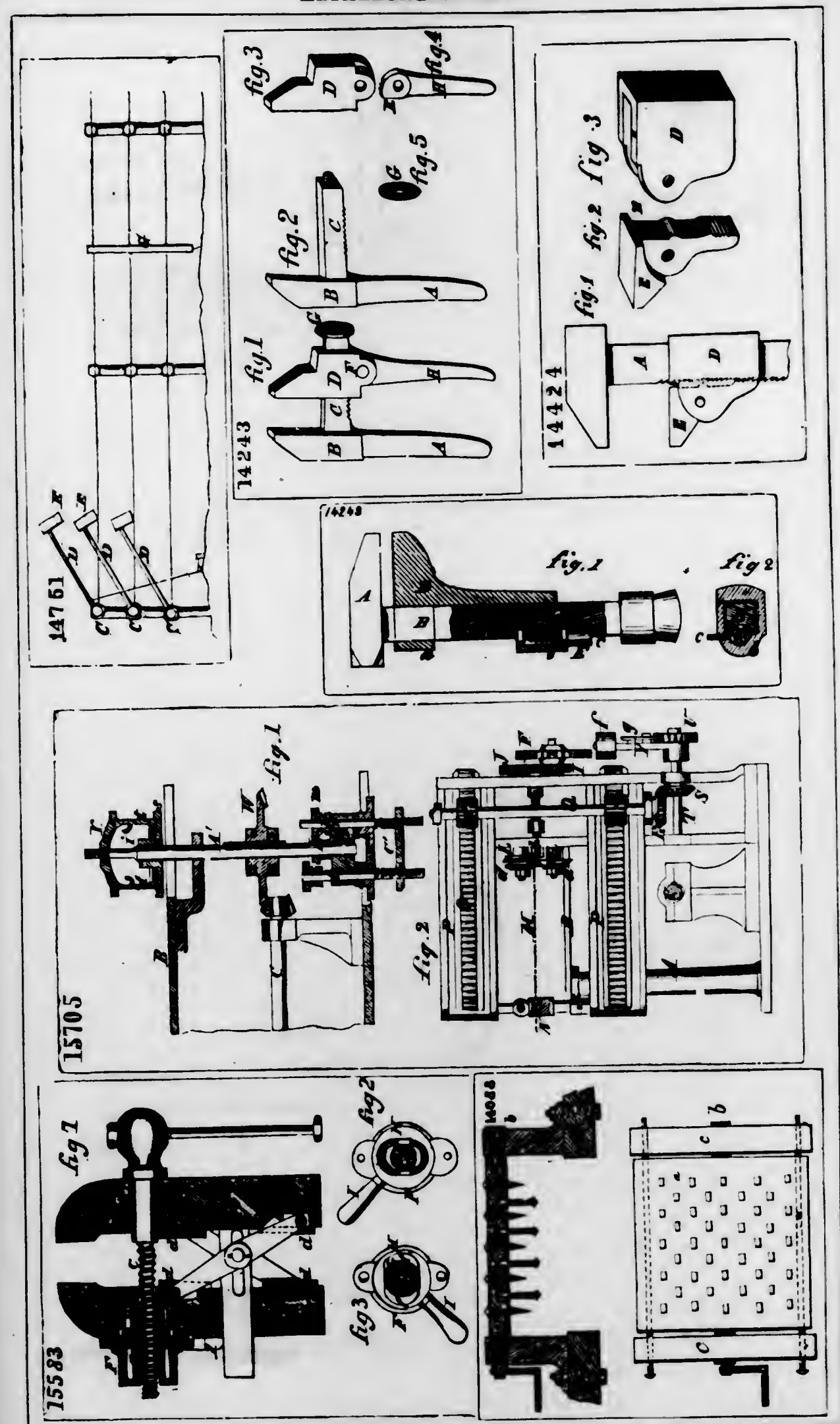
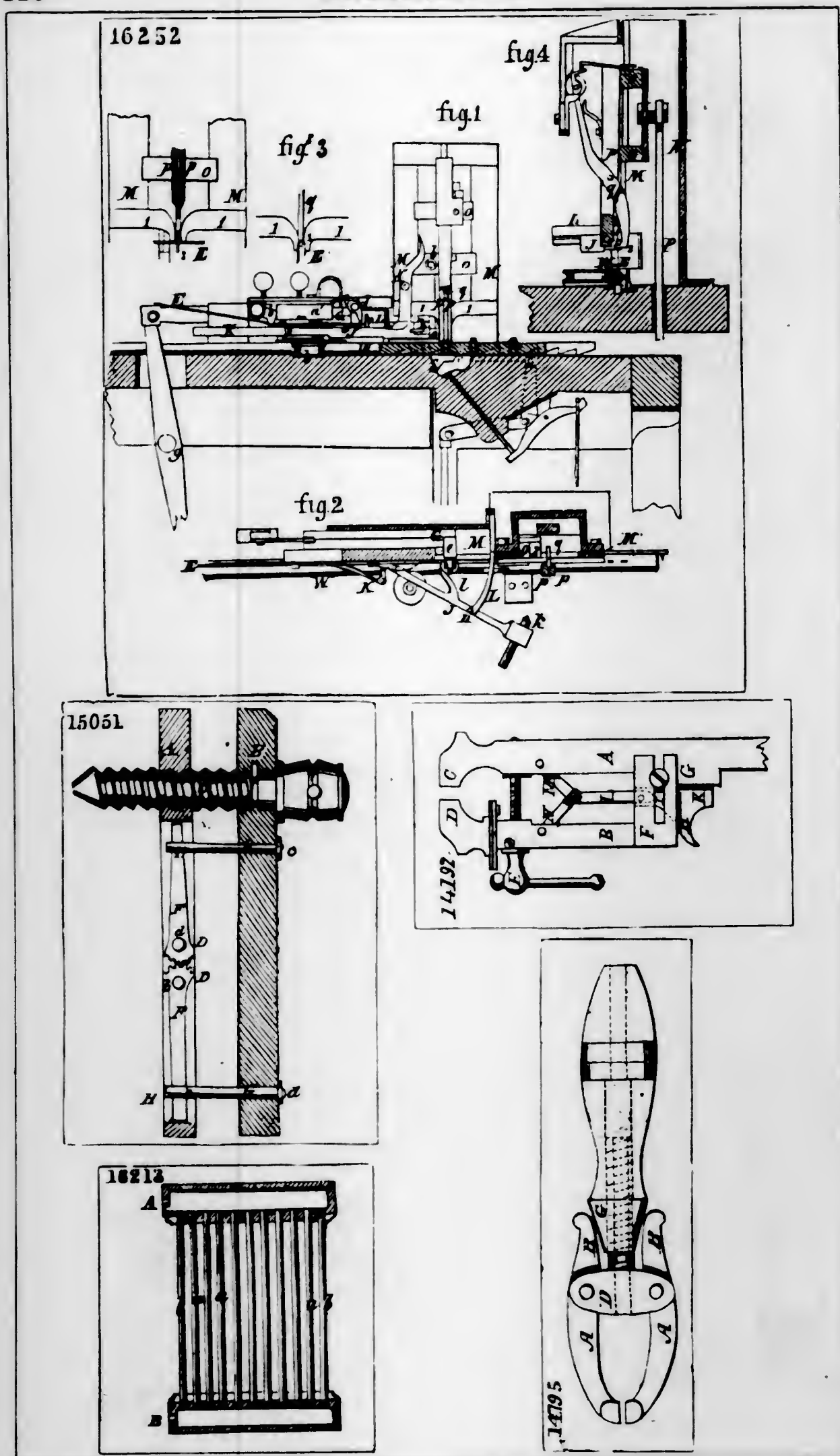
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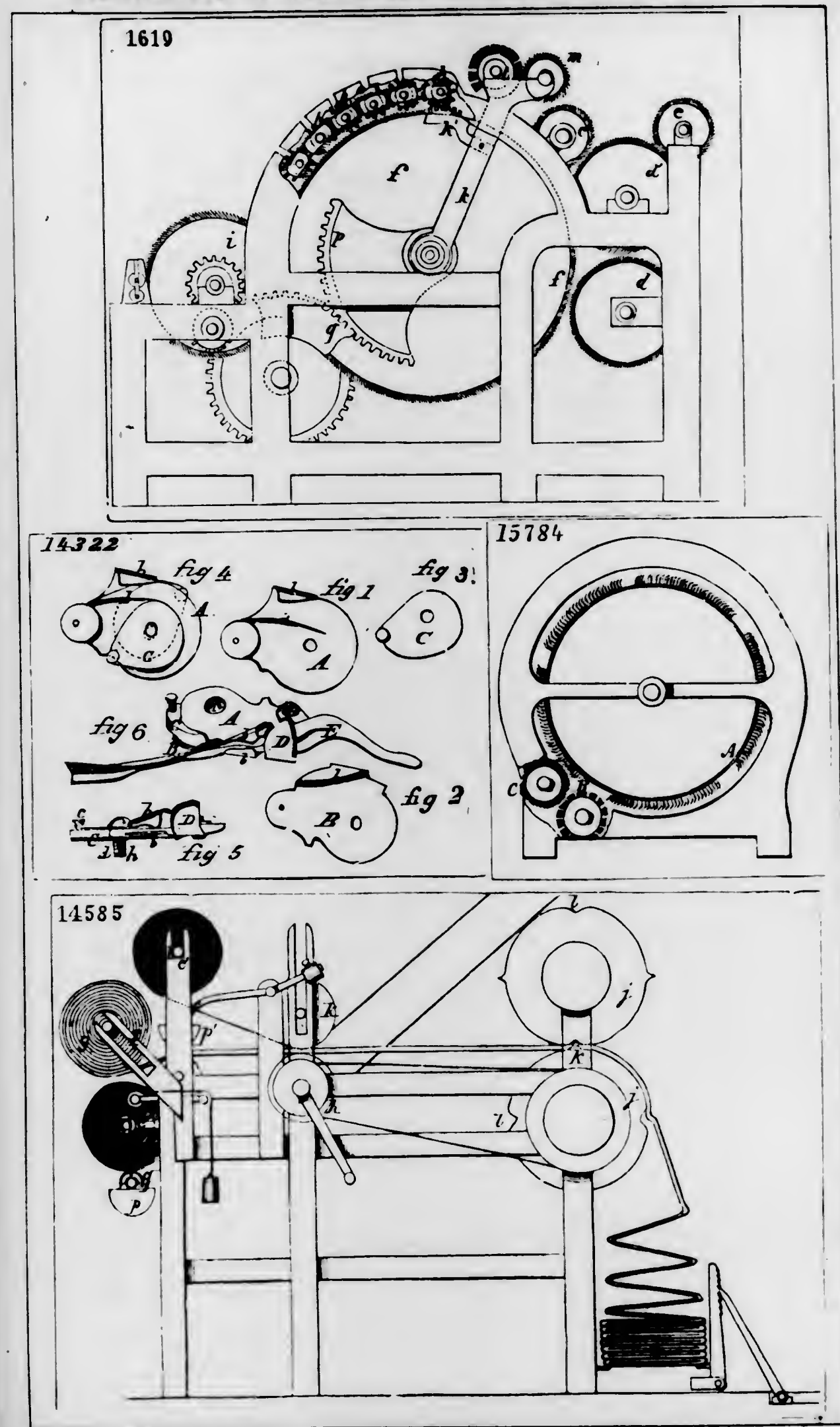
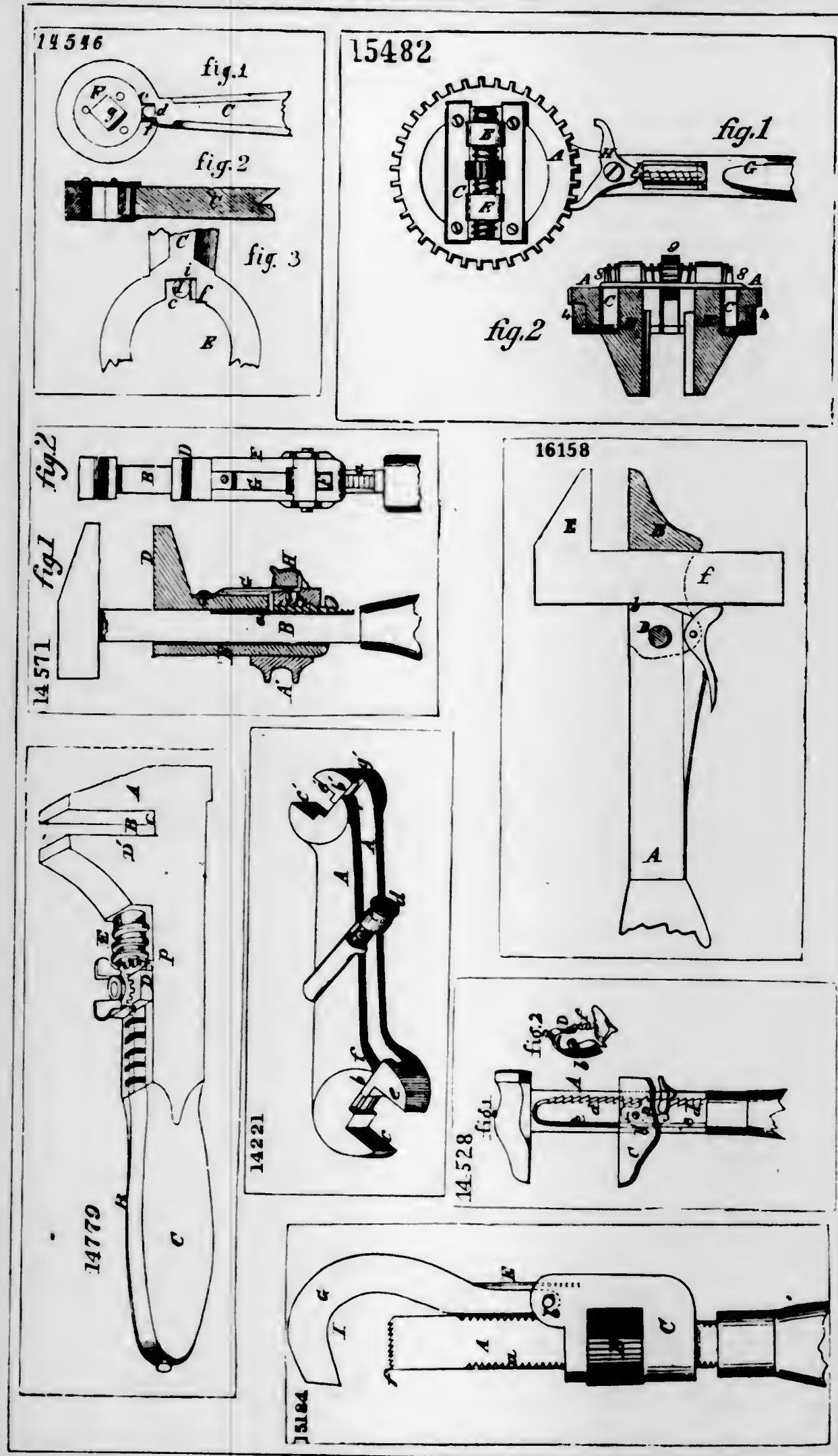


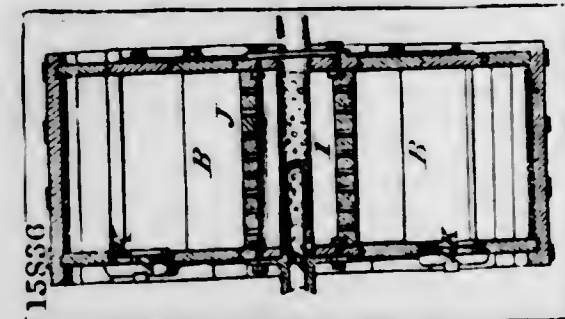
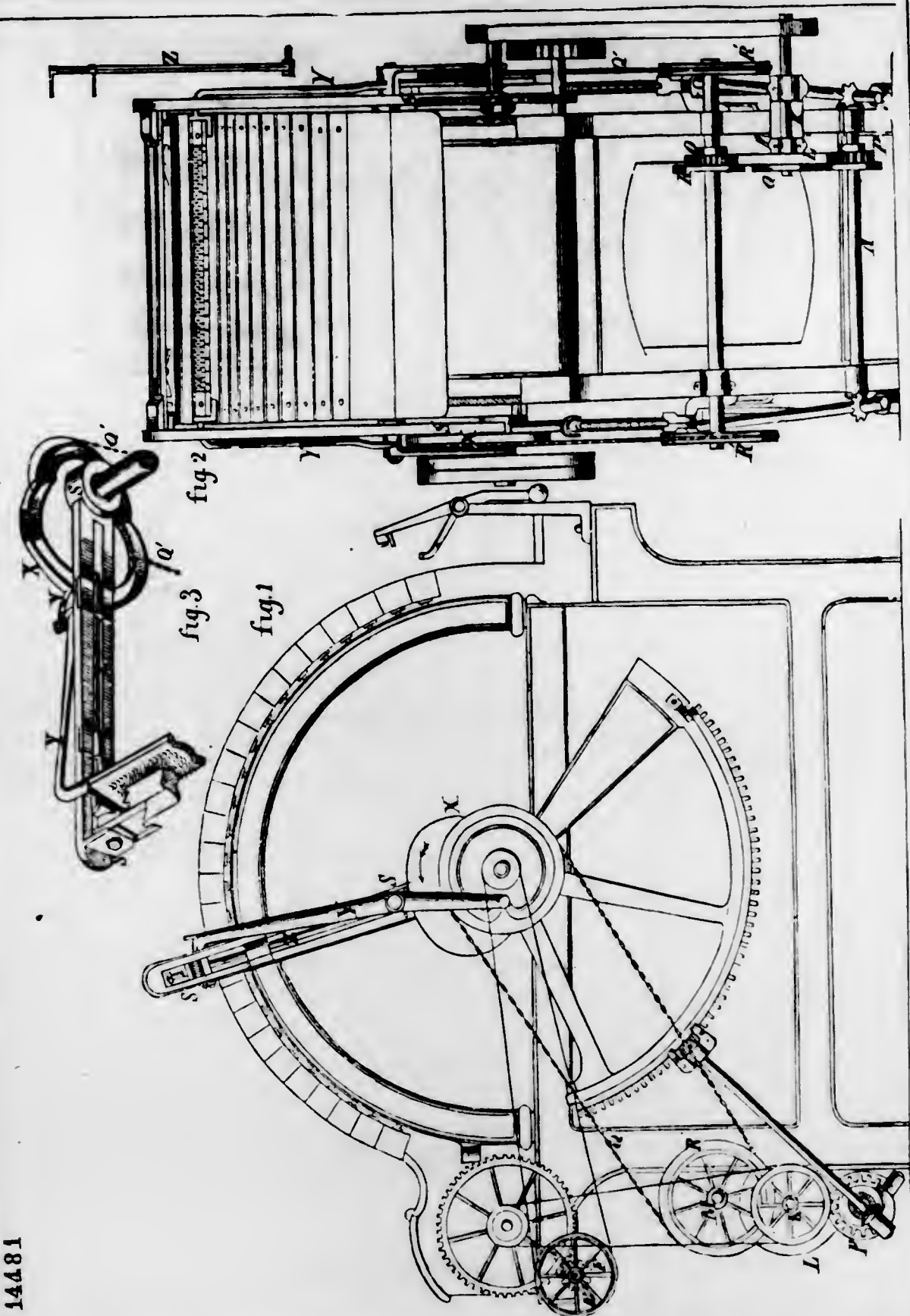
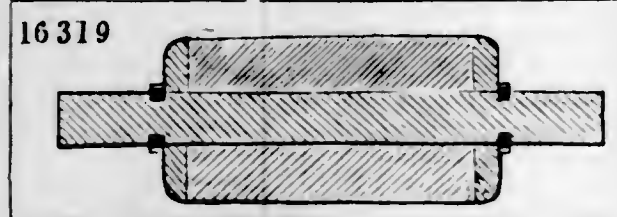
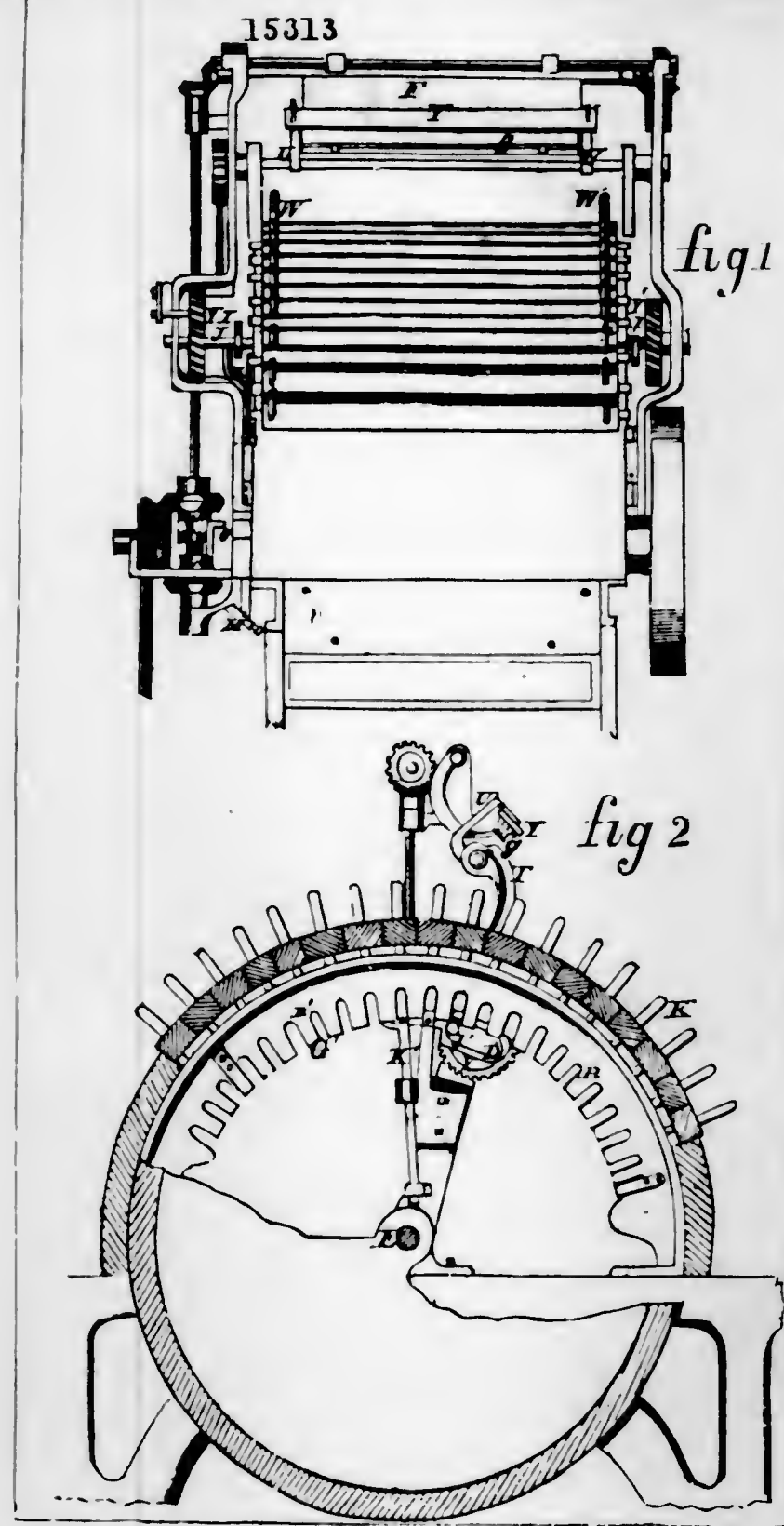
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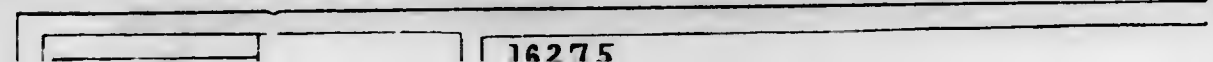
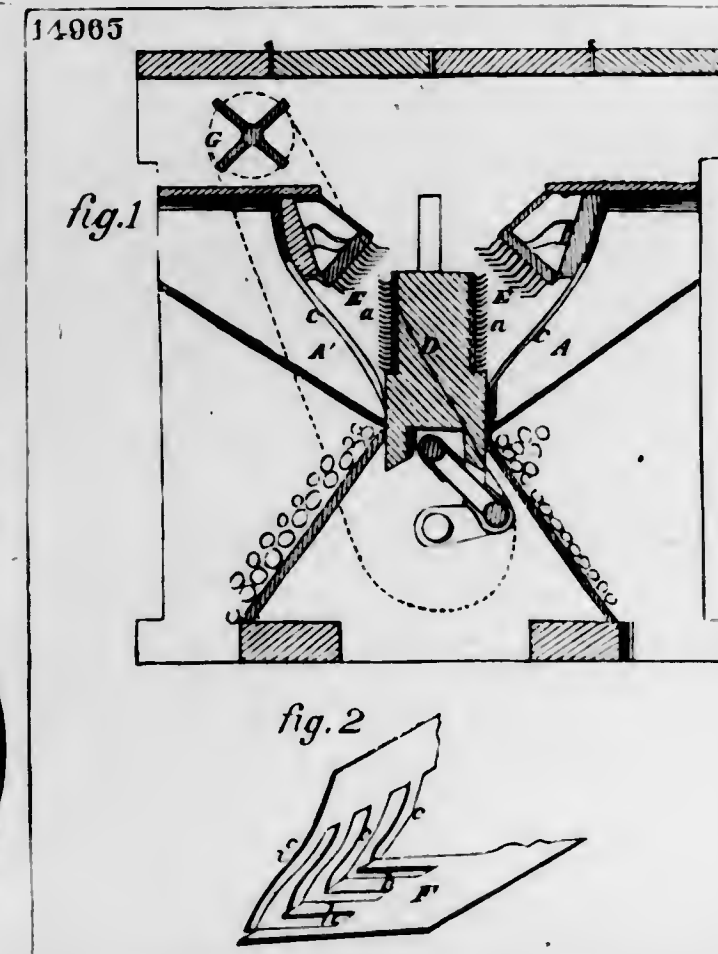
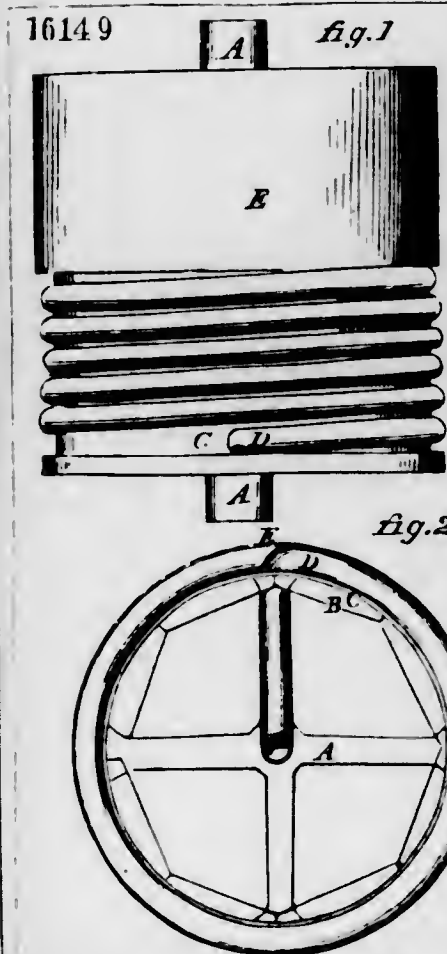
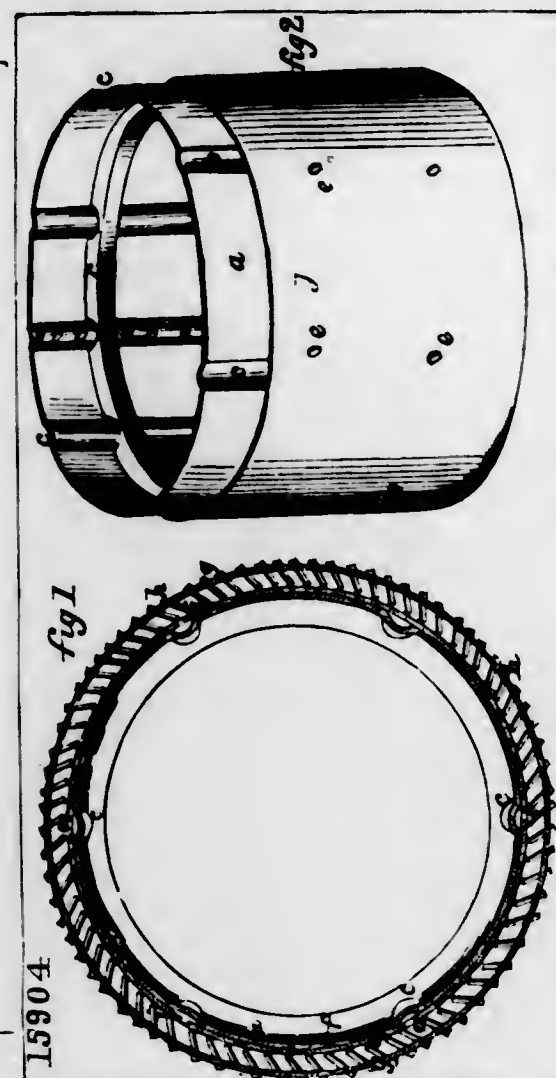
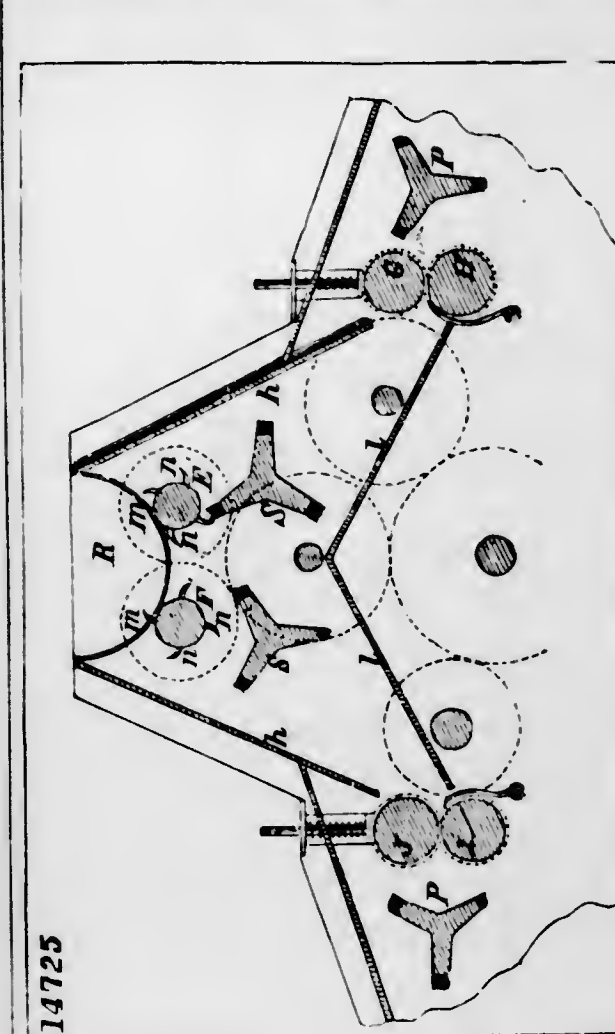
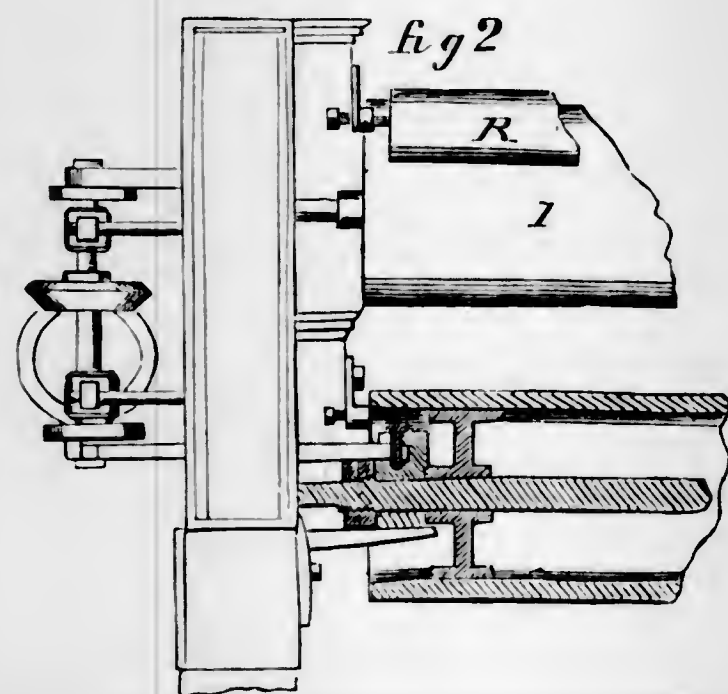
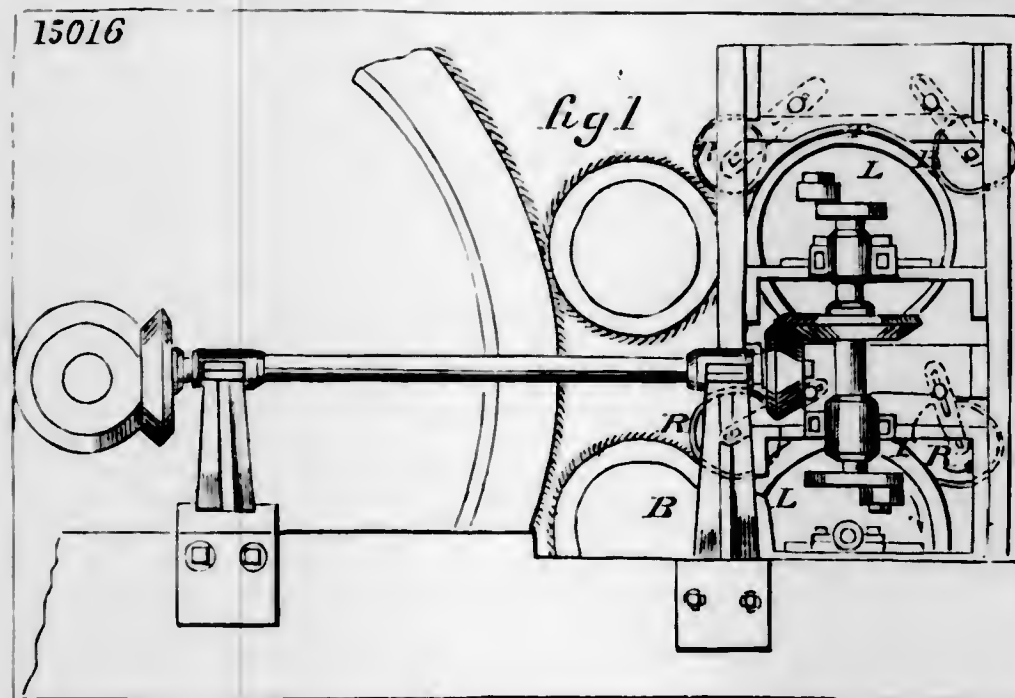
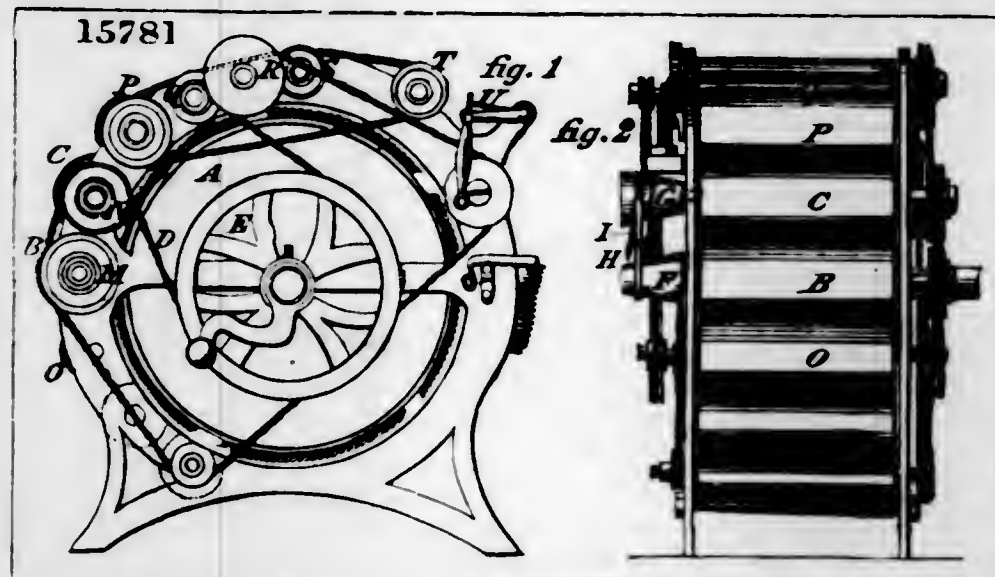


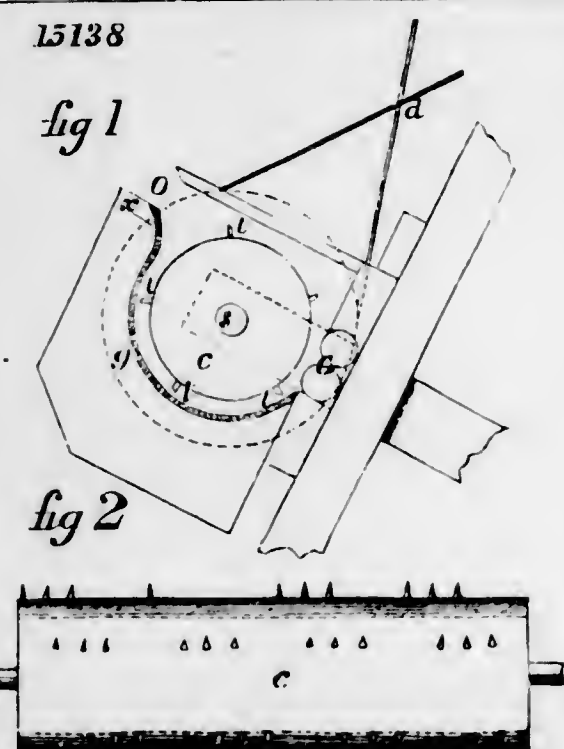
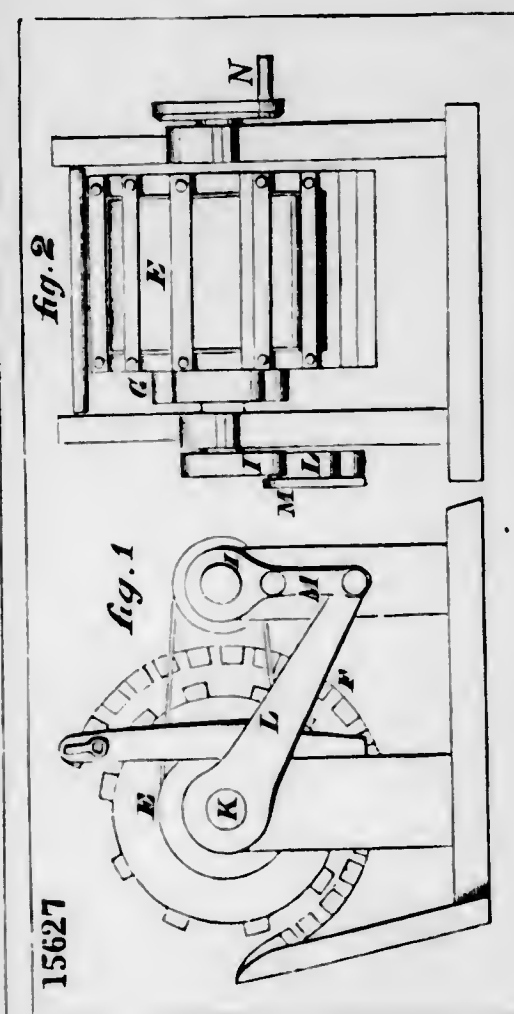
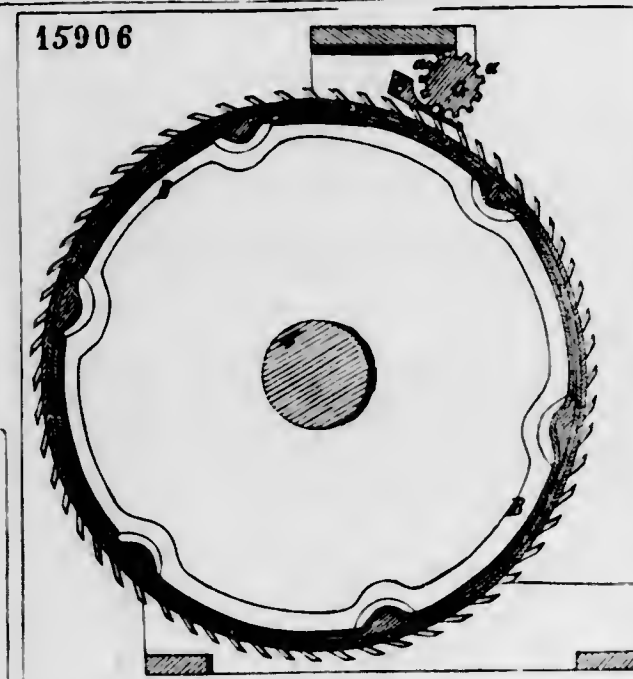
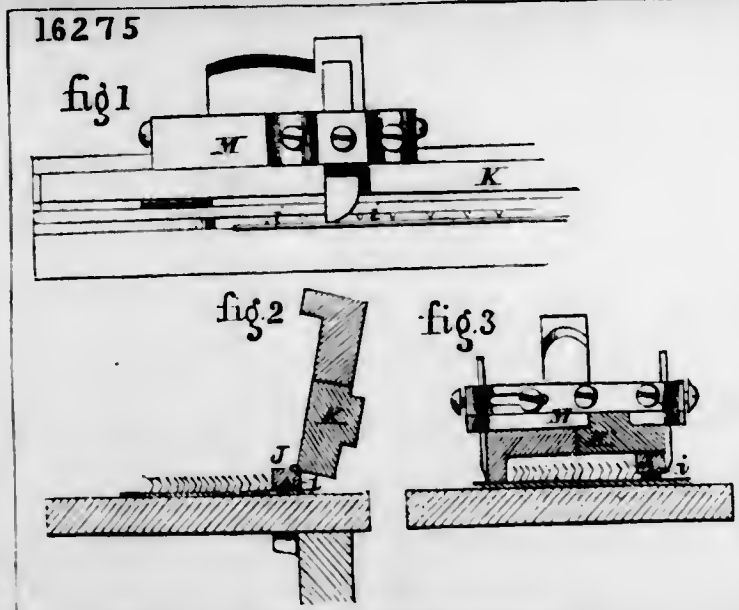
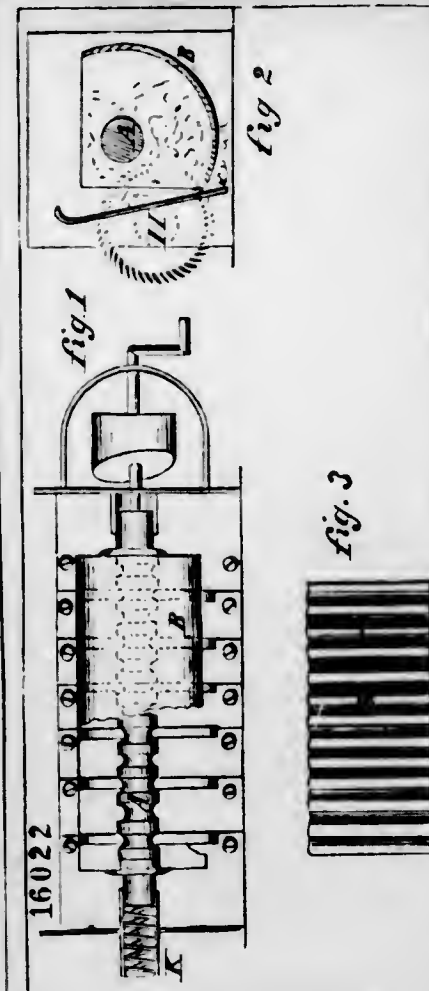
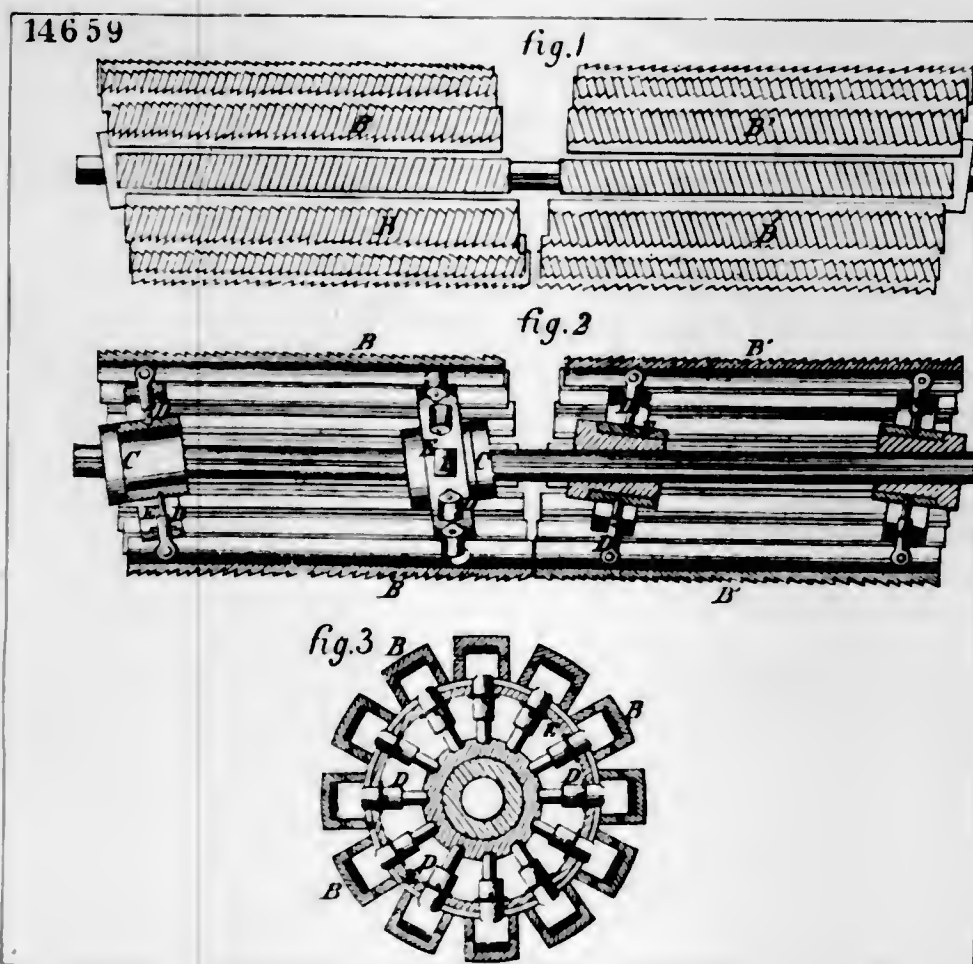
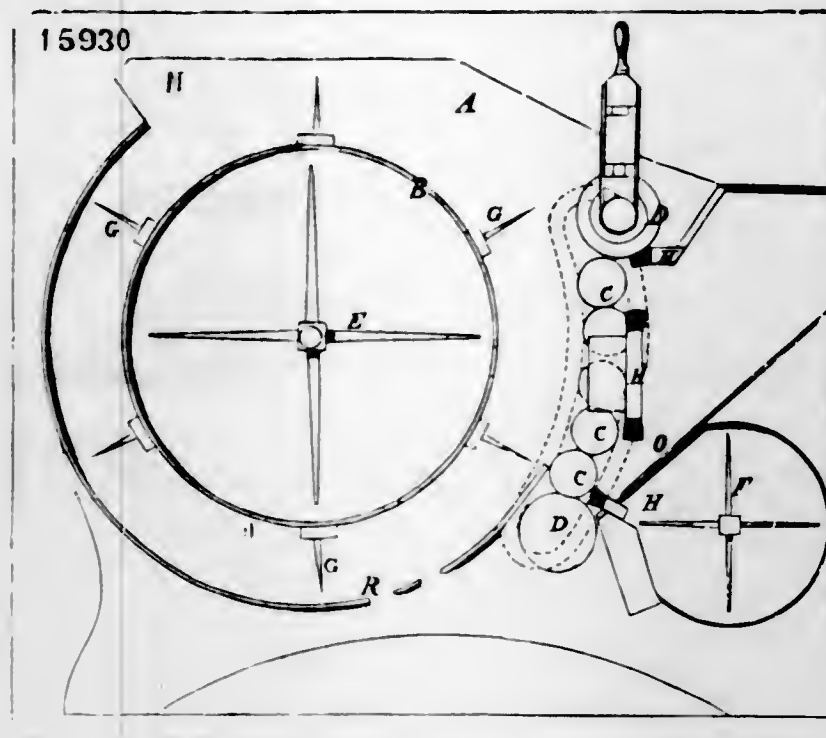
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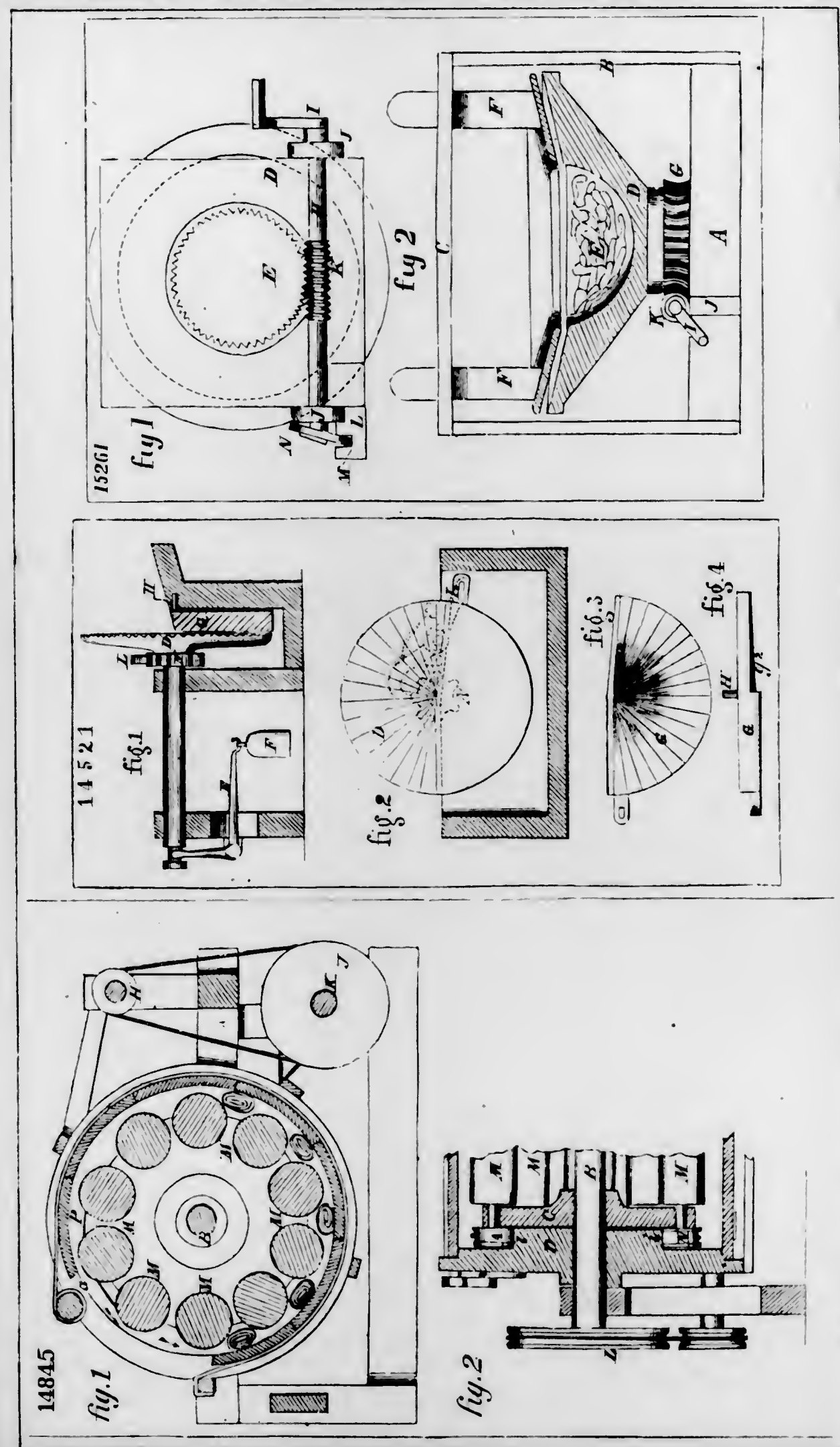
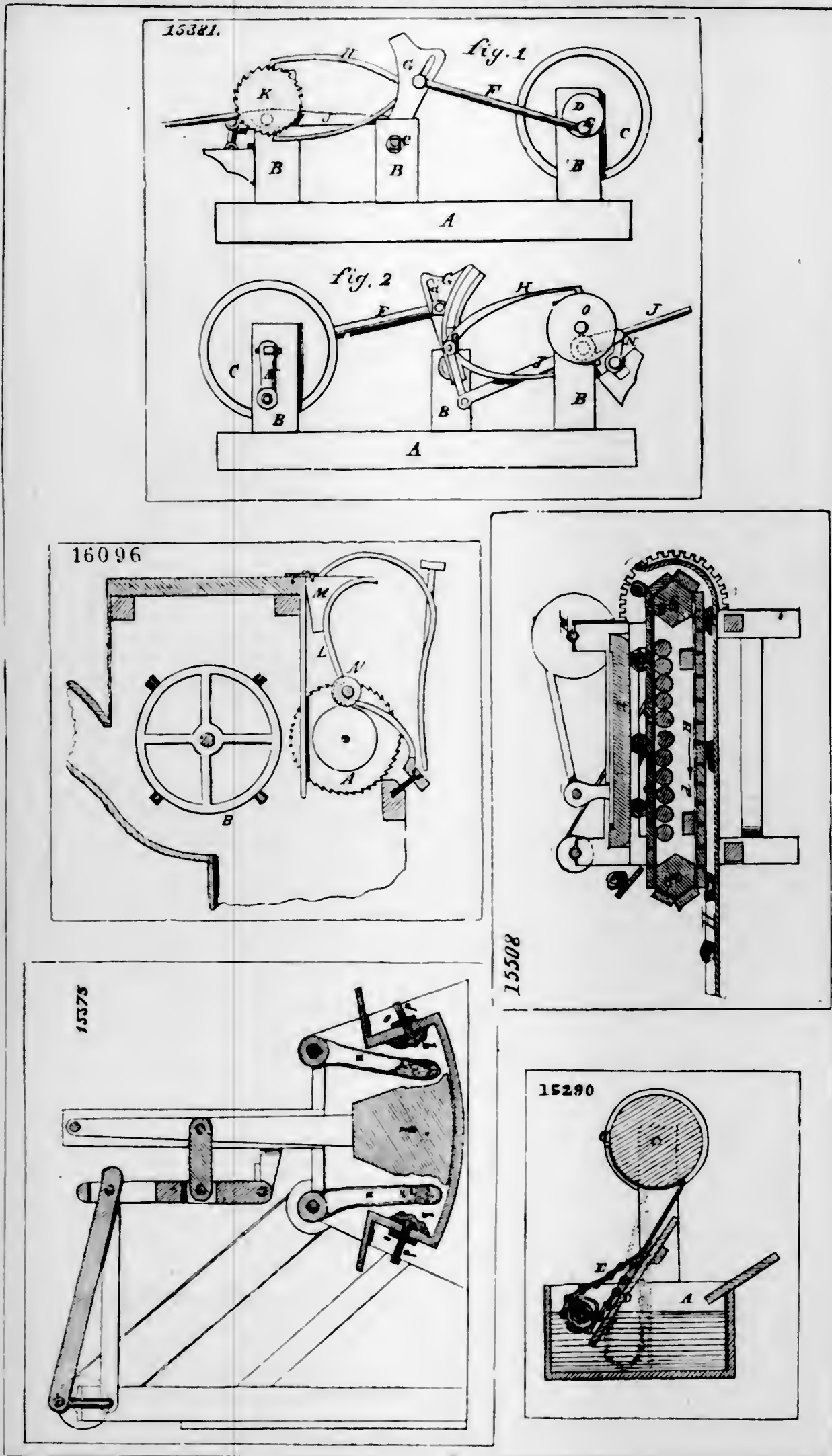


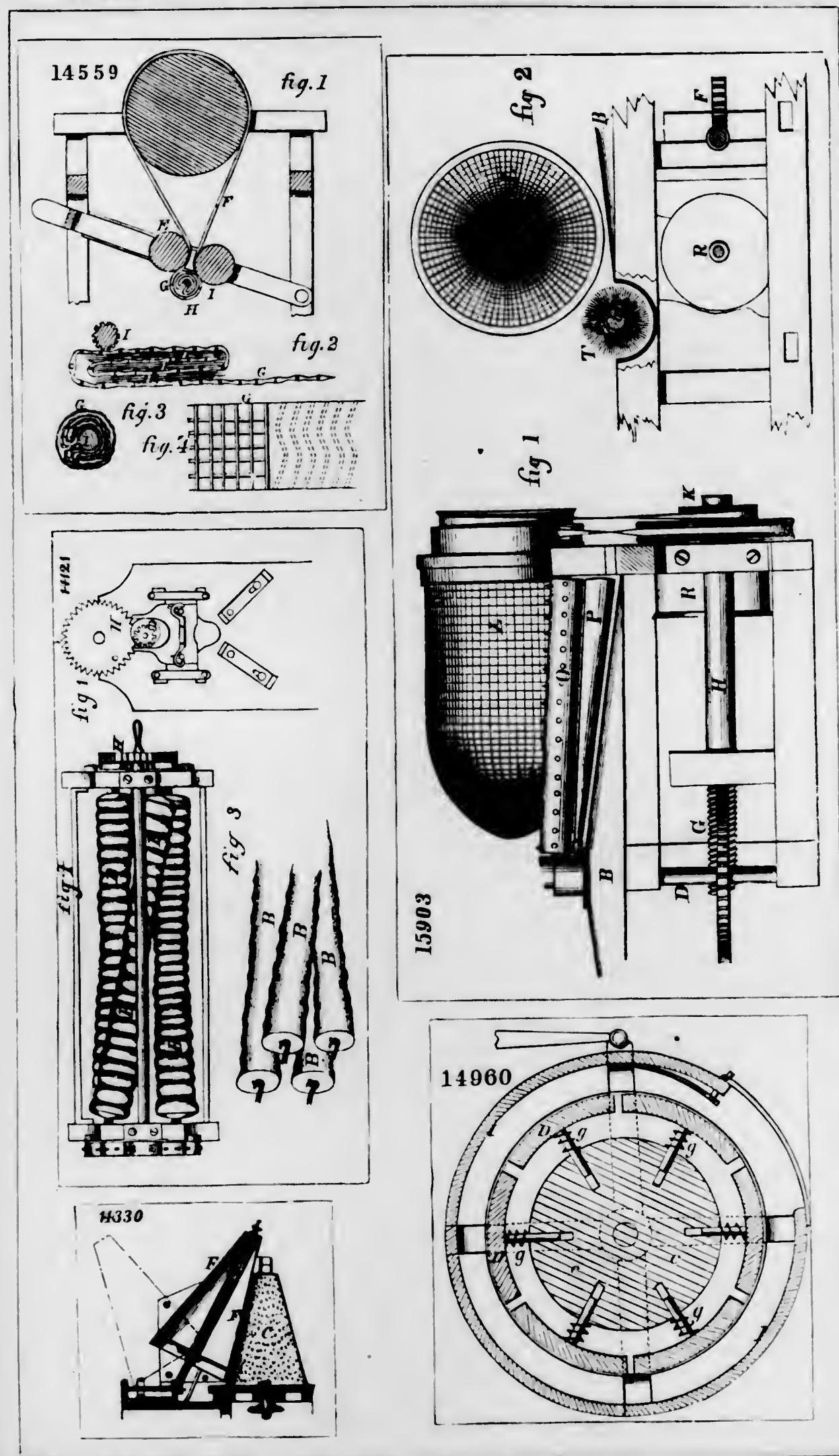
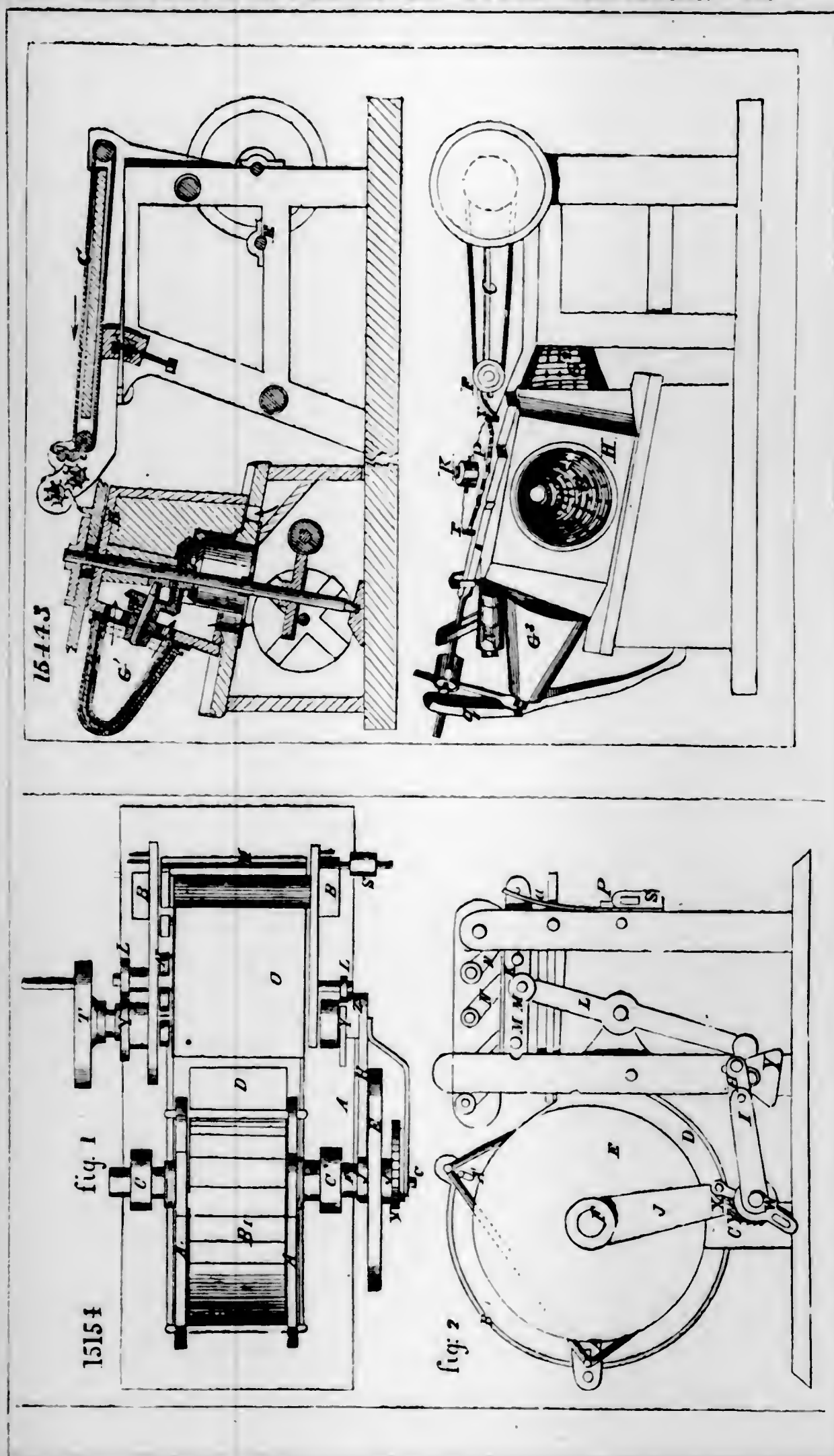


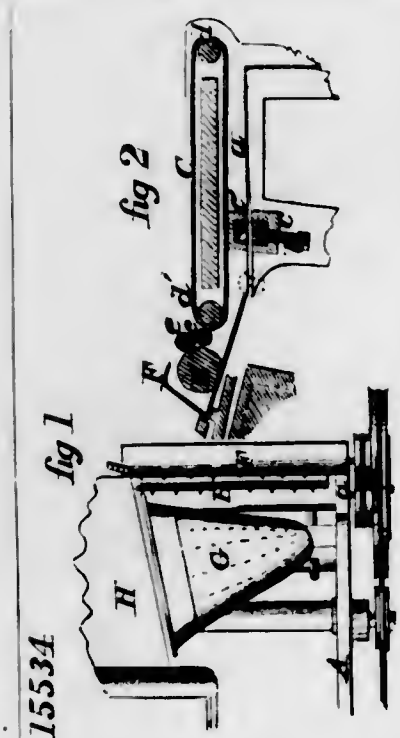
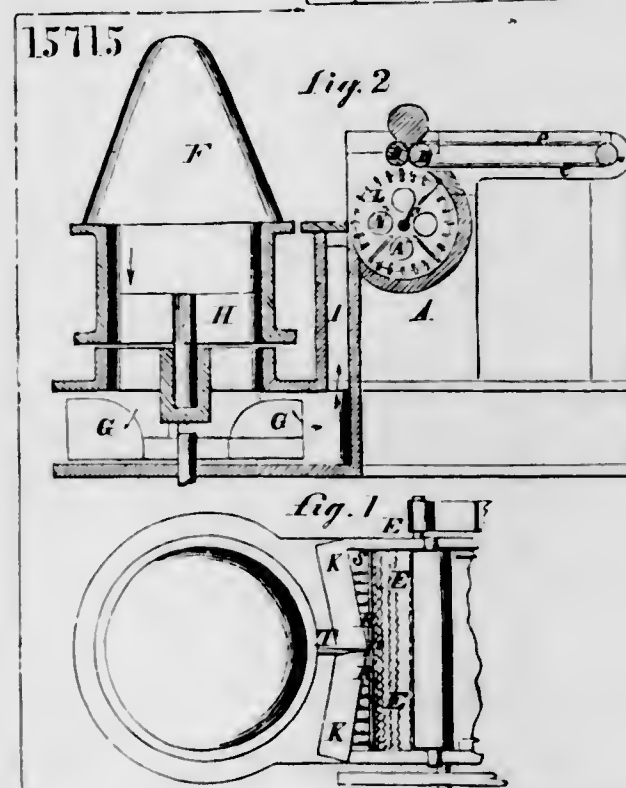
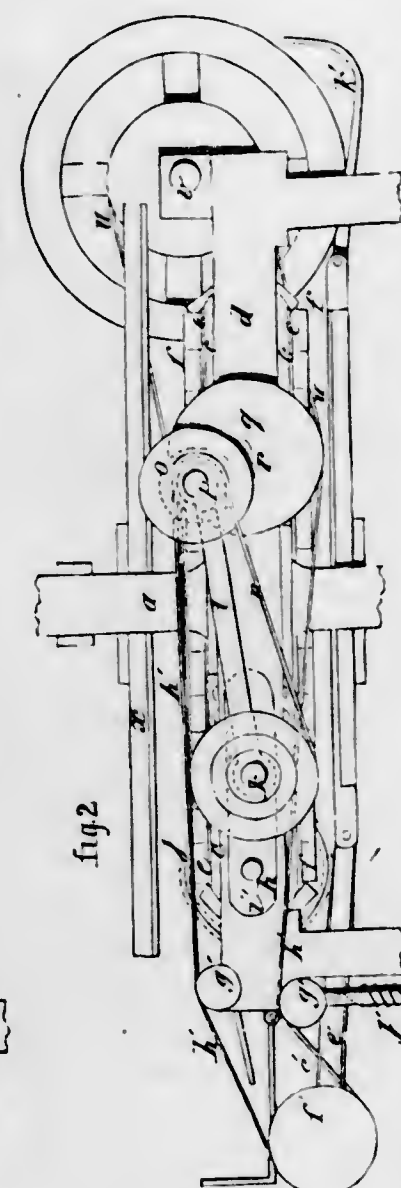
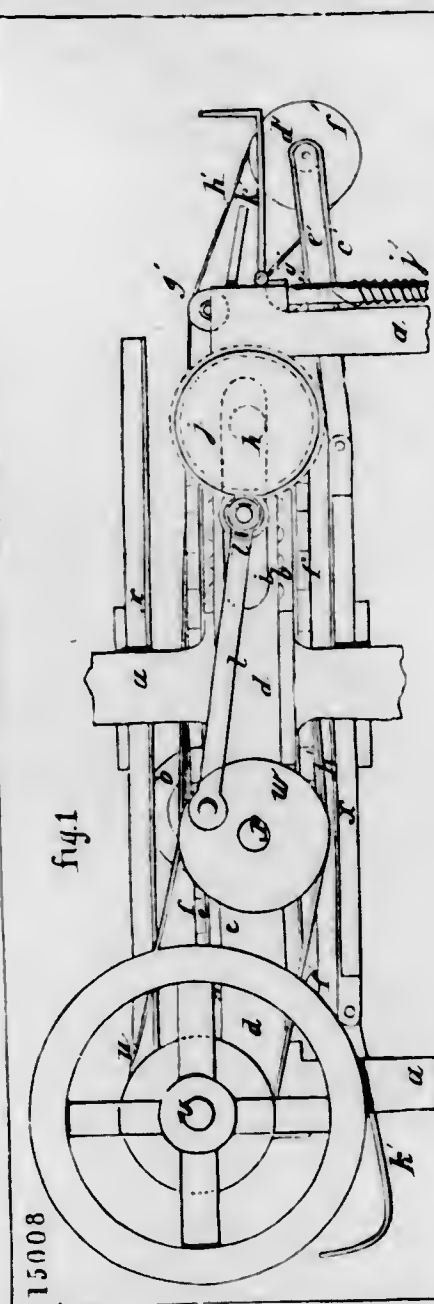
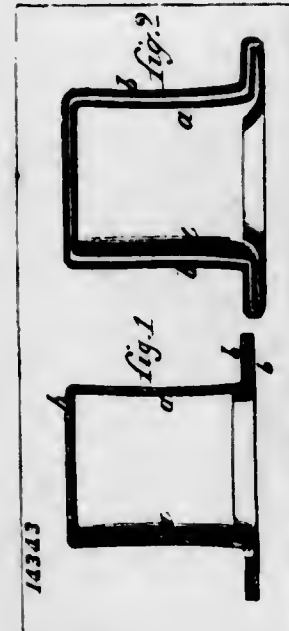
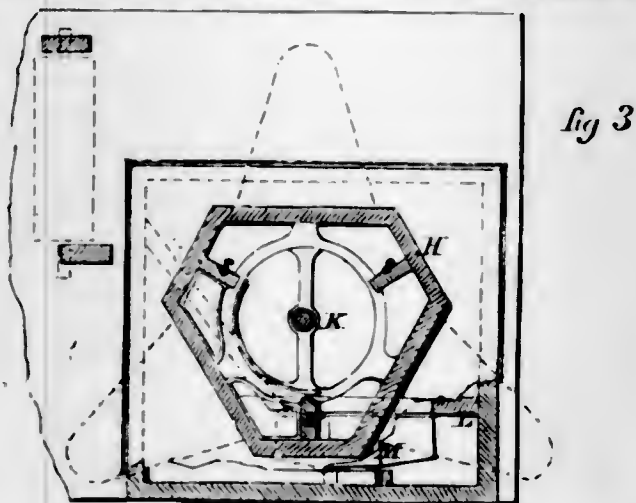
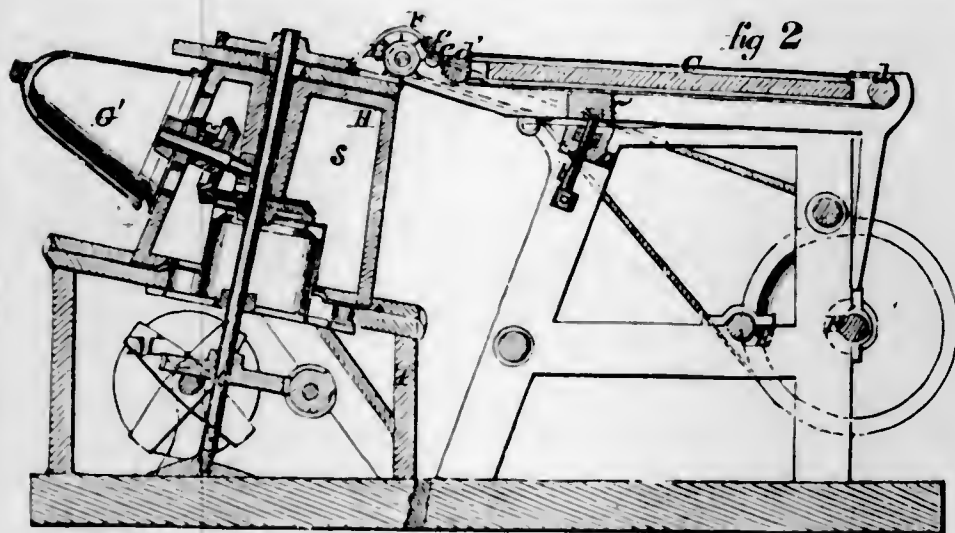
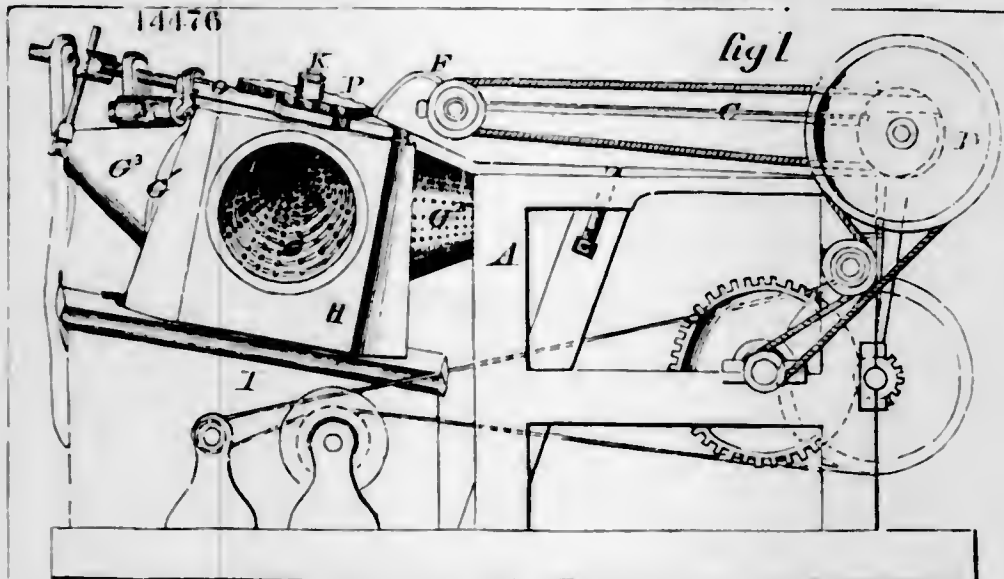
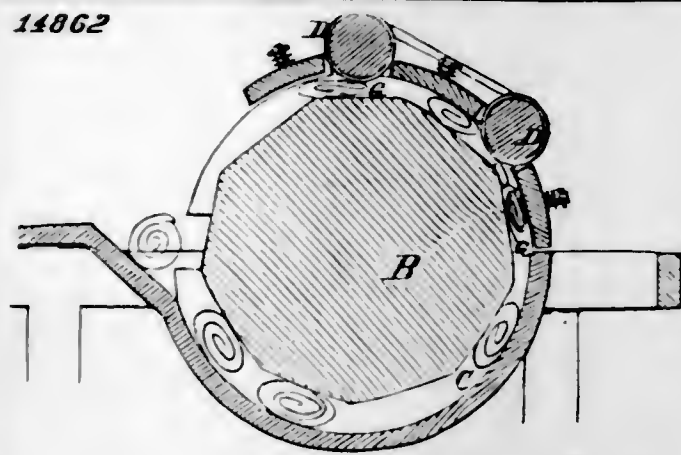
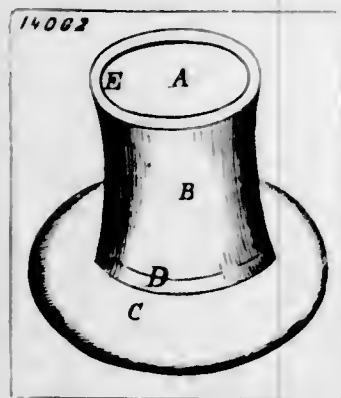


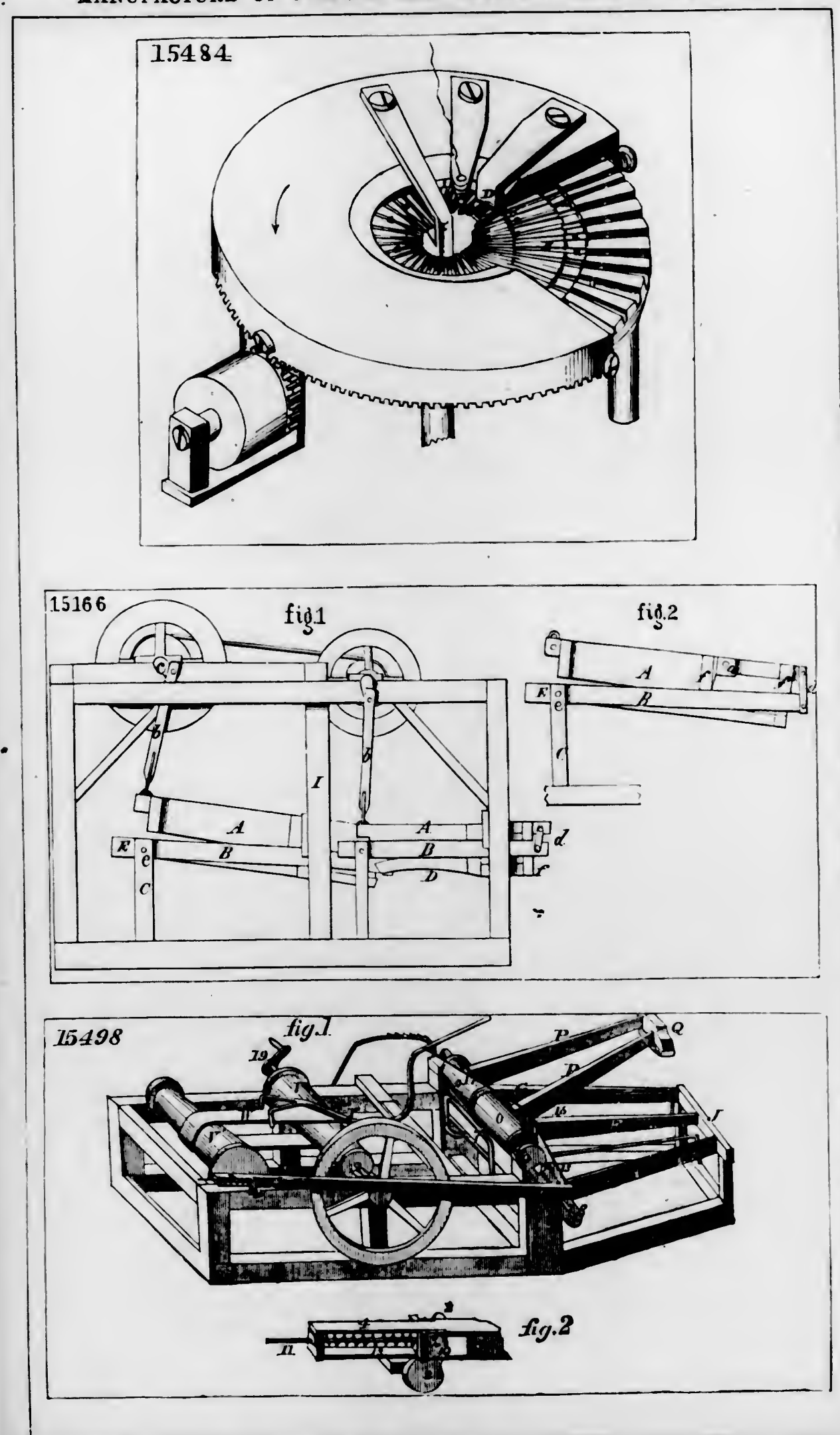
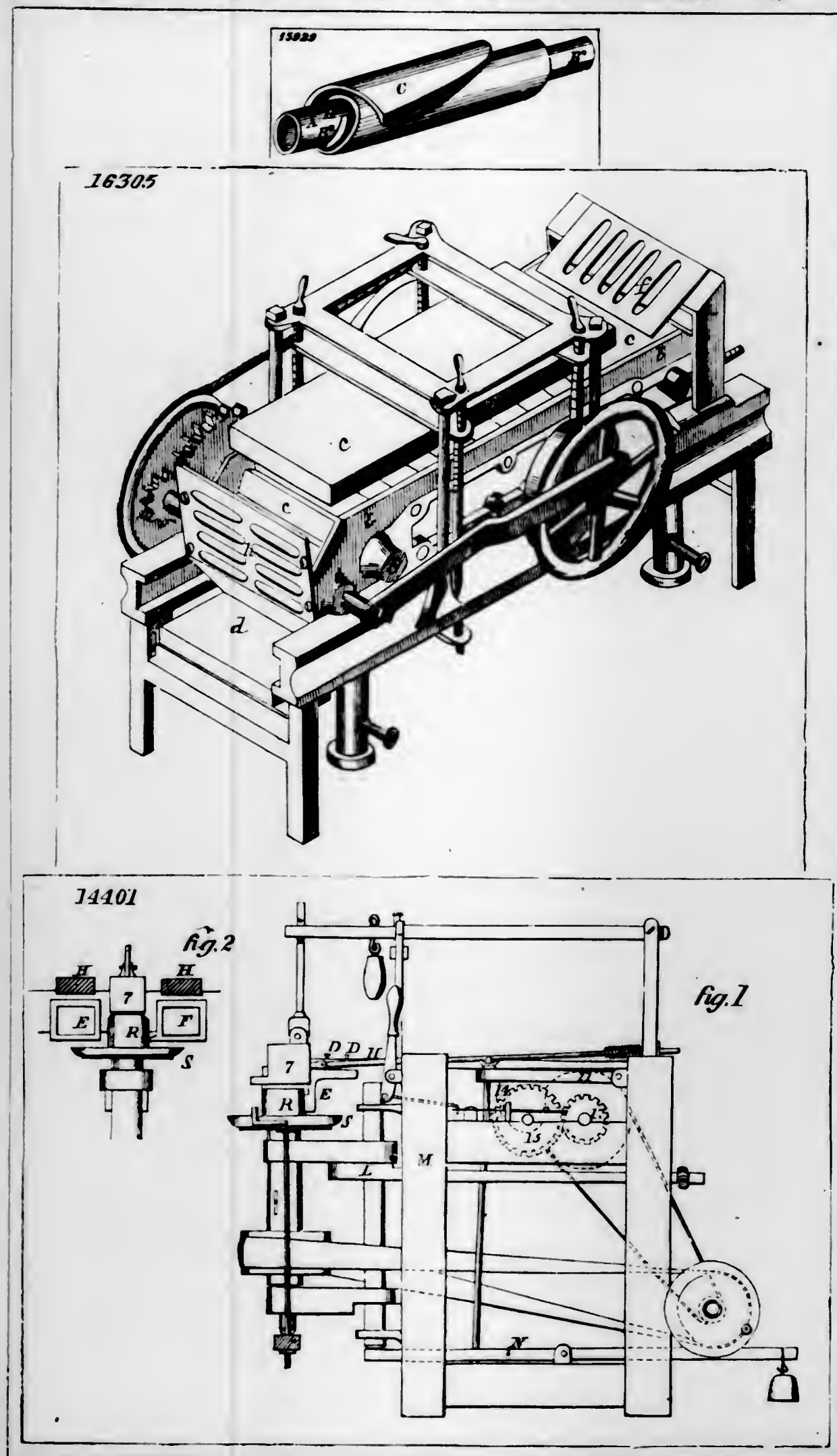


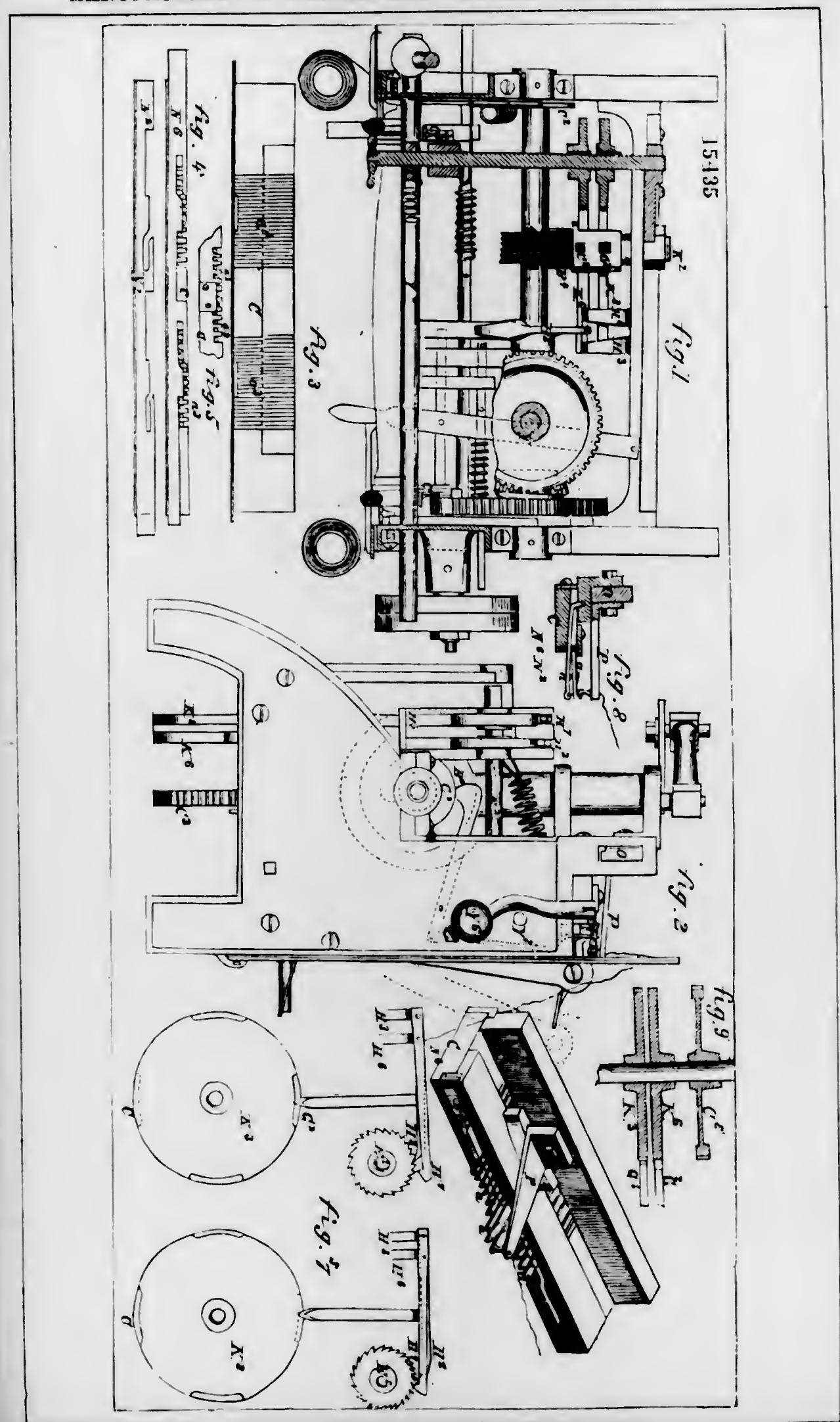
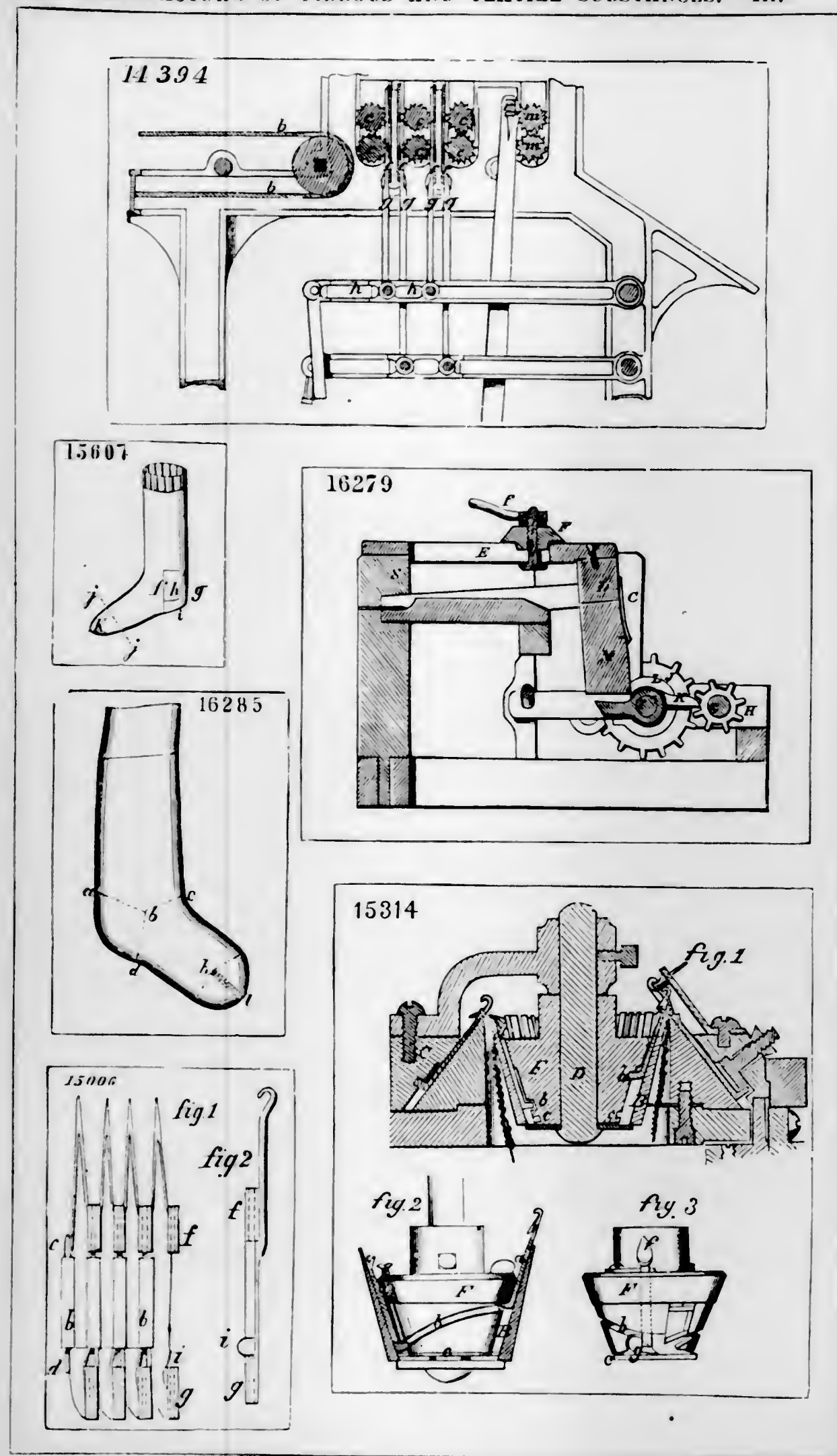












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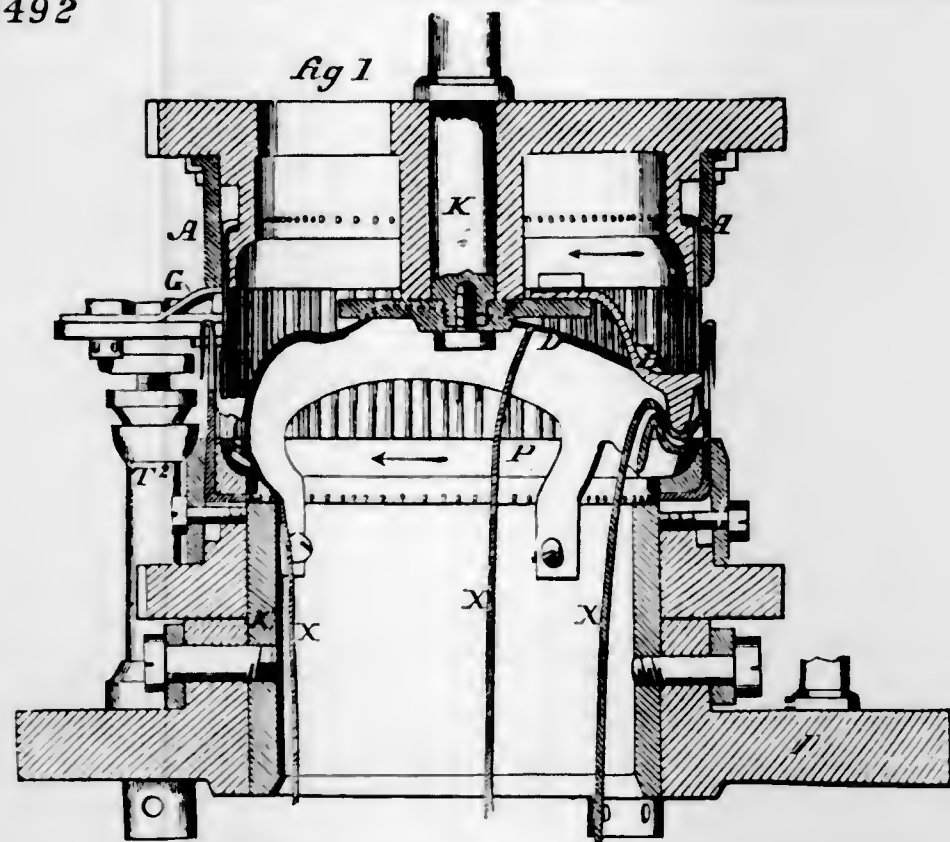


fig 2

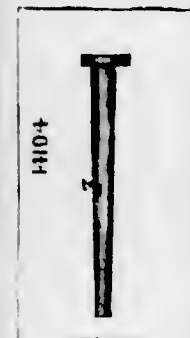
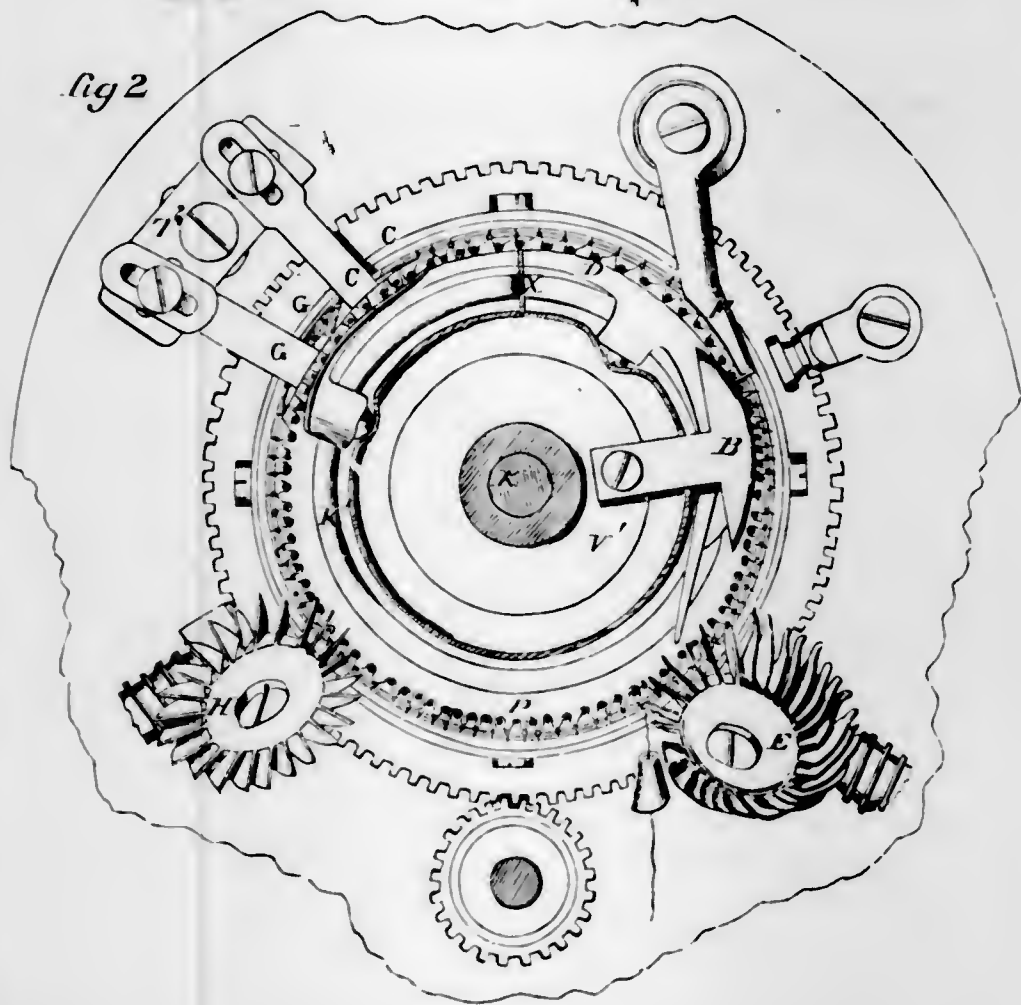


fig1

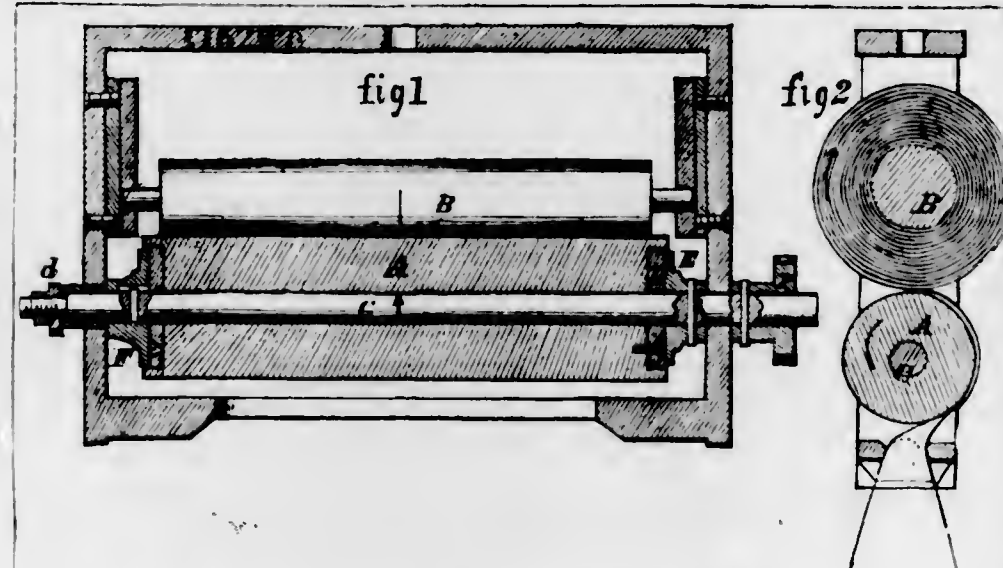
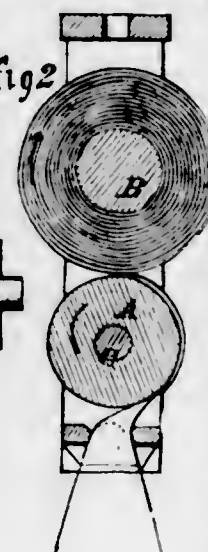
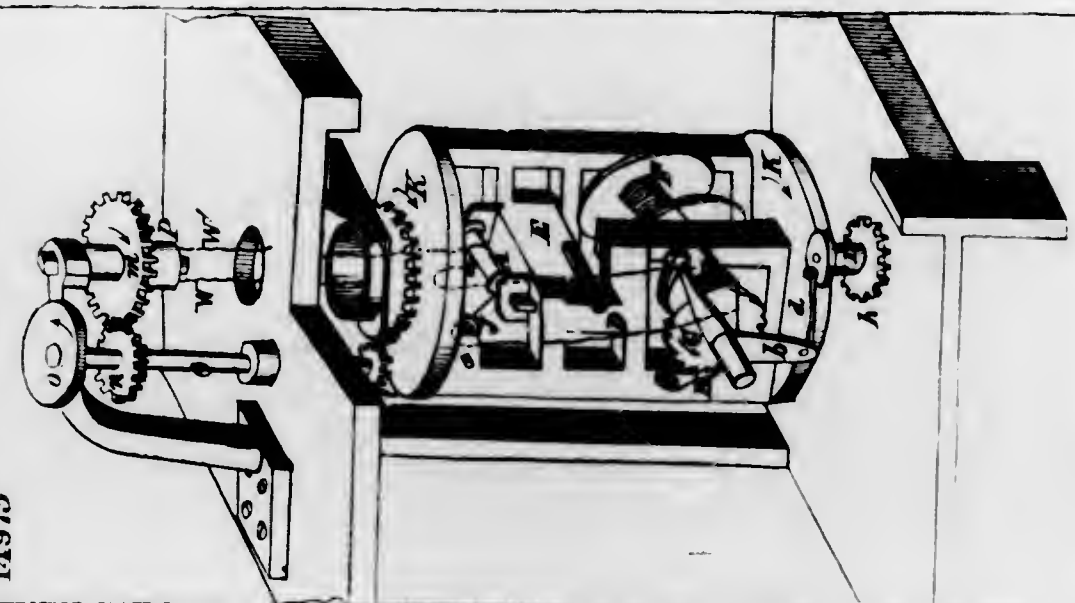


fig2



14975



15326

fig1

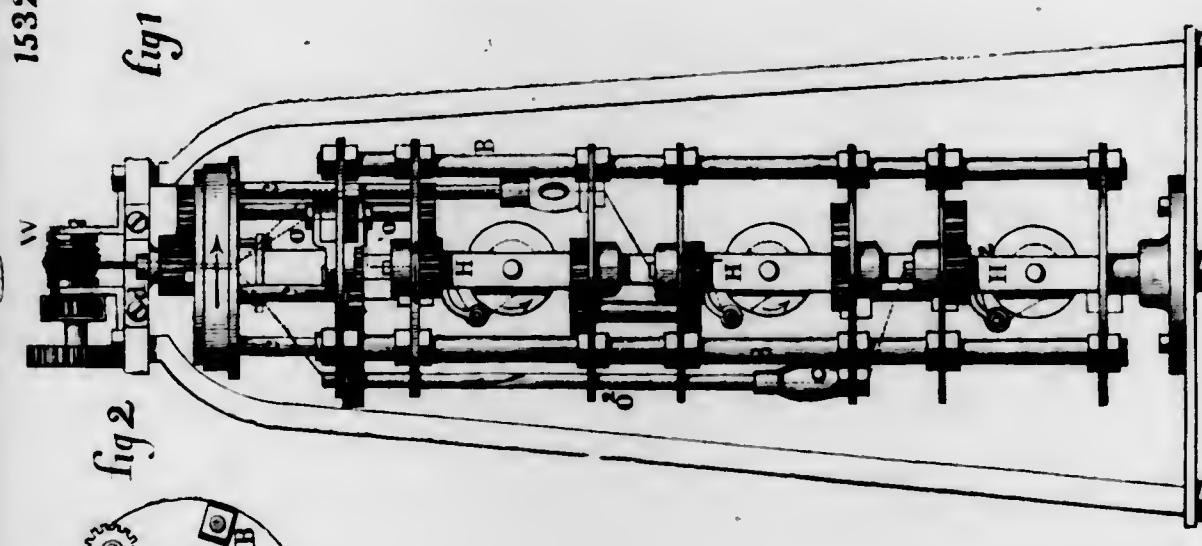
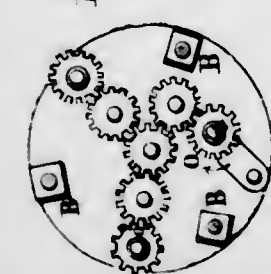
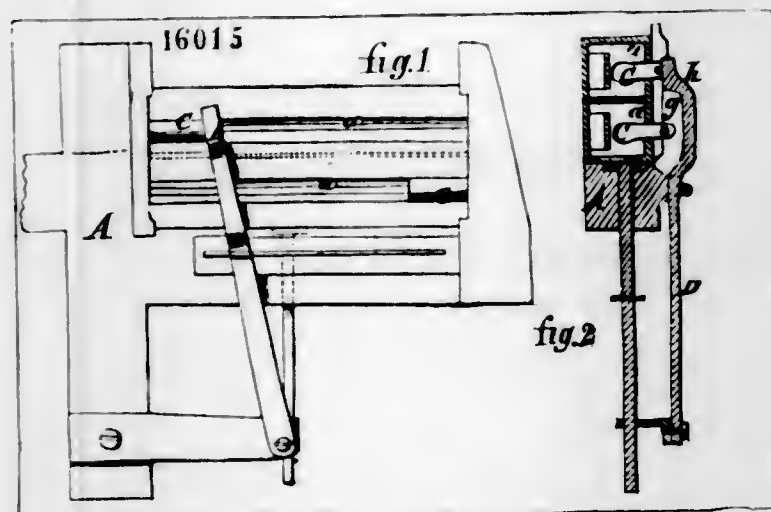
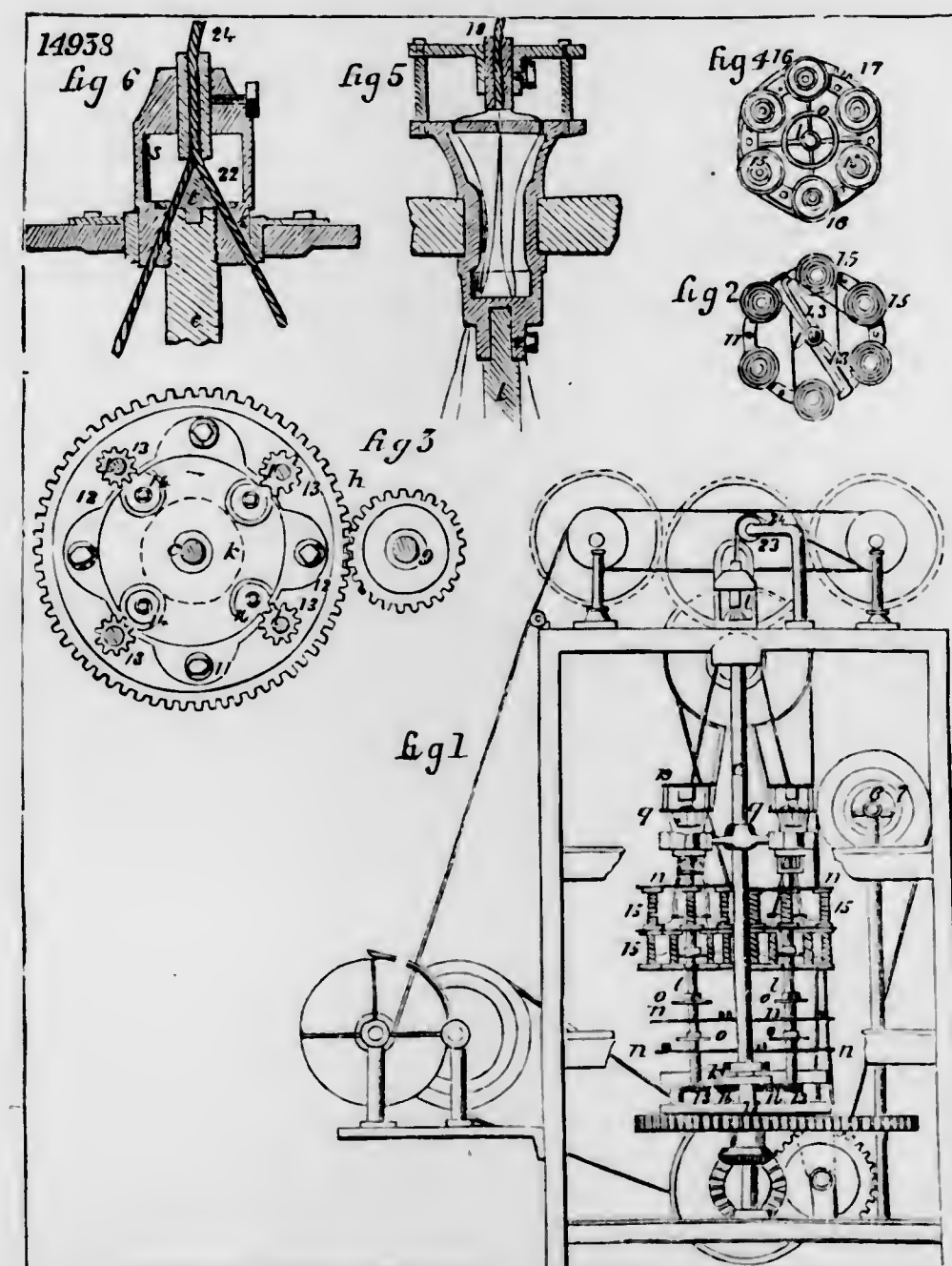
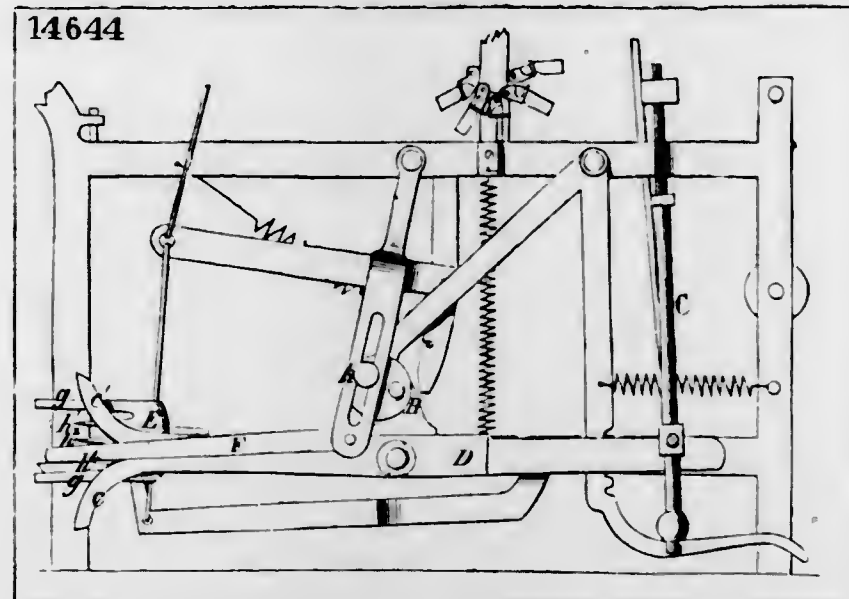
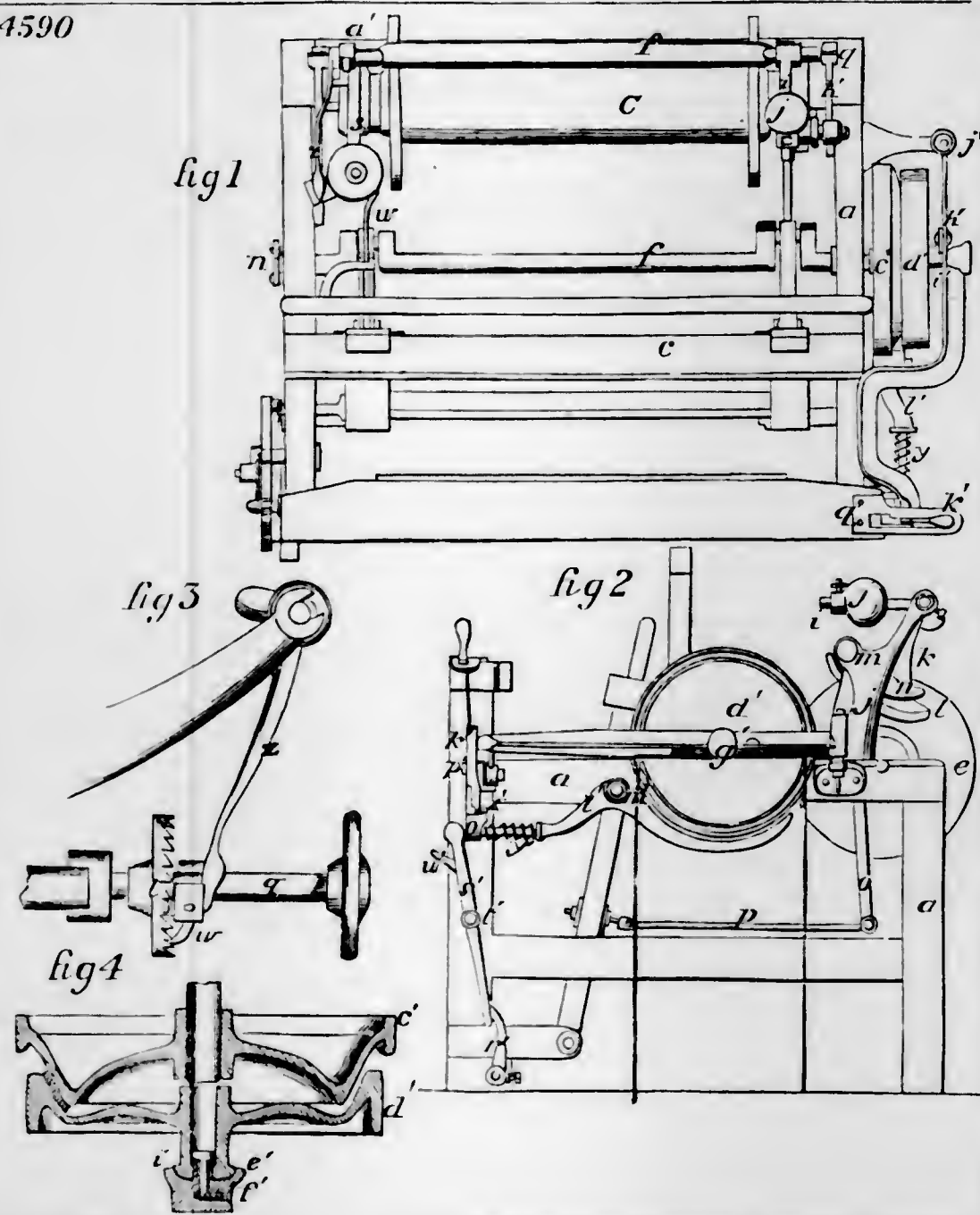


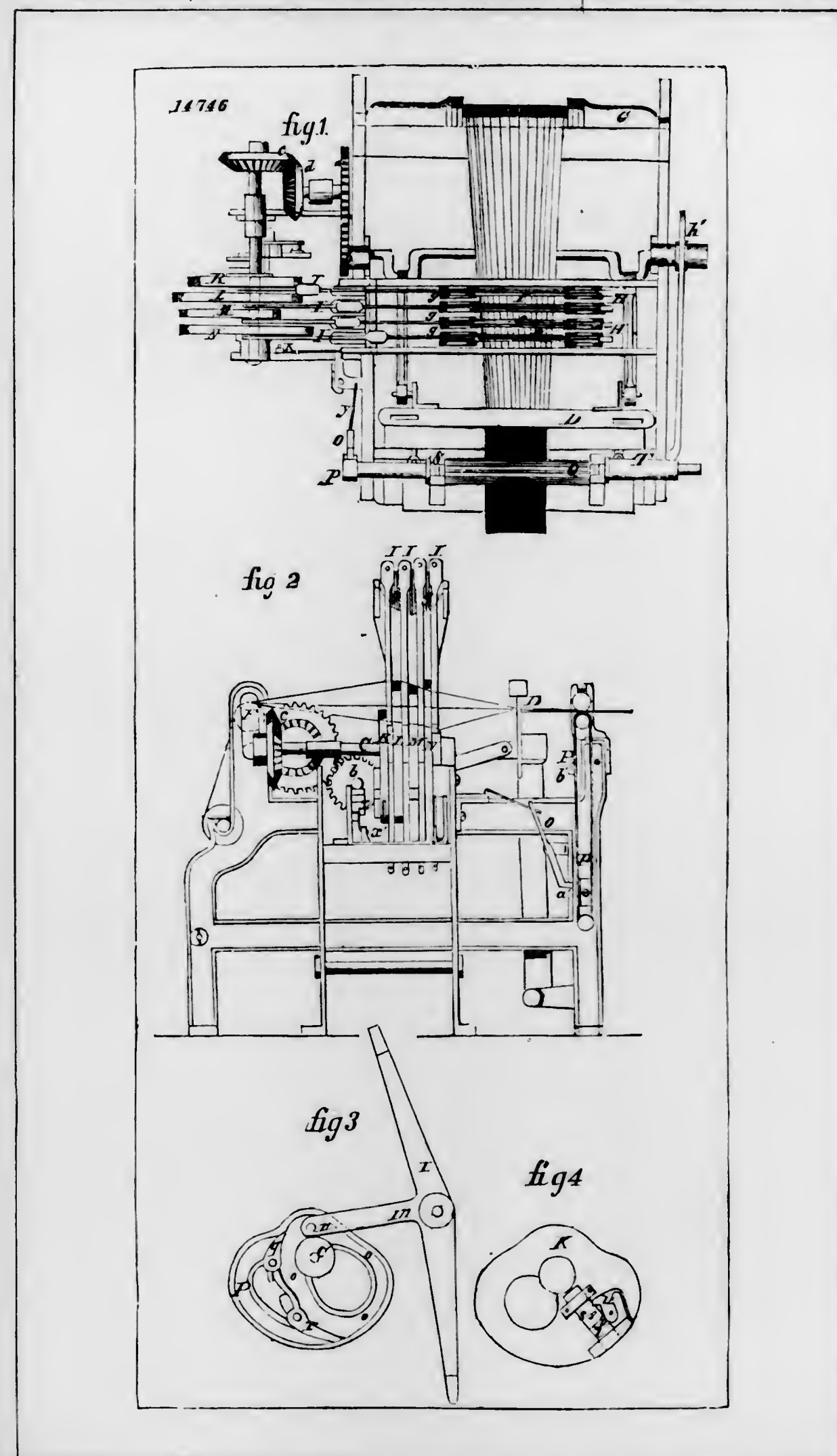
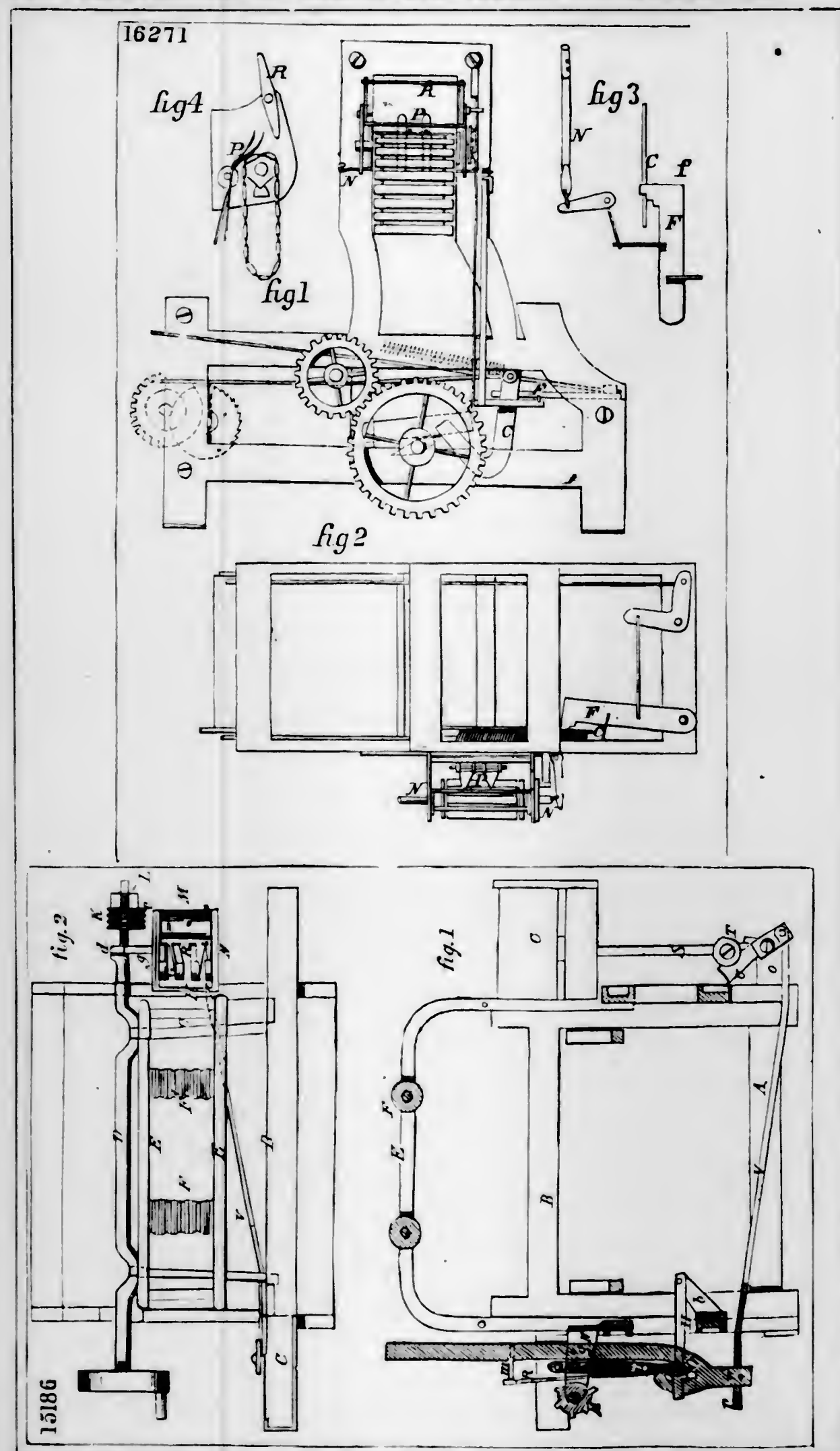
fig2

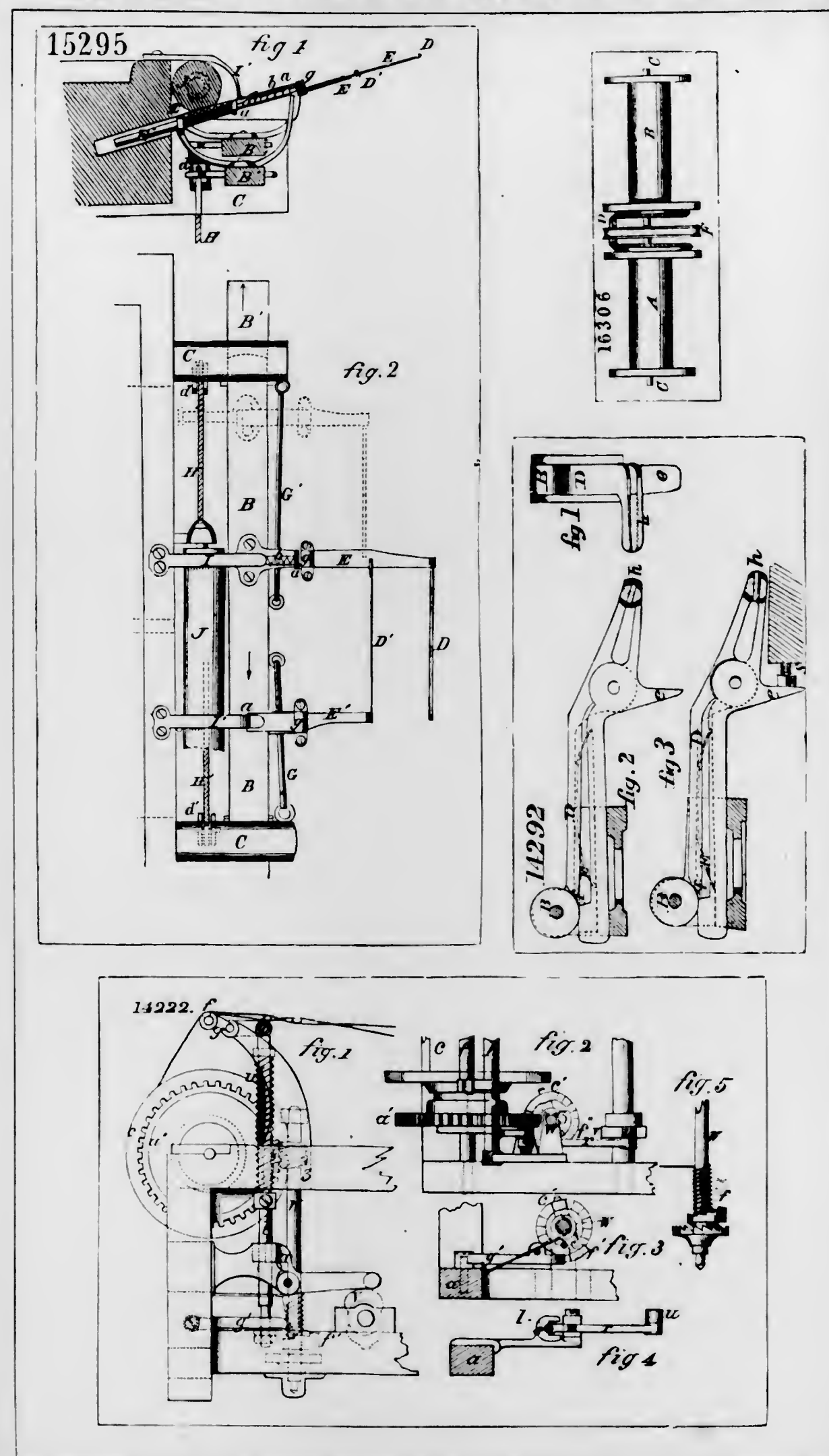
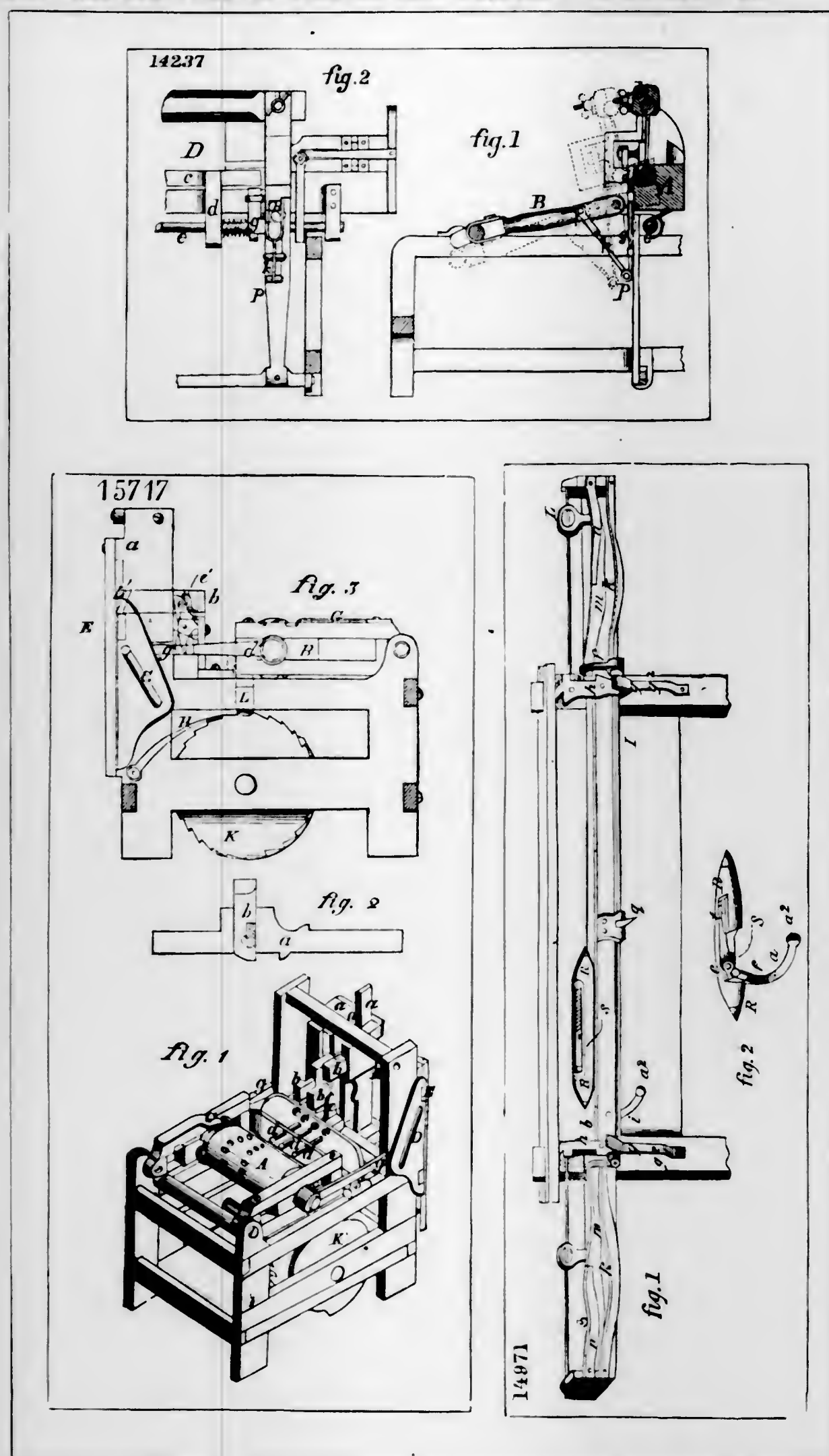


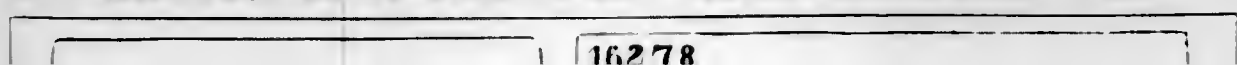
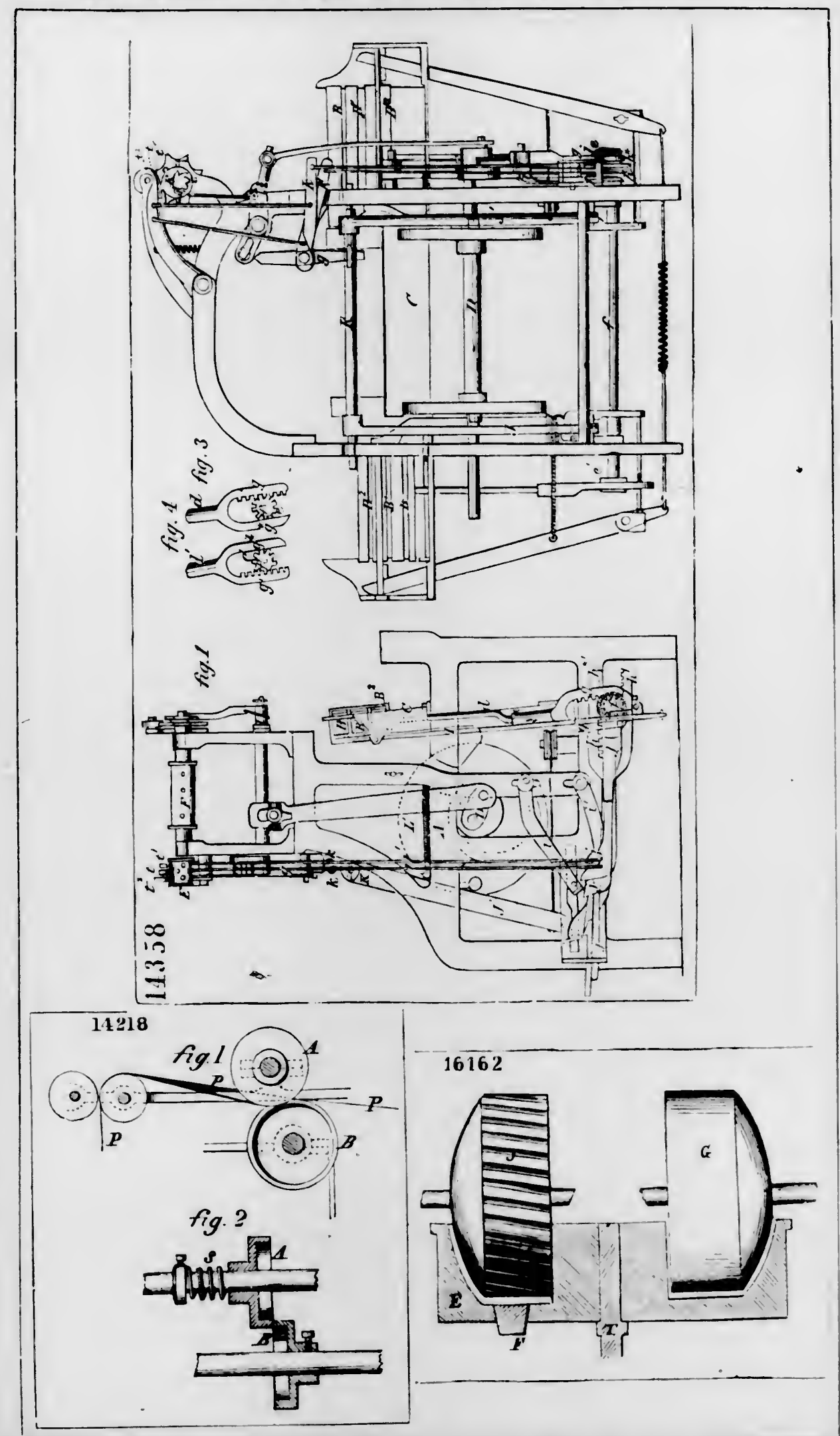
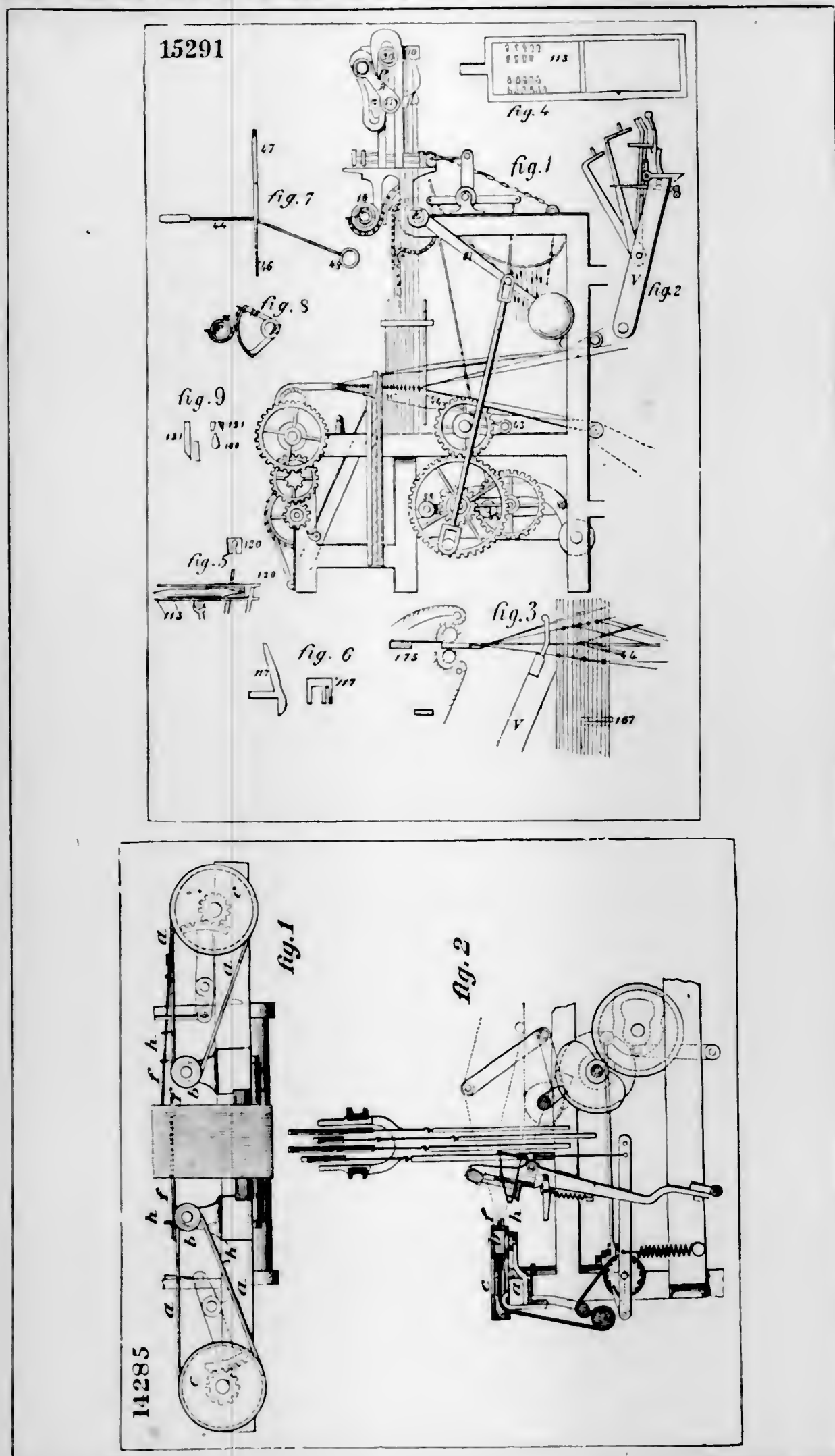


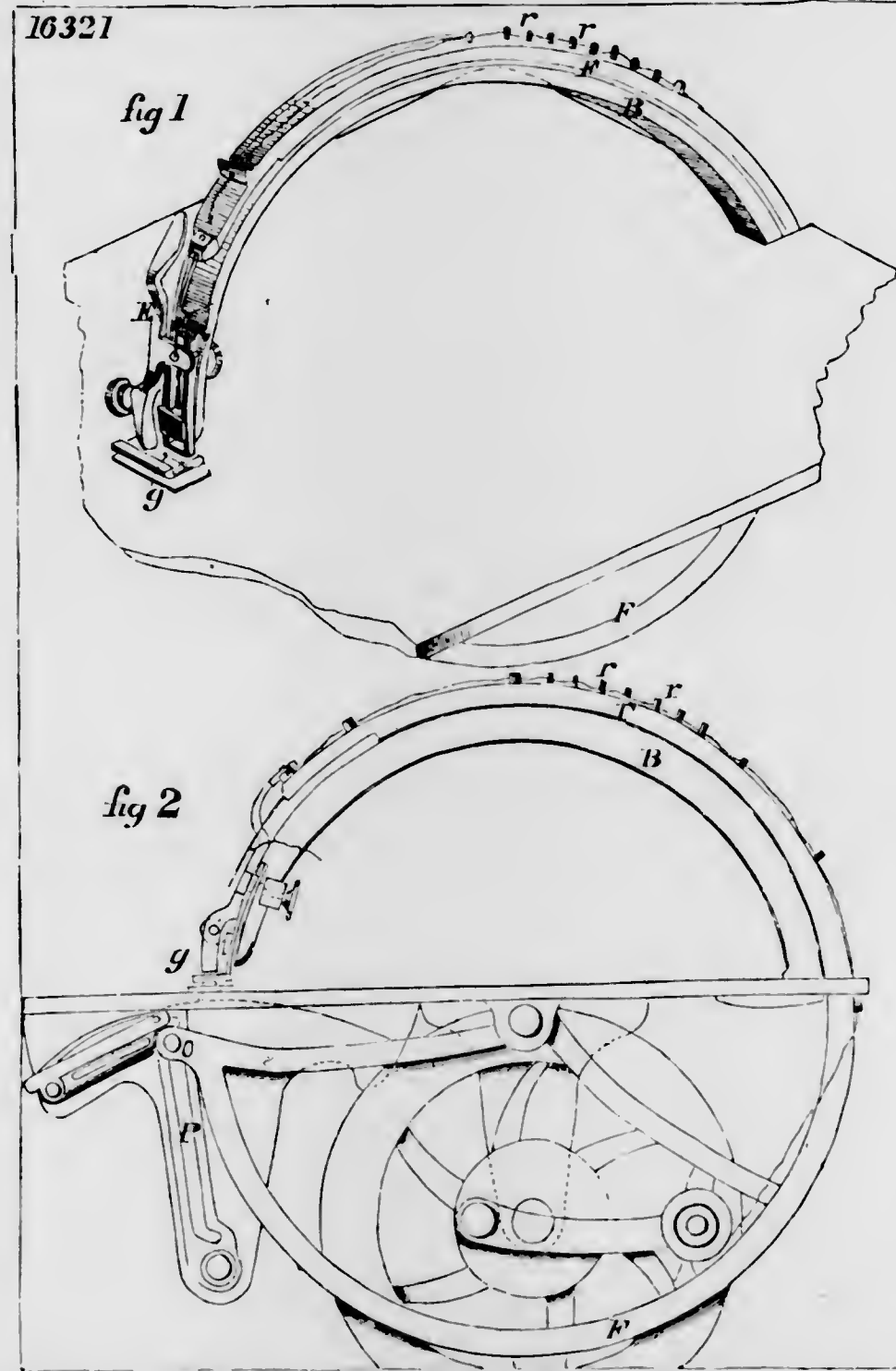
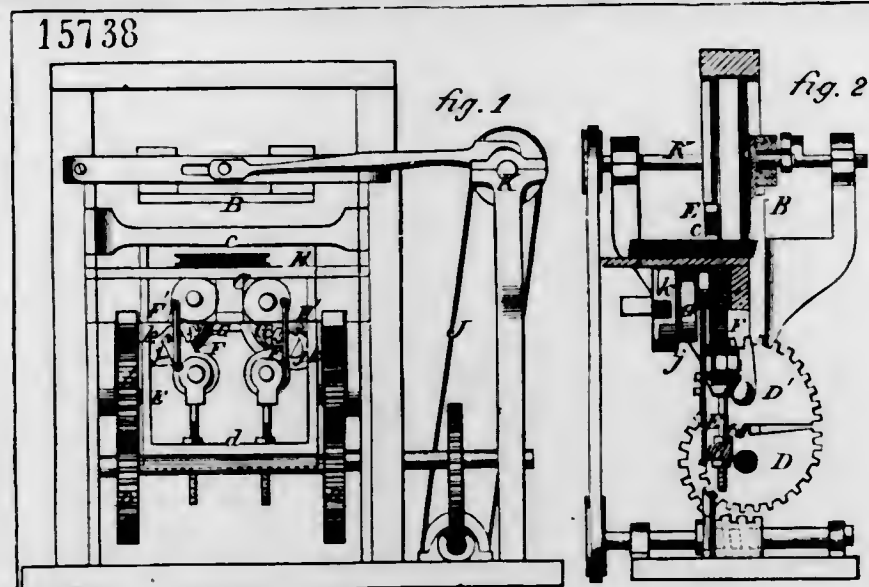
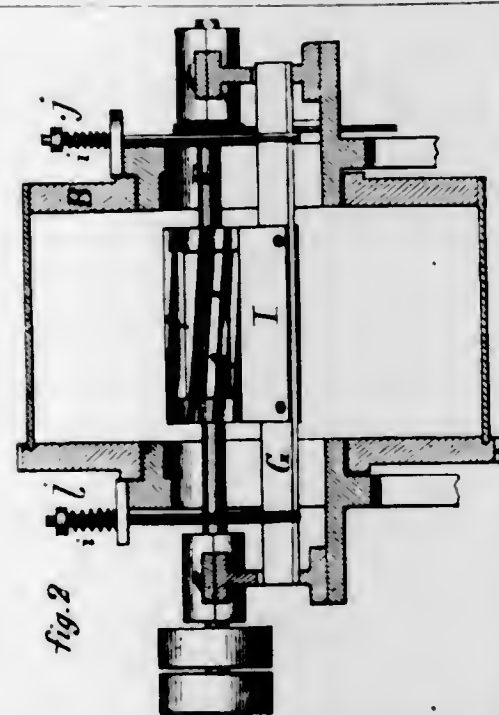
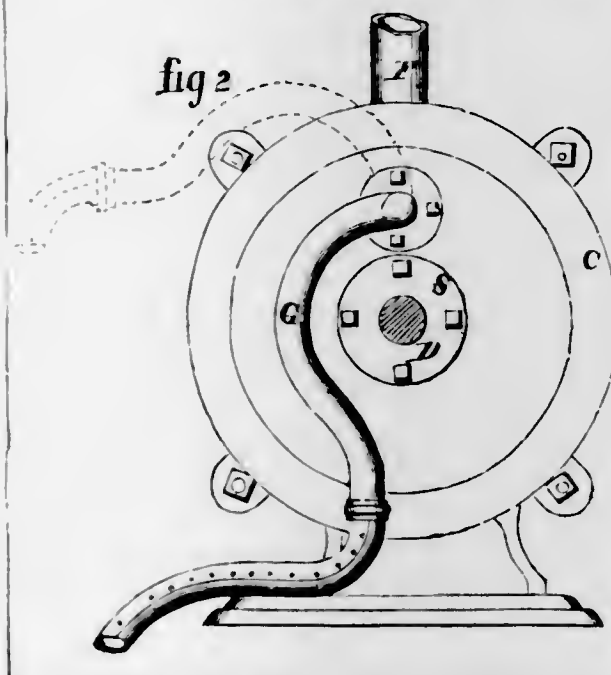
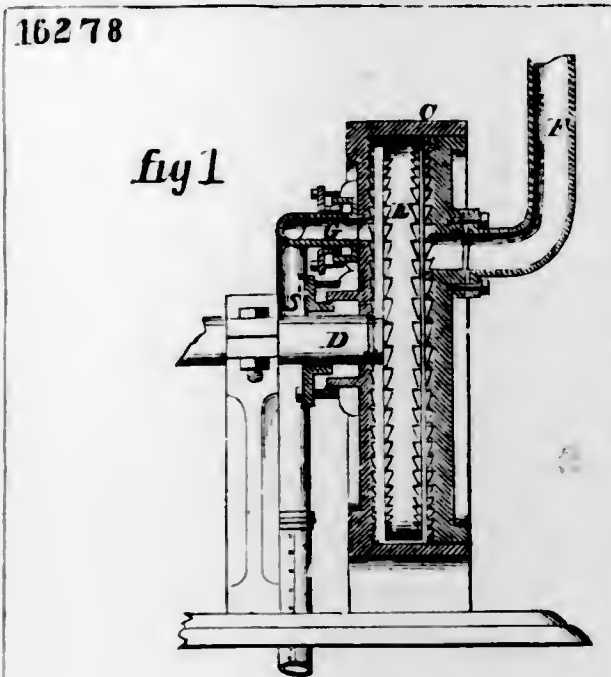
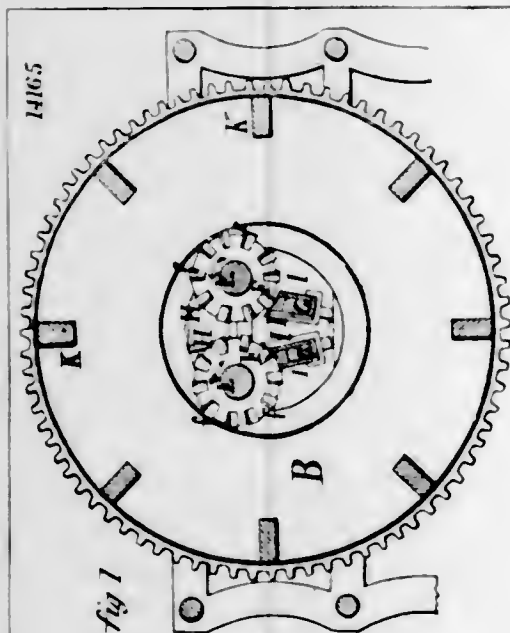
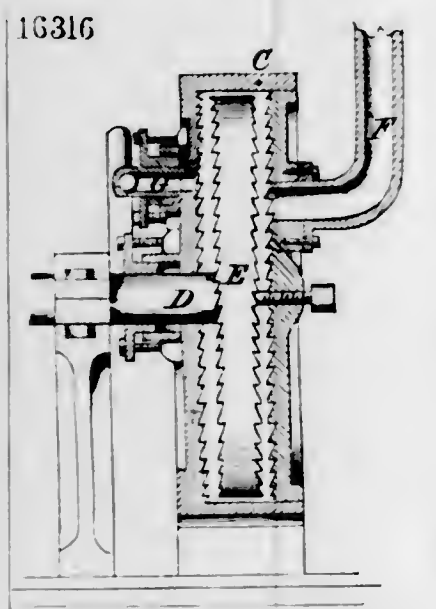
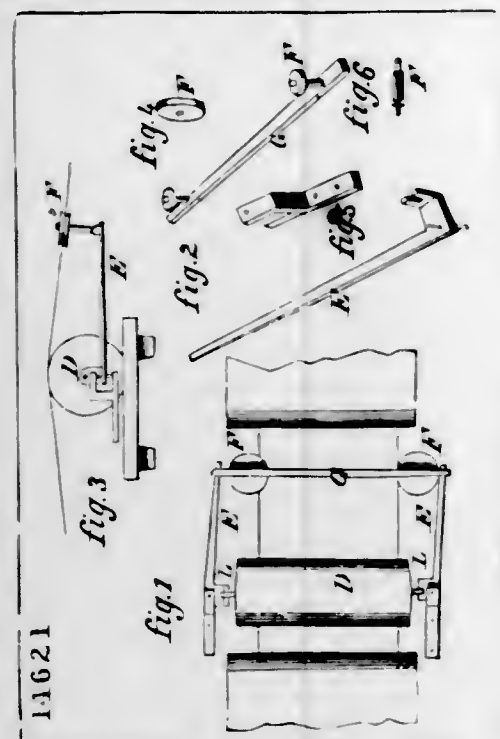
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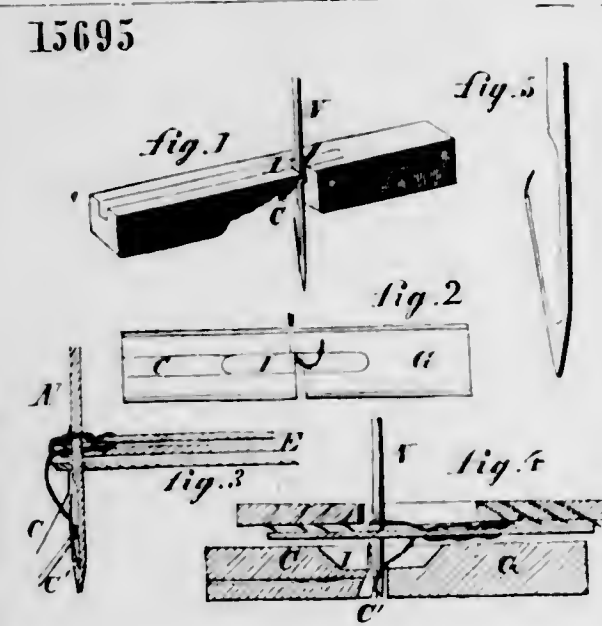
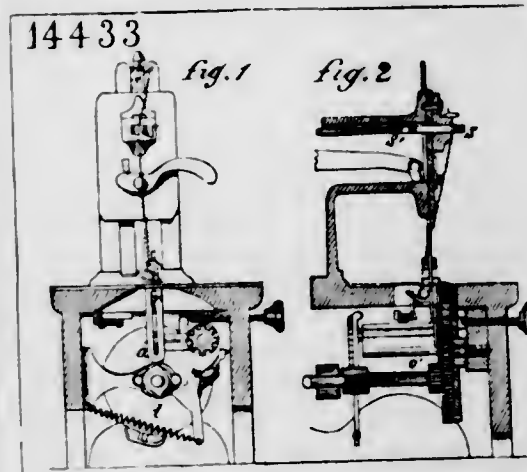
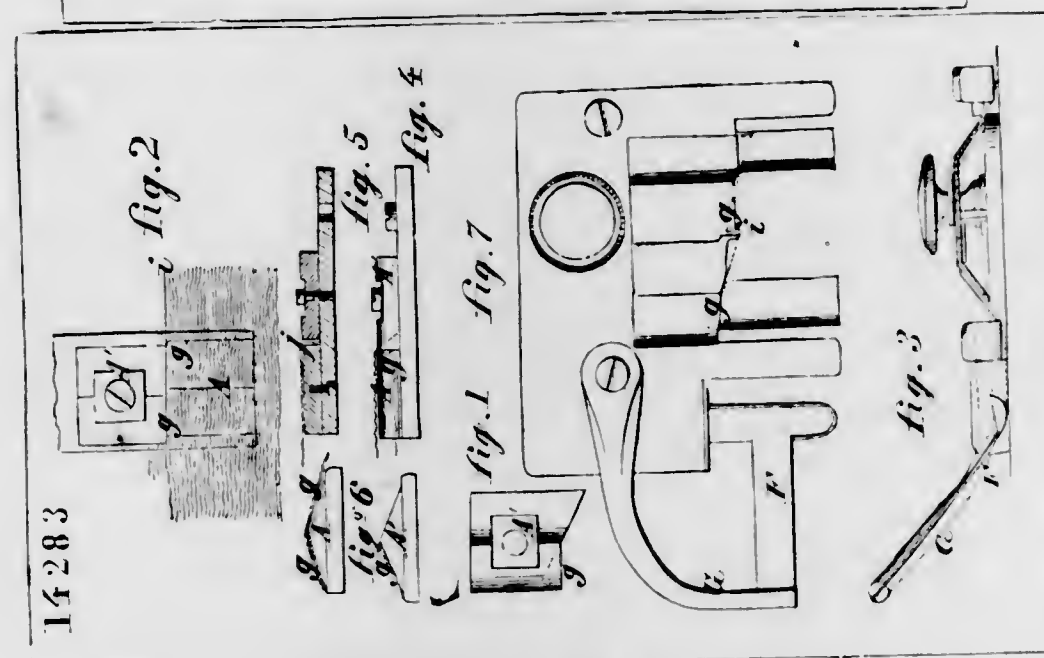
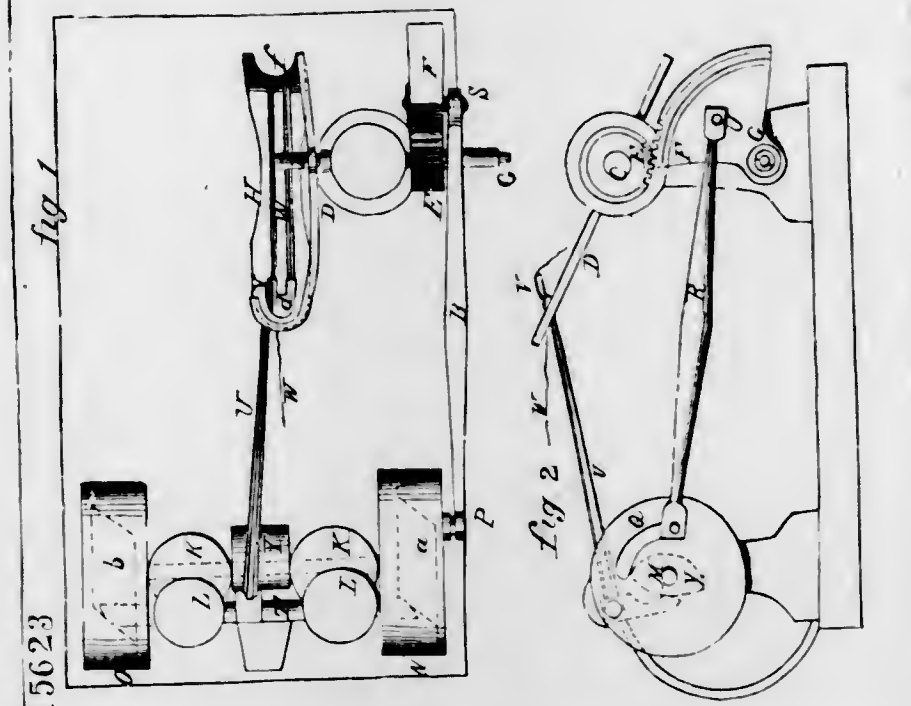
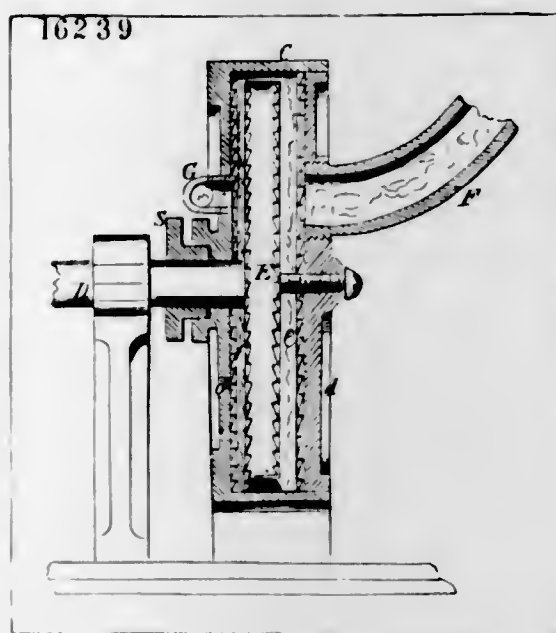
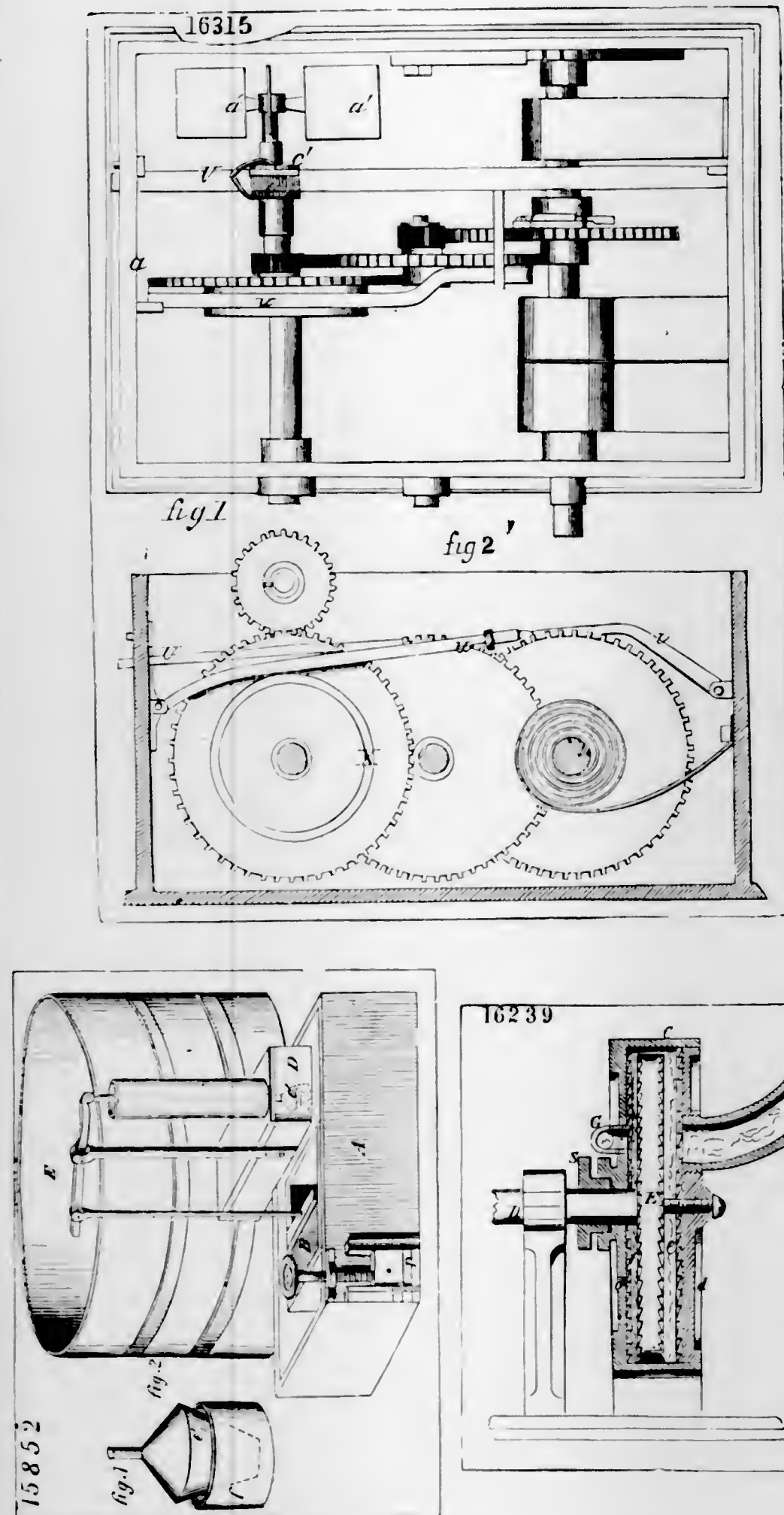


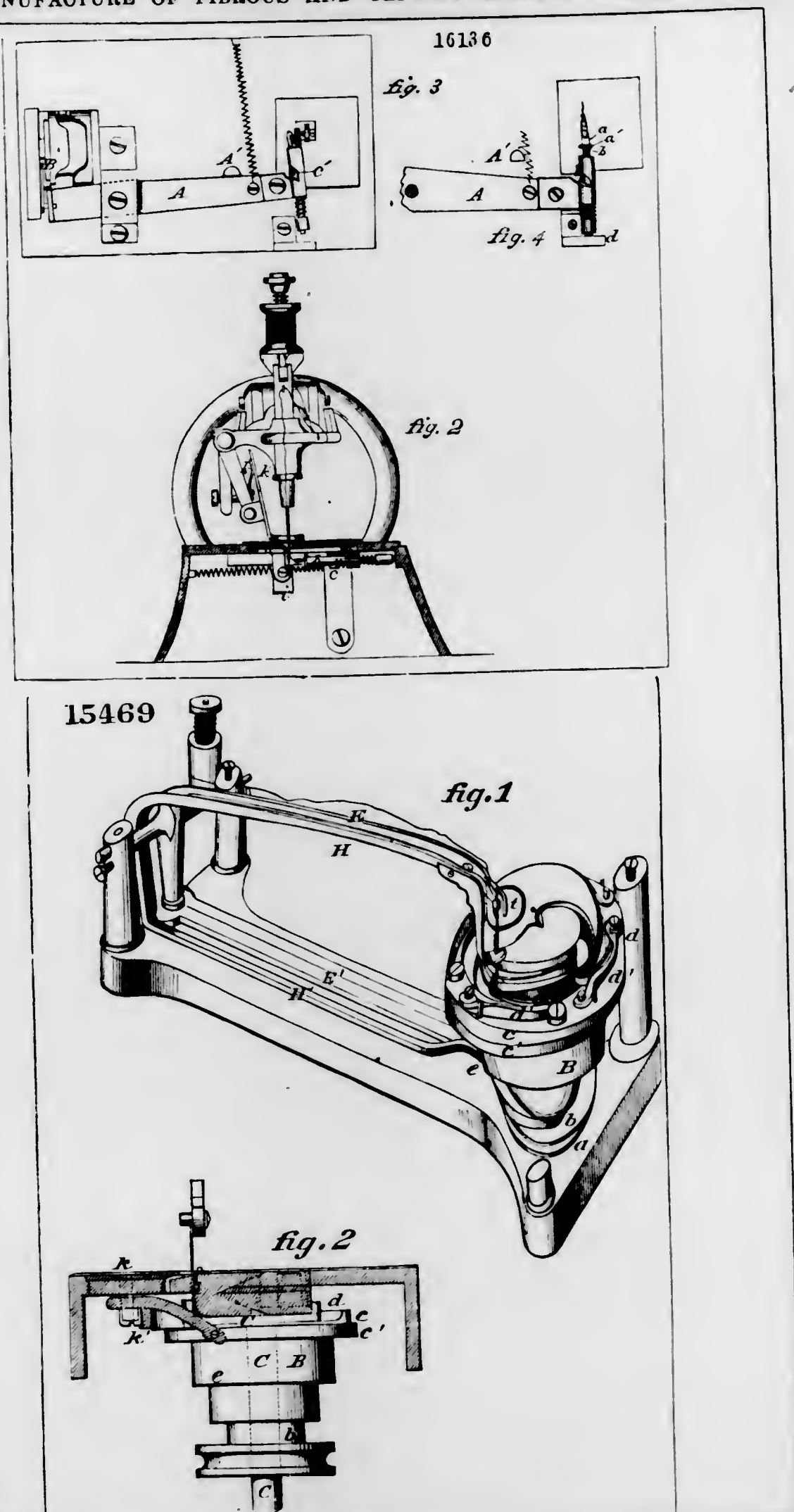
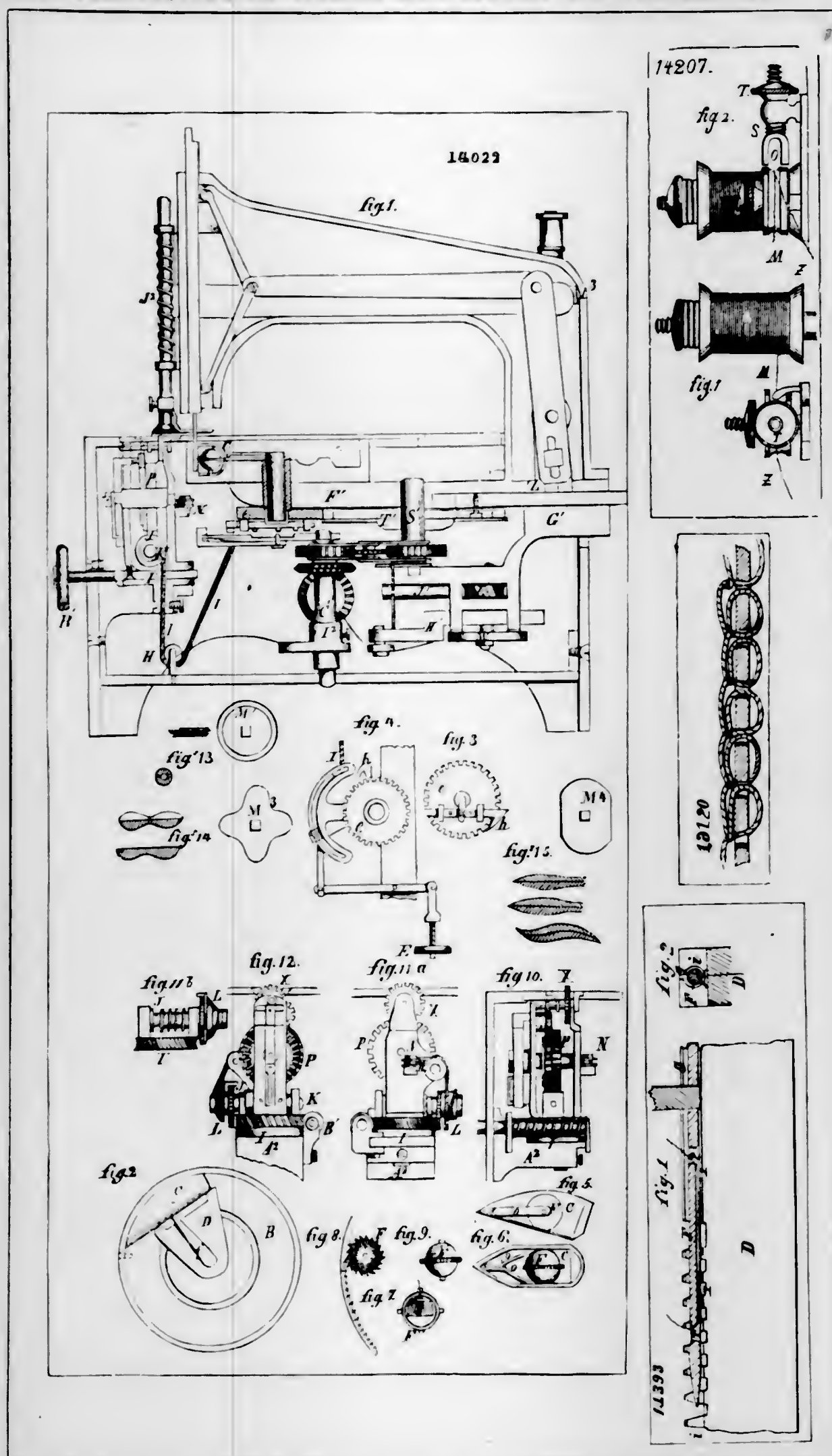


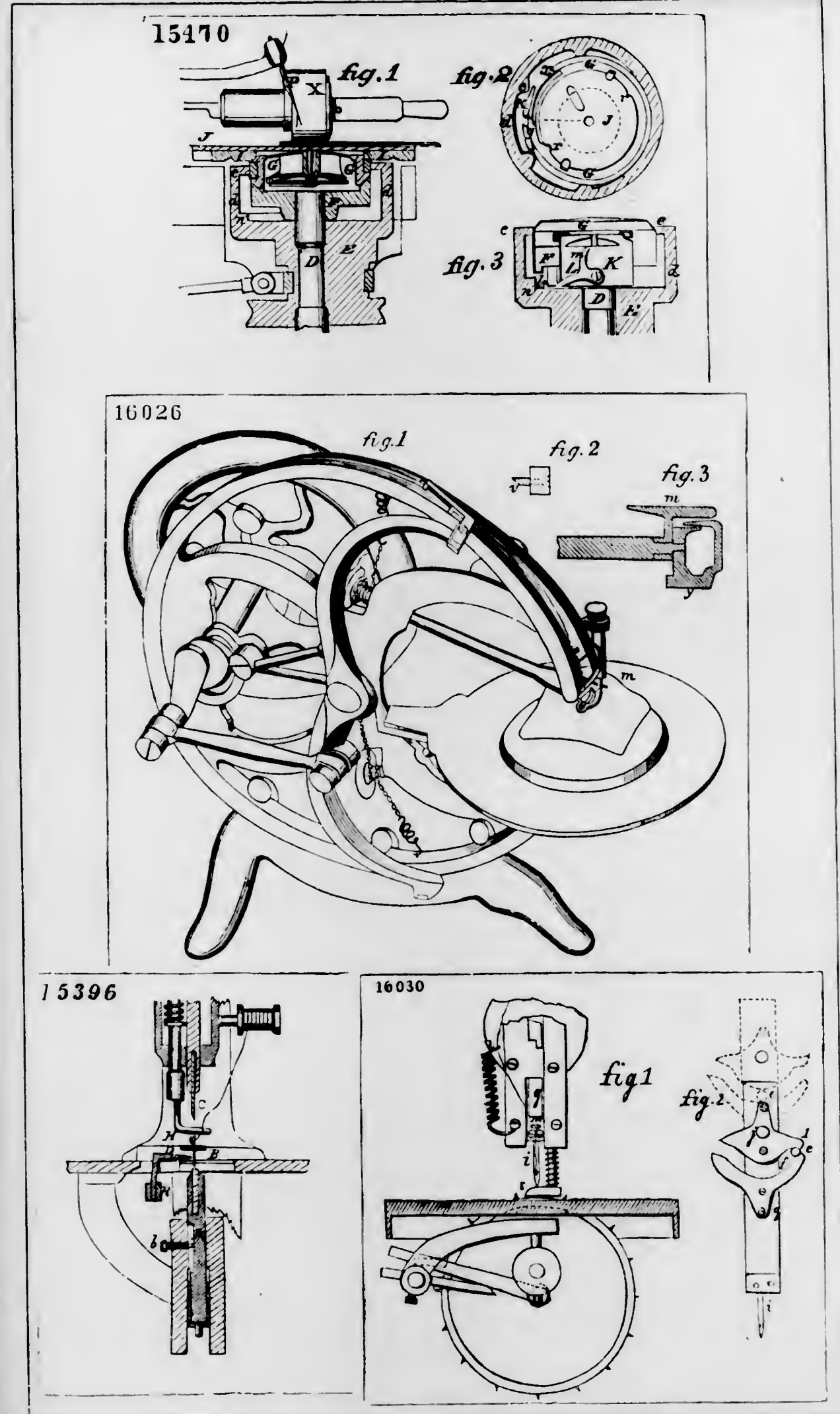
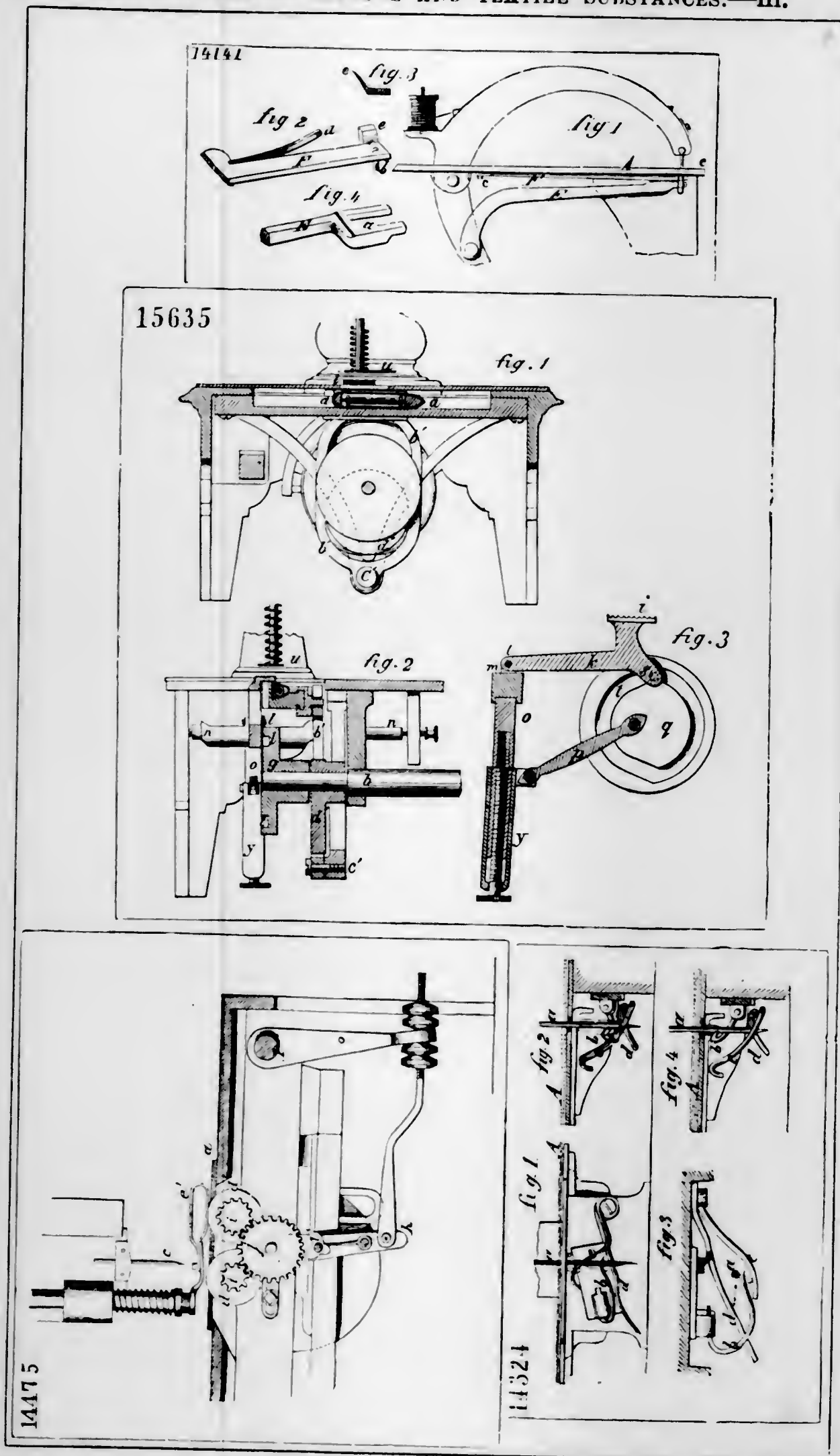












15402

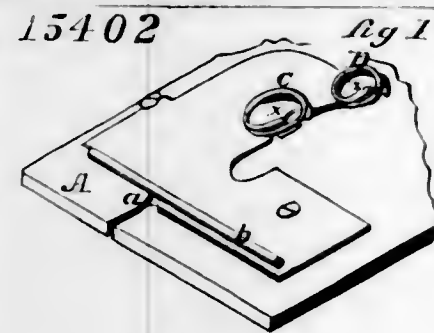
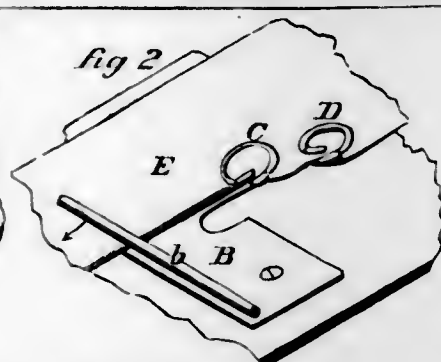


fig 1

fig 2



16234

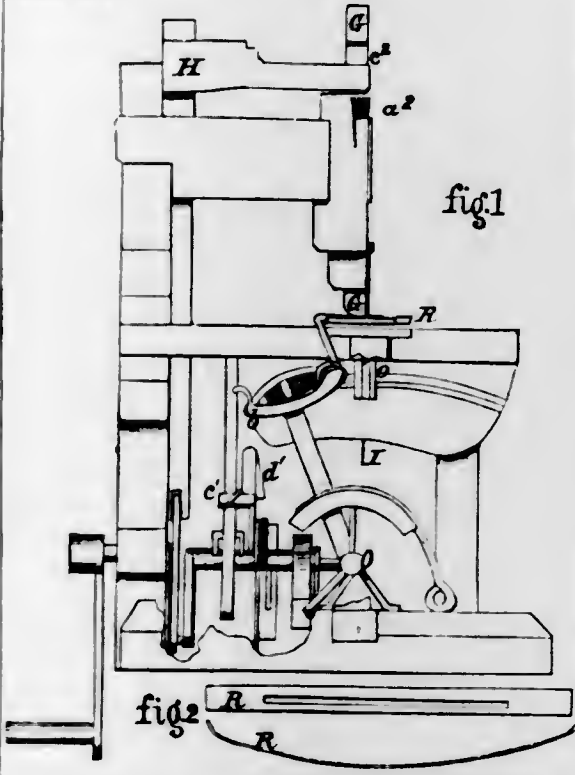


fig 1

fig 2



16281

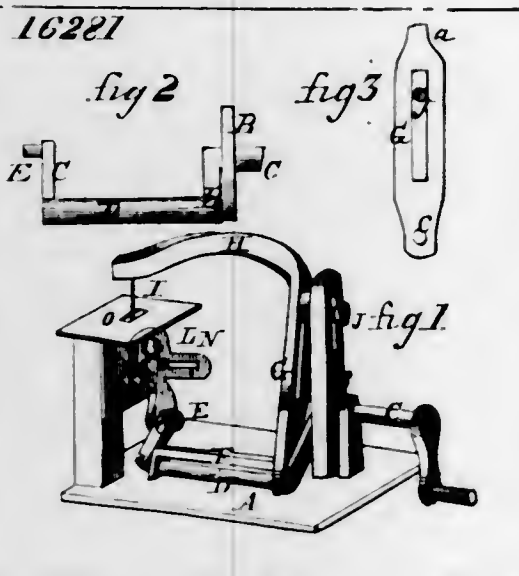
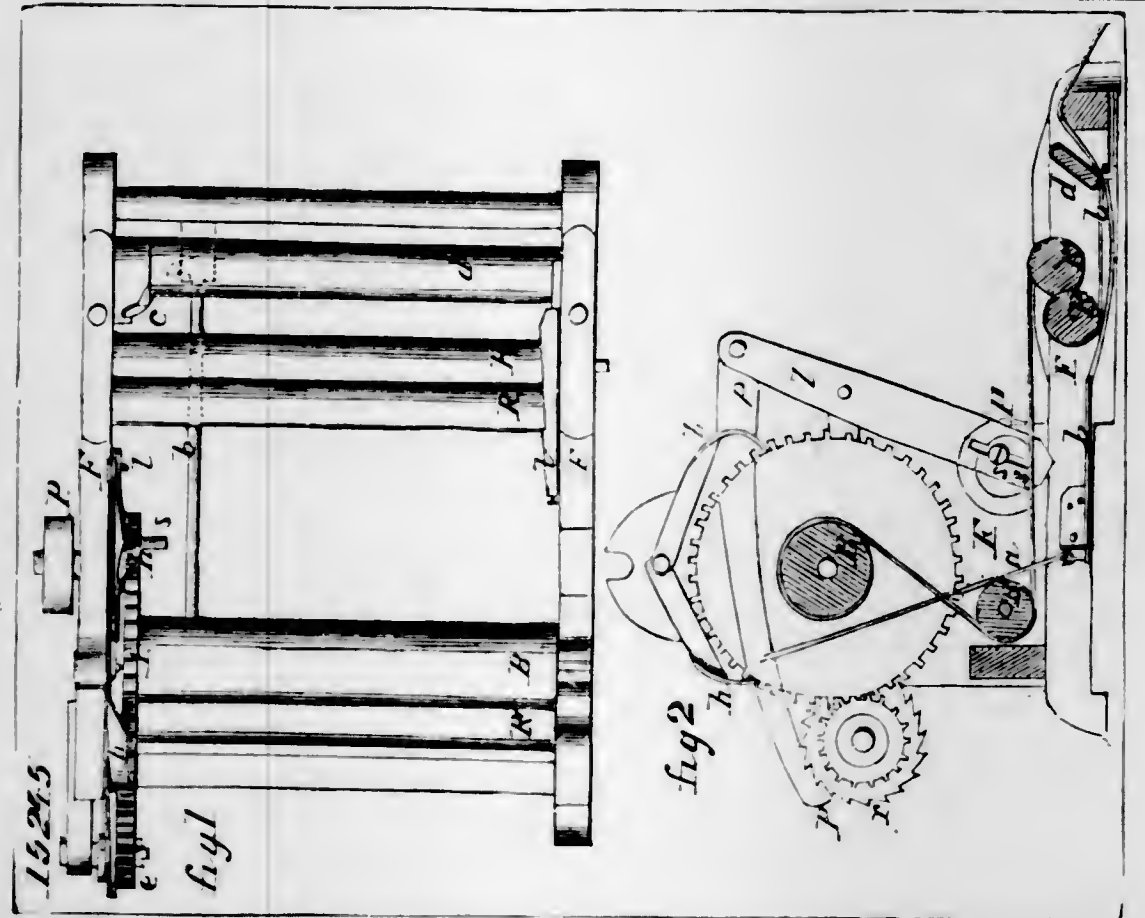


fig 1

fig 2



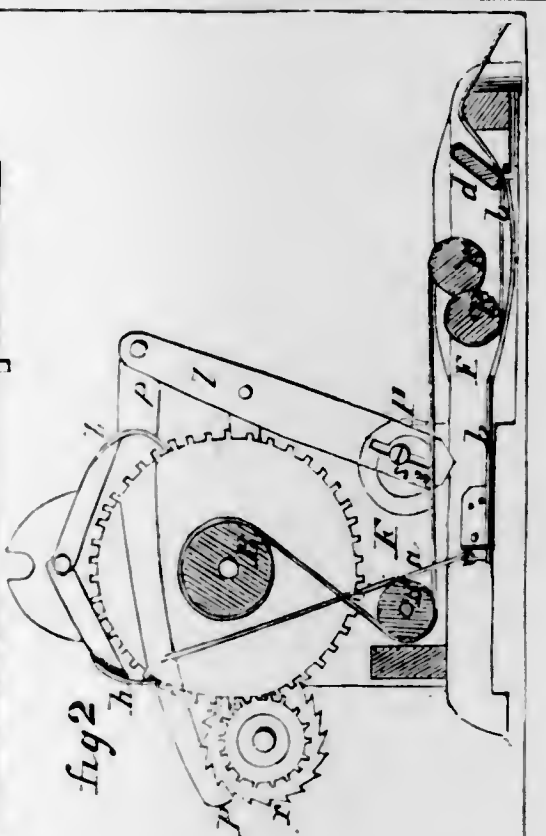
fig 3



15245

fig 1

fig 2



15020
fig 1

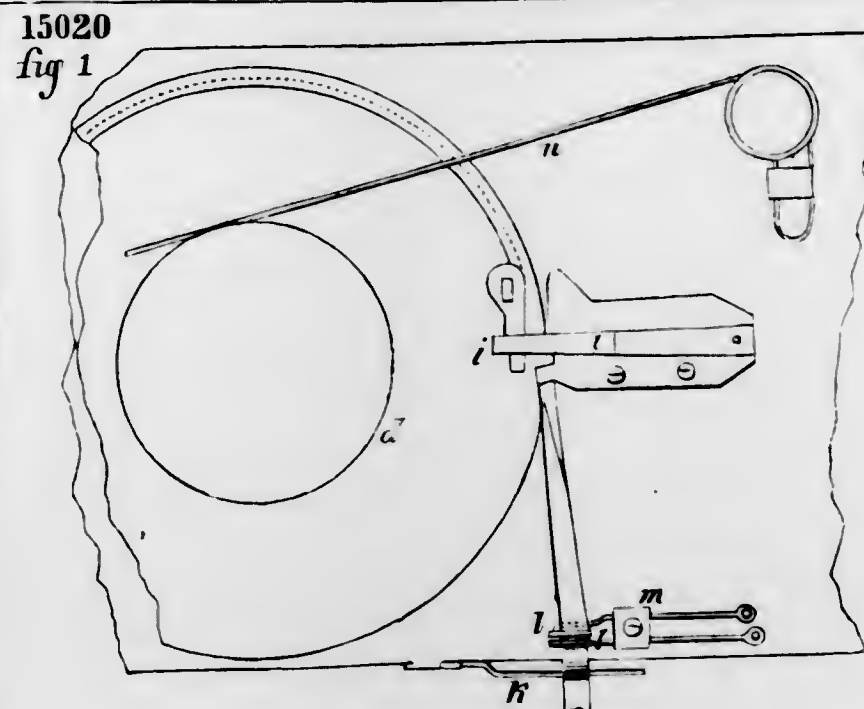


fig 2

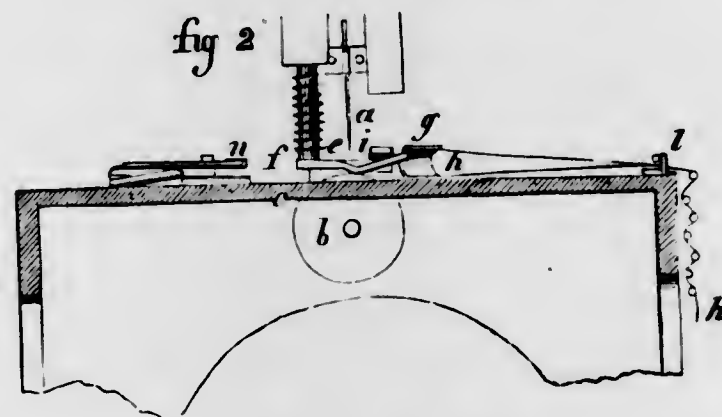
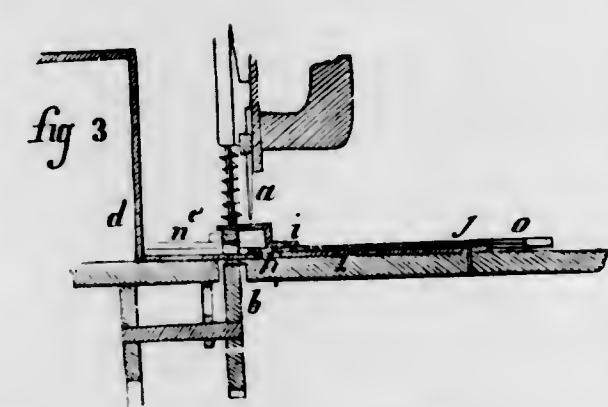


fig 3



16029

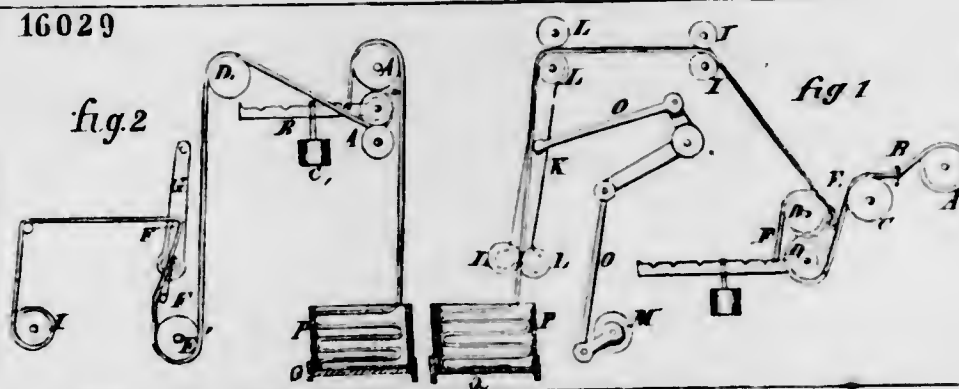


fig 2

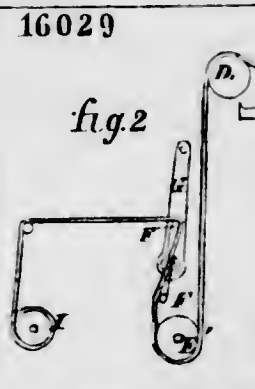
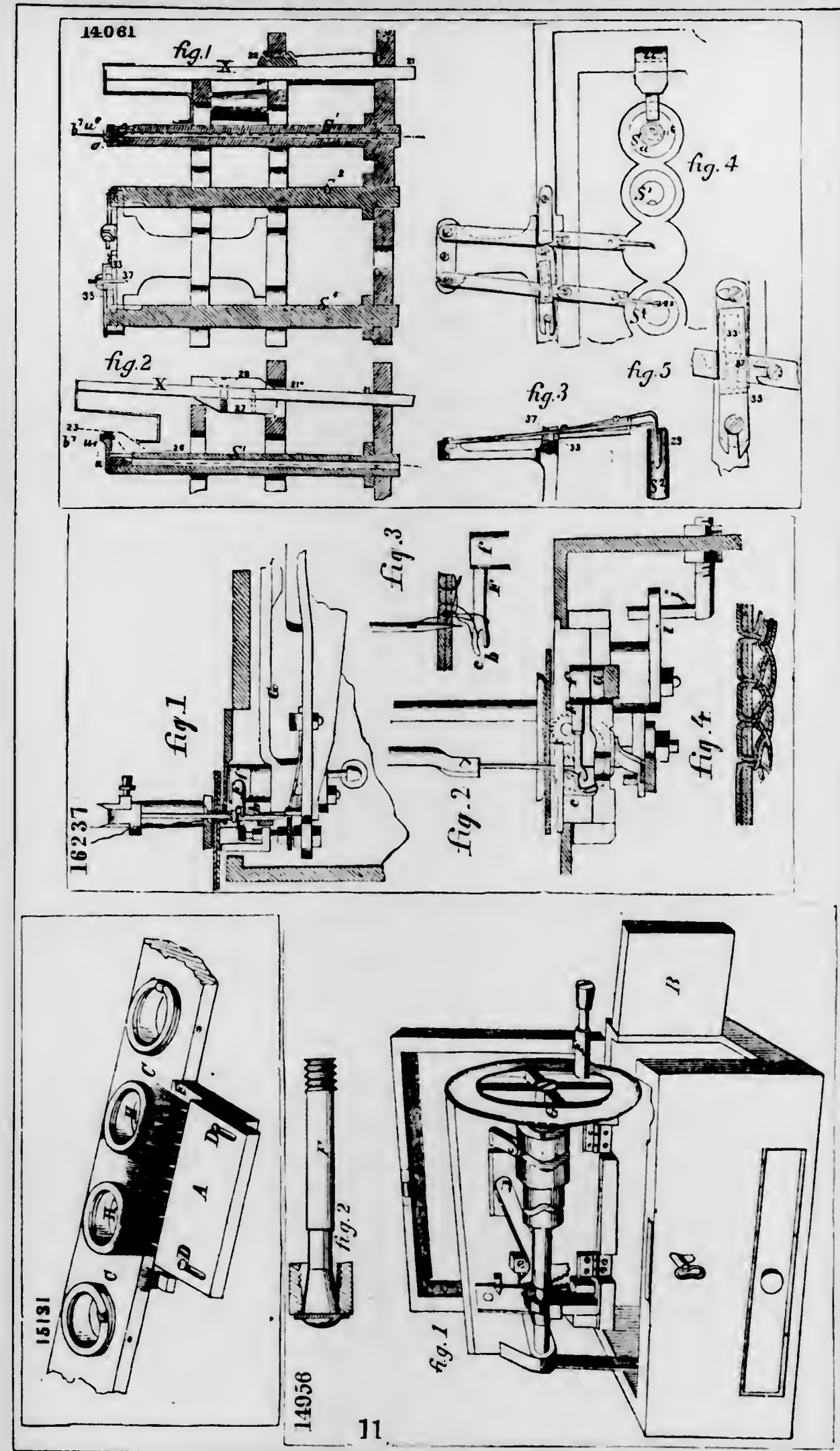
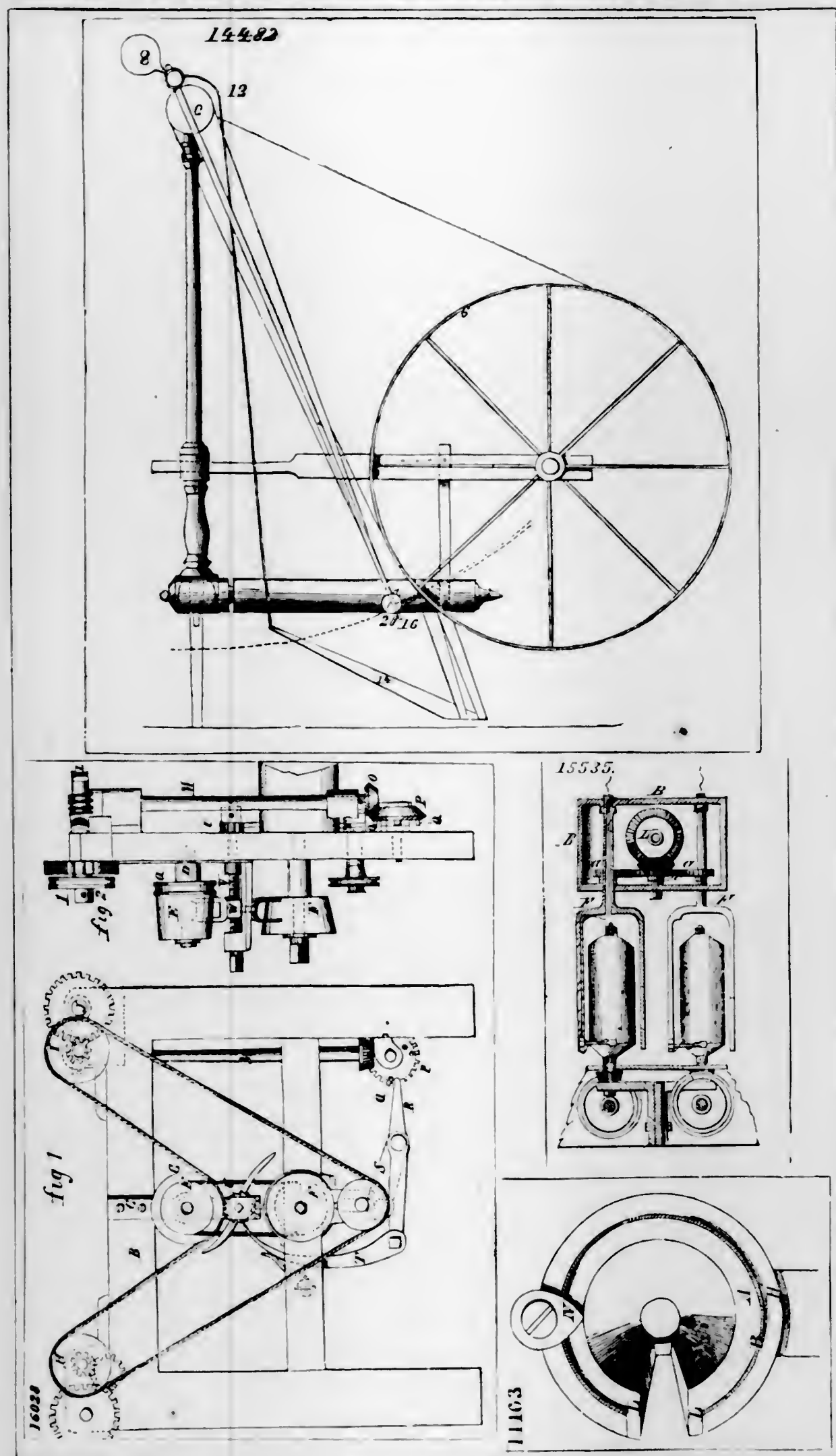
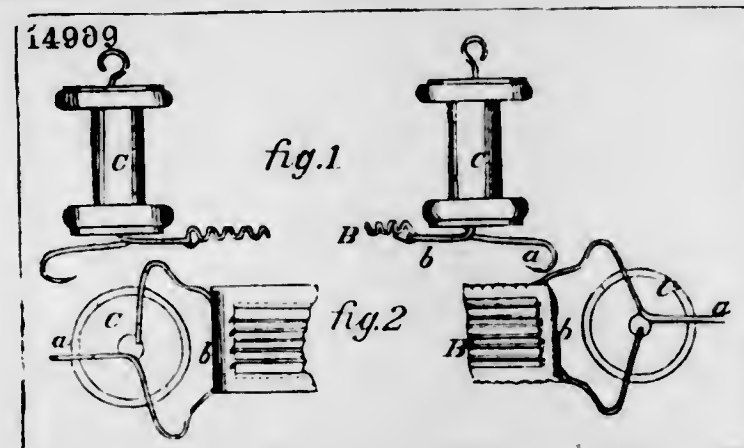
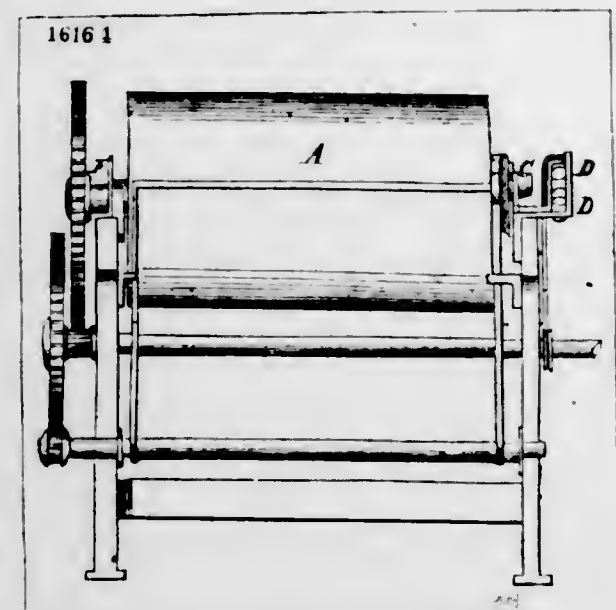
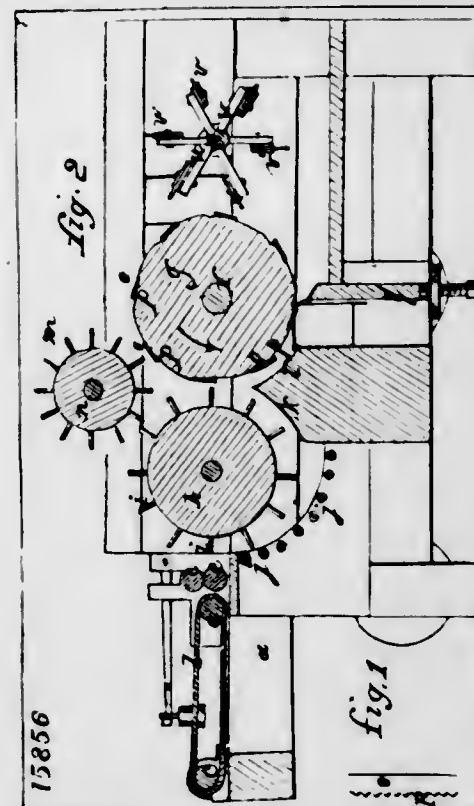
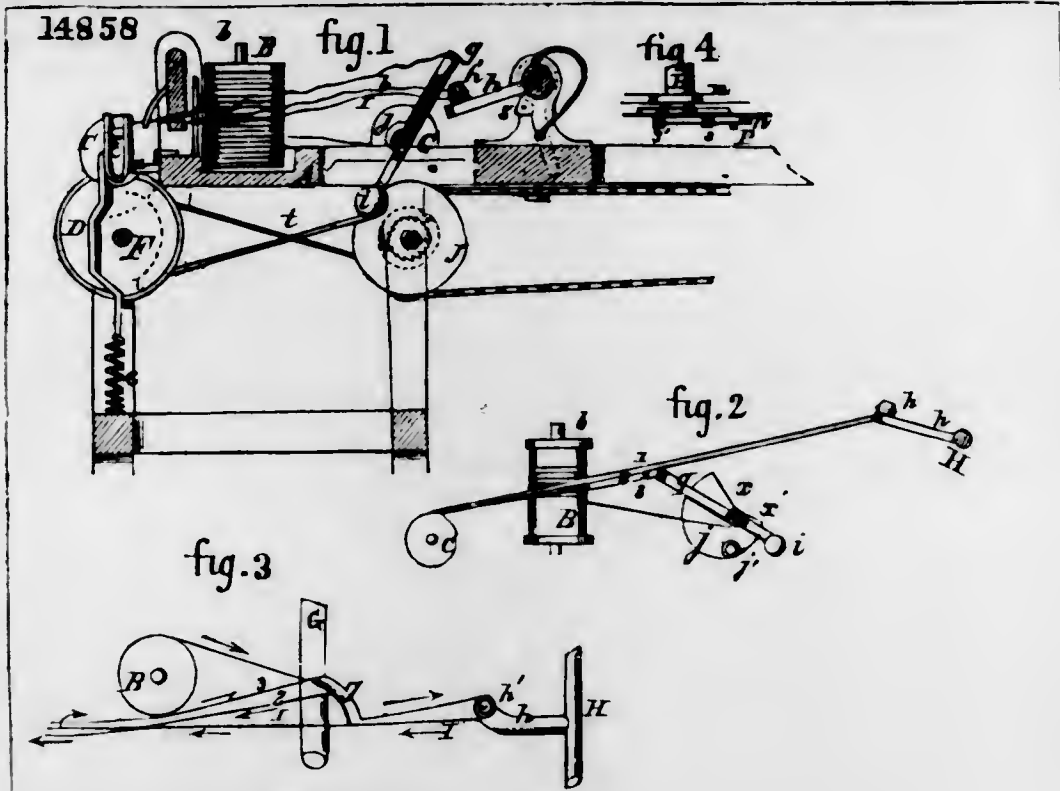
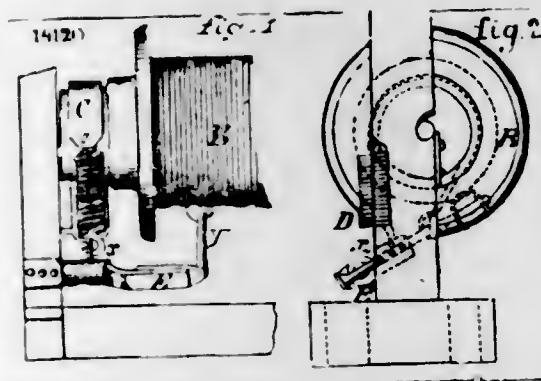
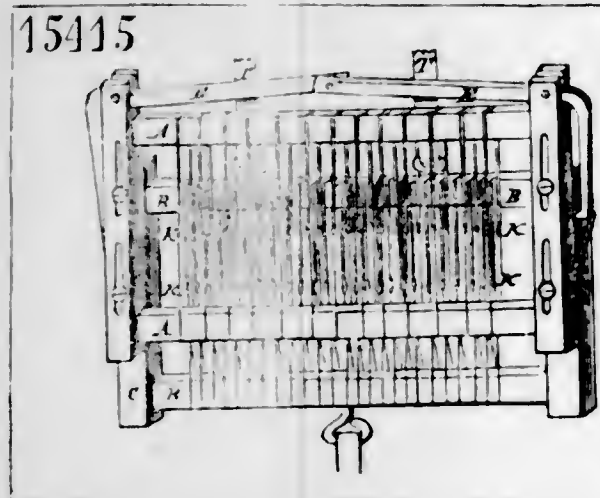
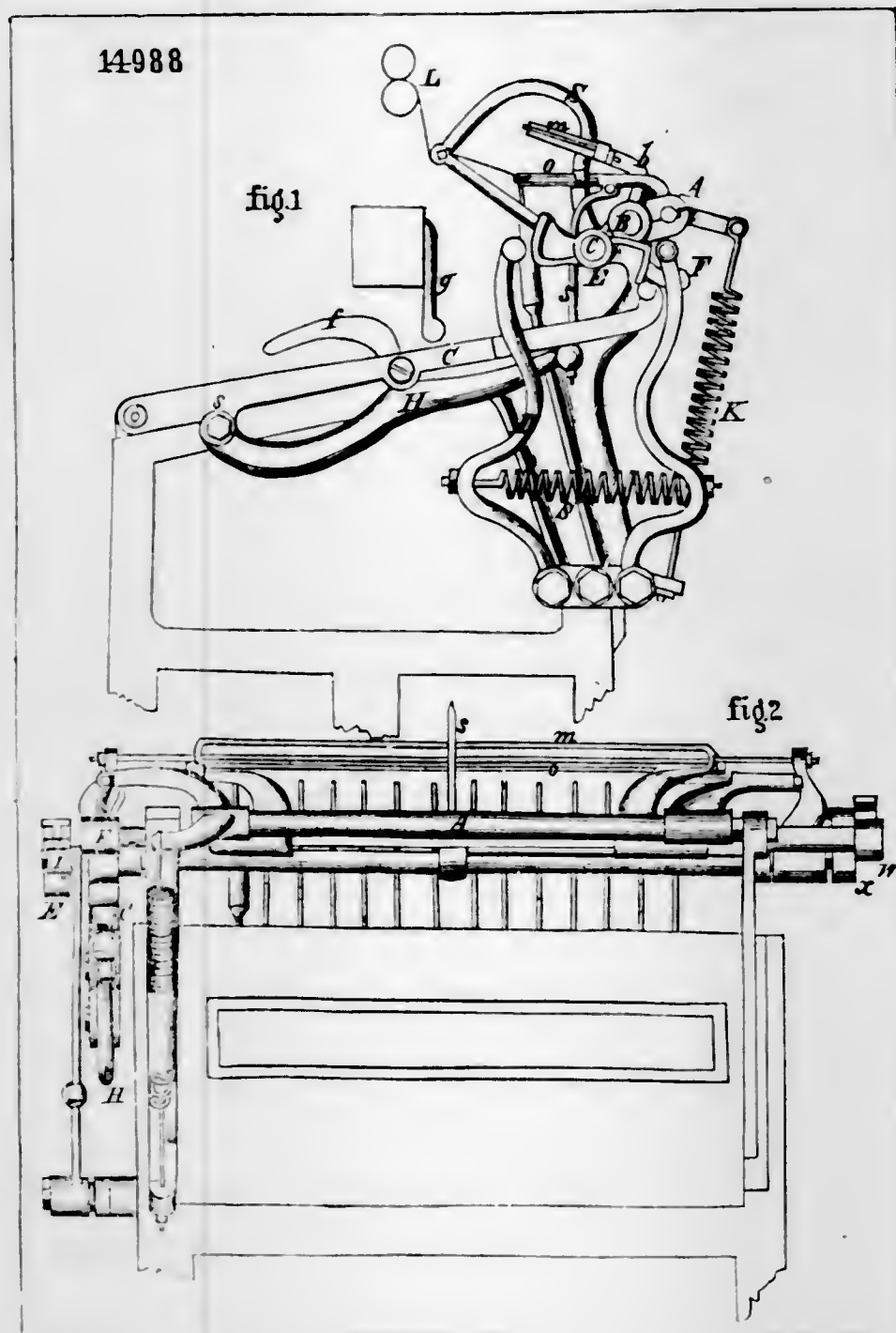
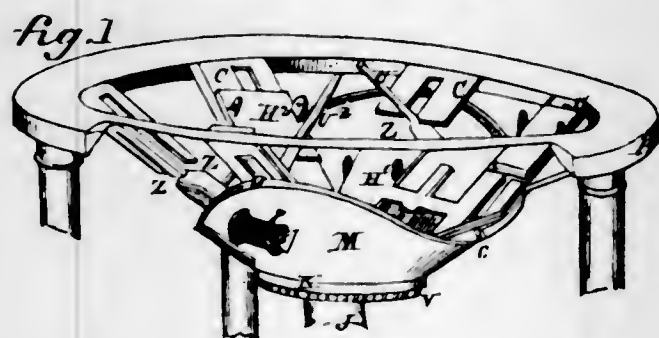
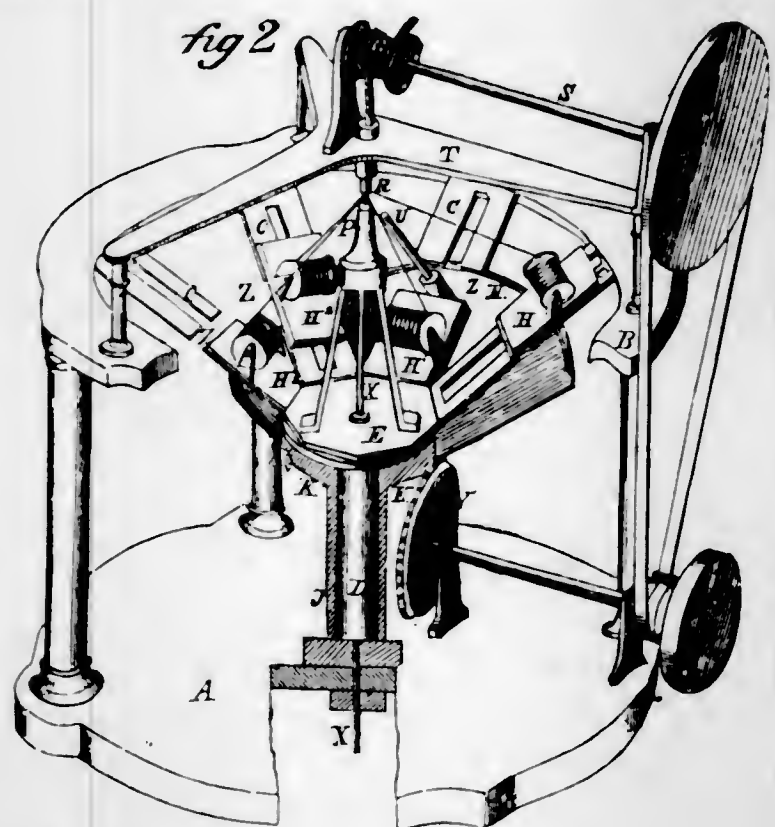


fig 1

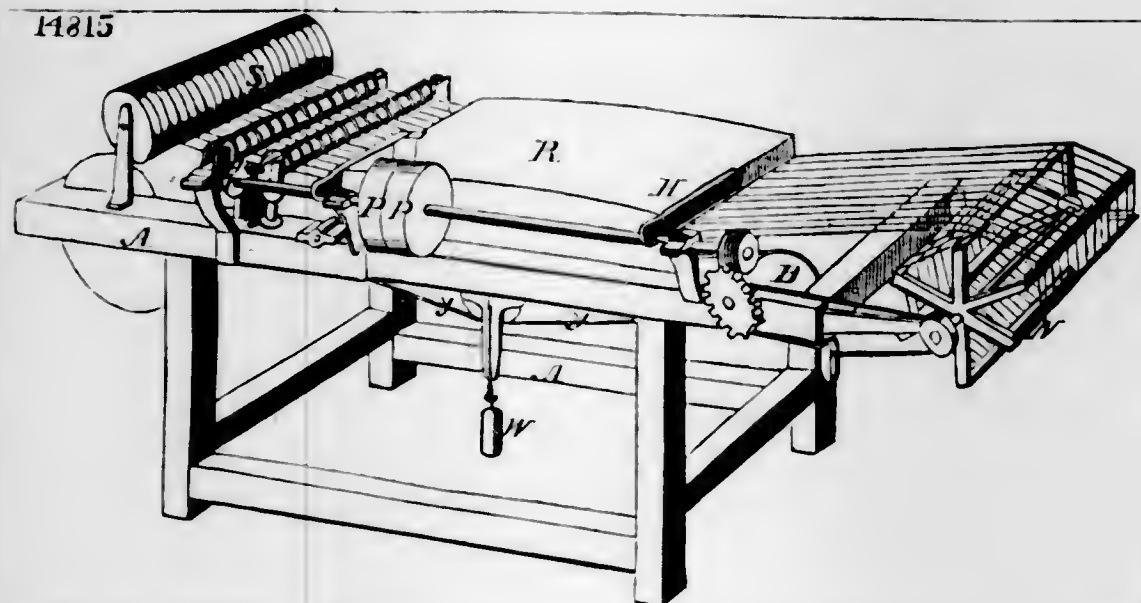




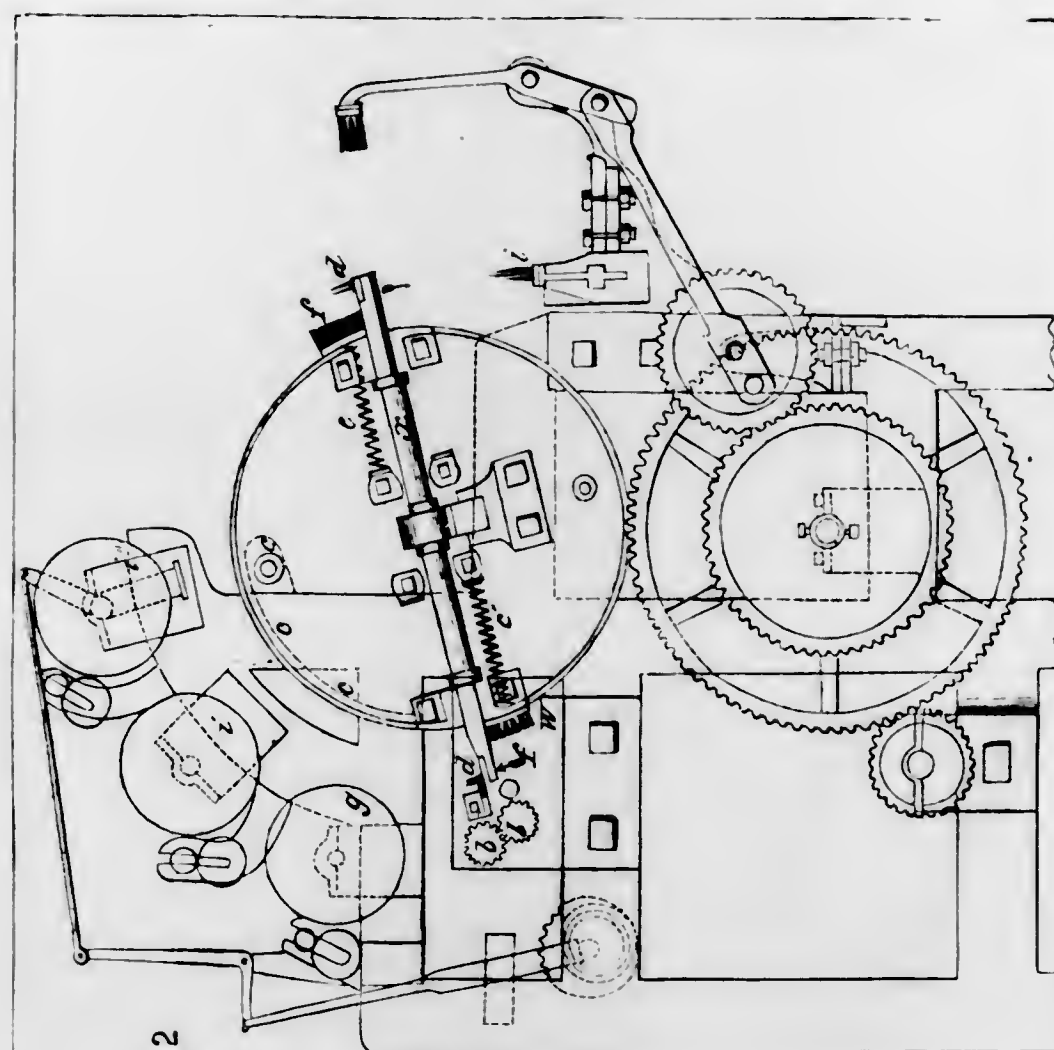
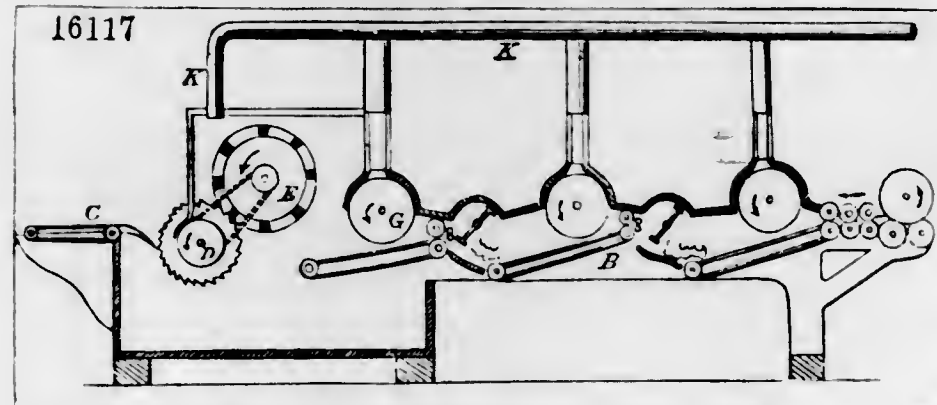
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14815

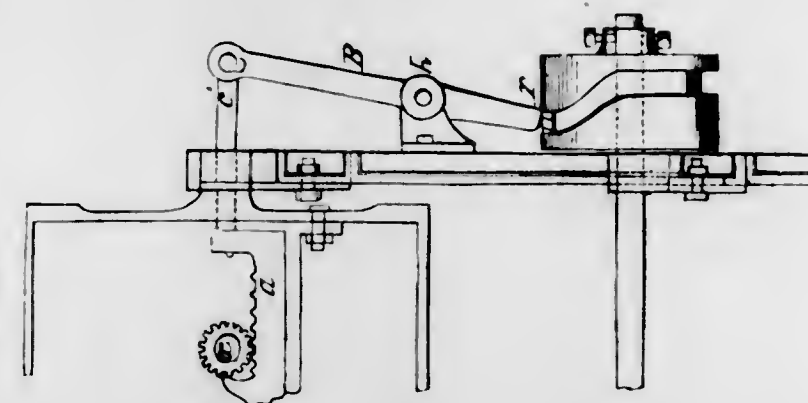


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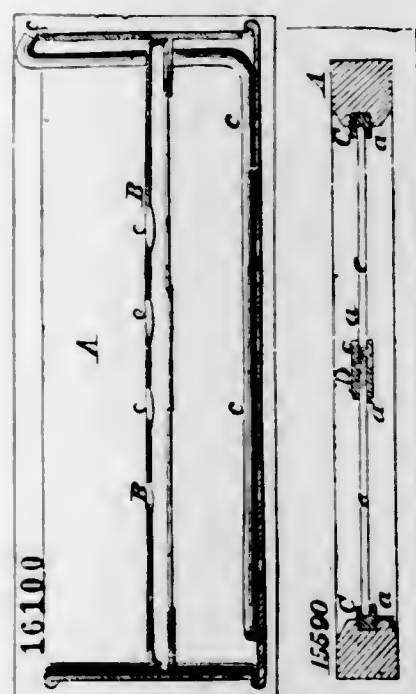
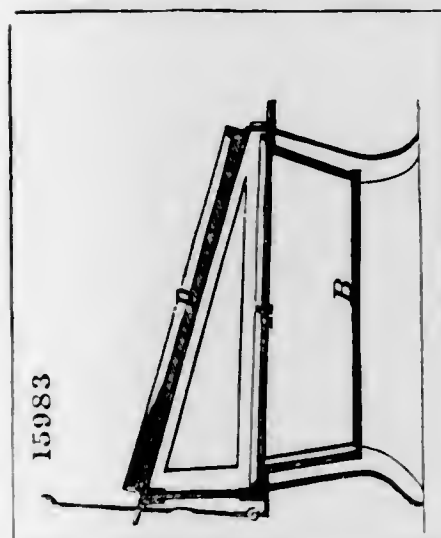
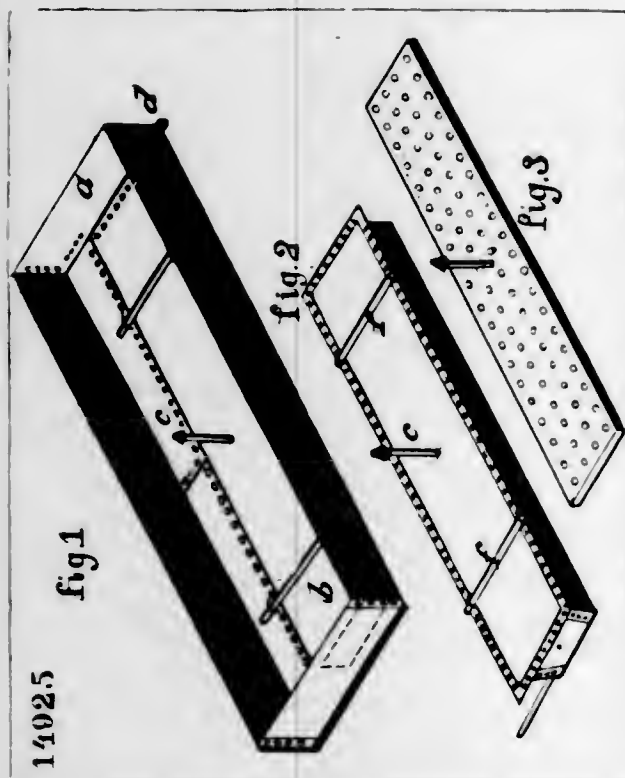
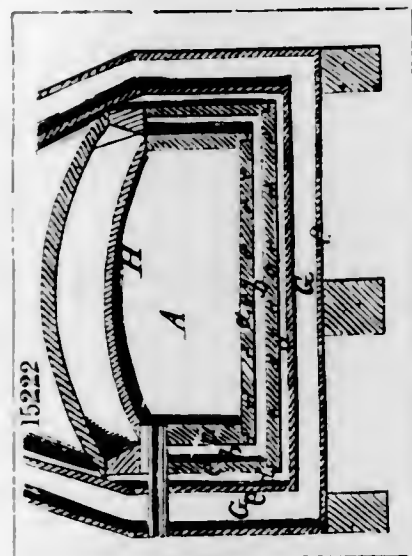
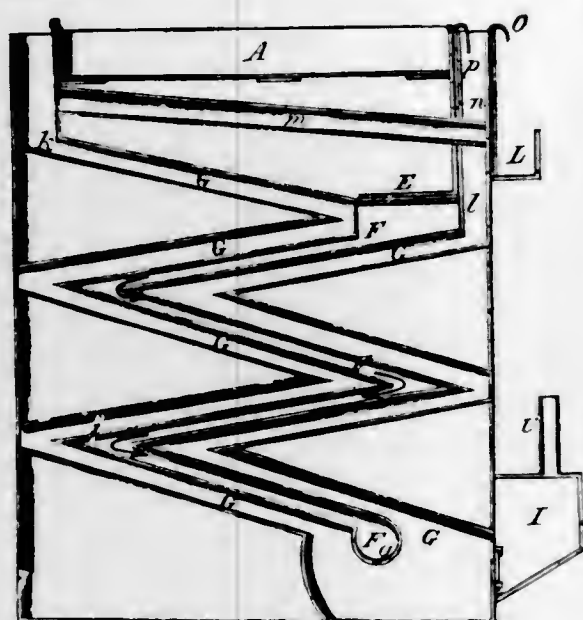


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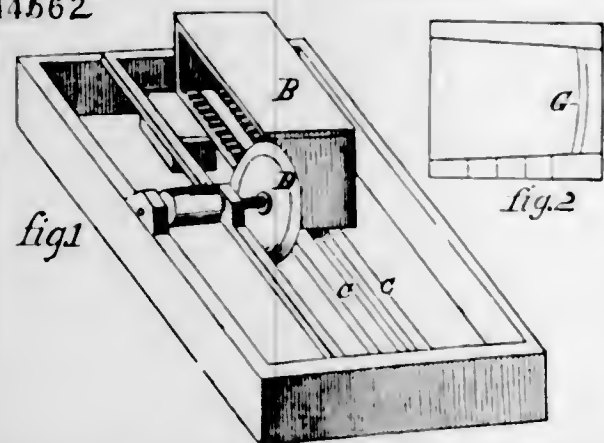
fig 1



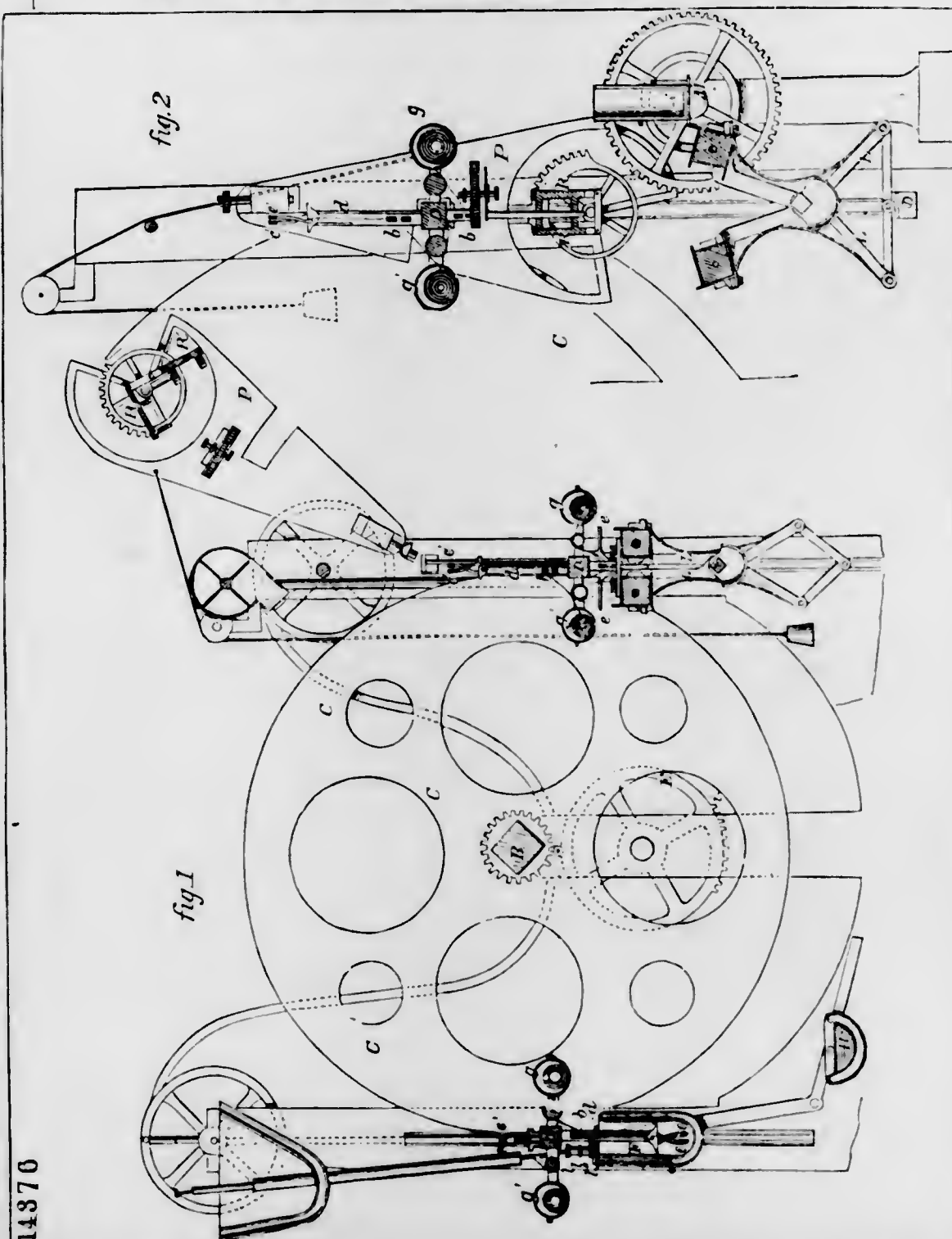
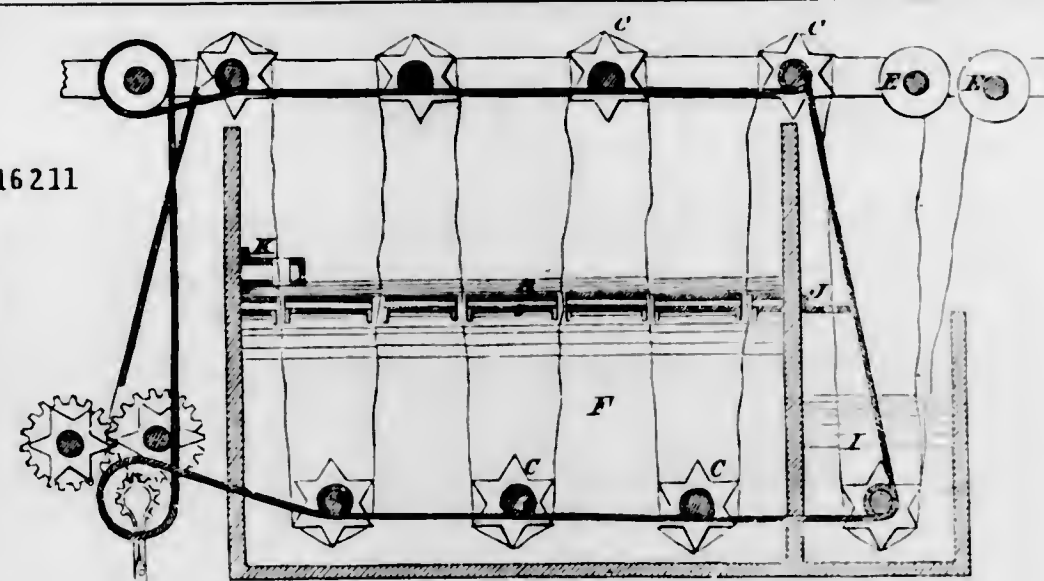
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14662

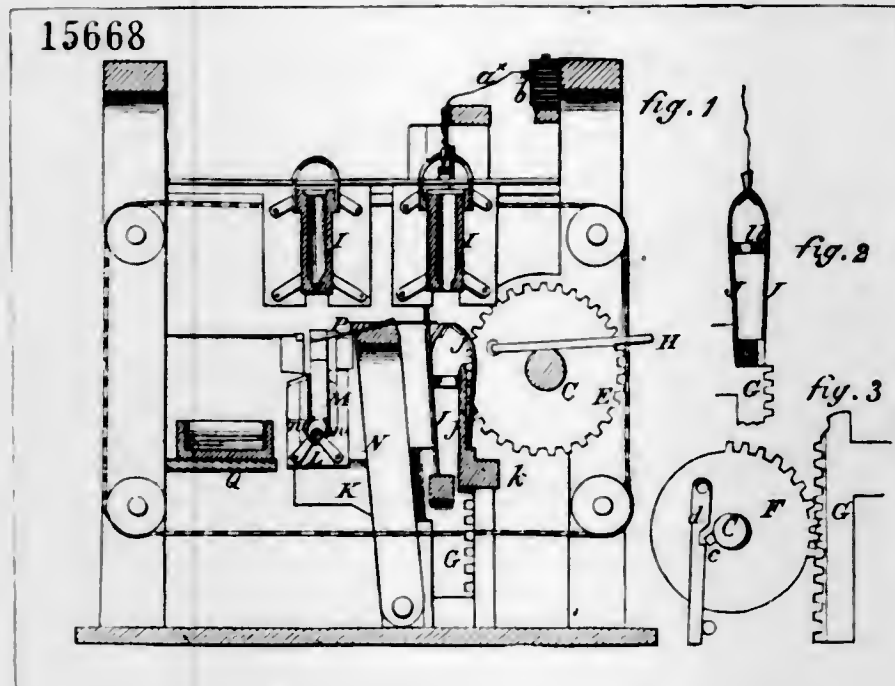


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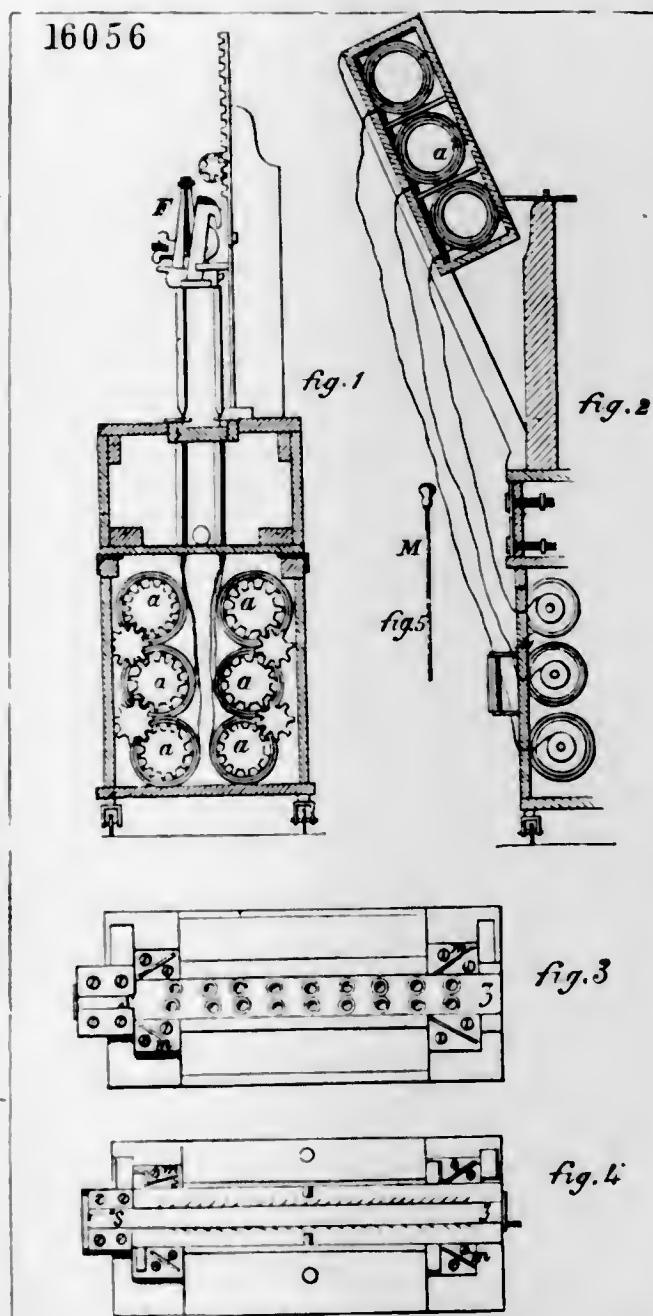


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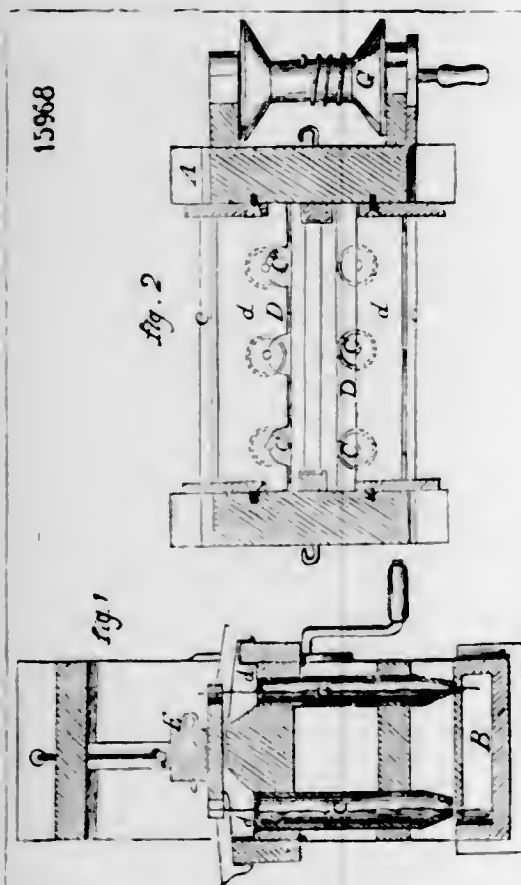
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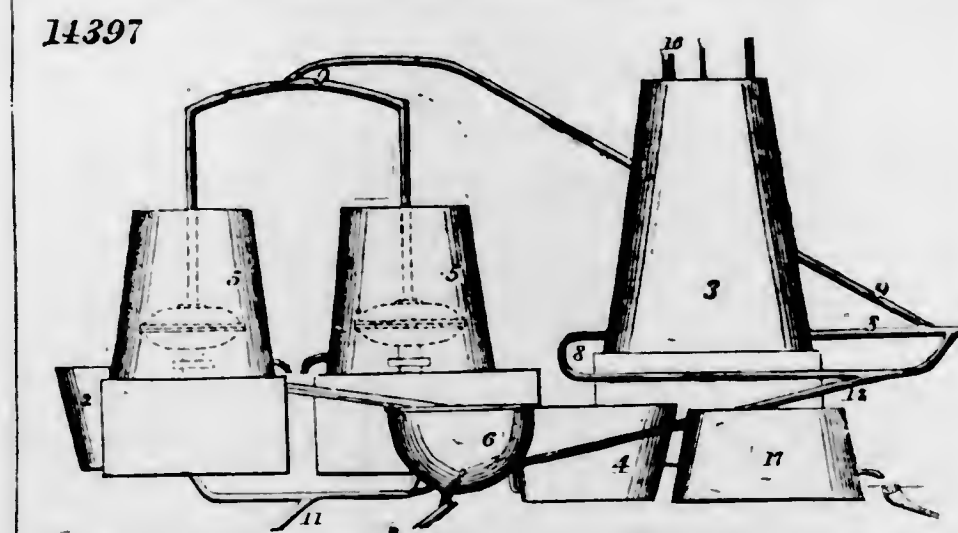
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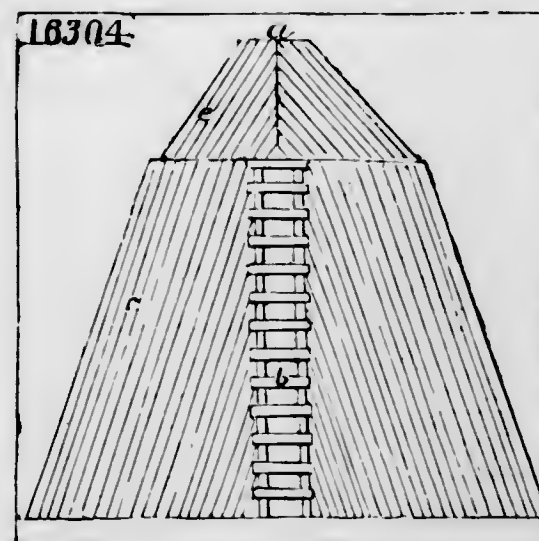
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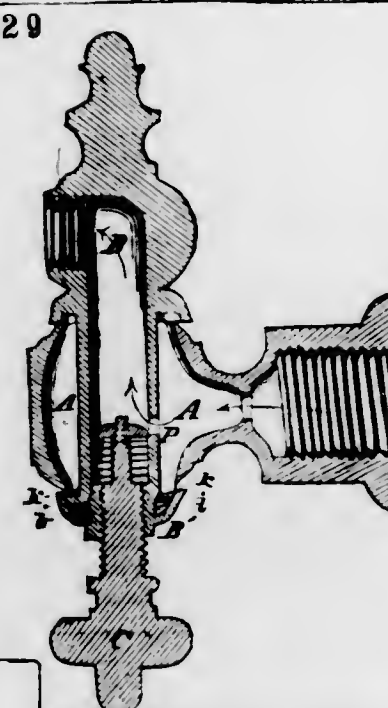
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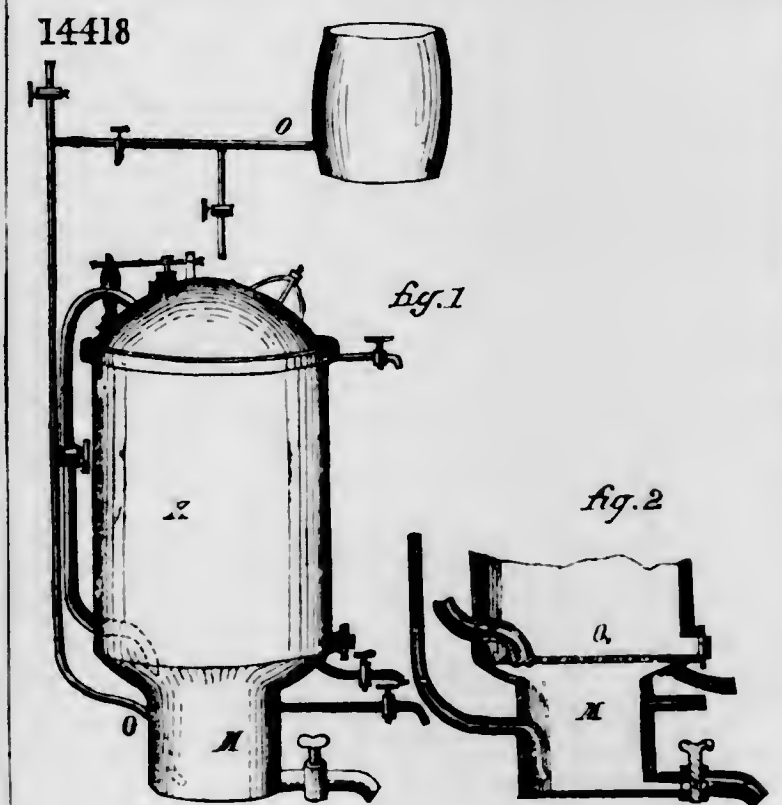
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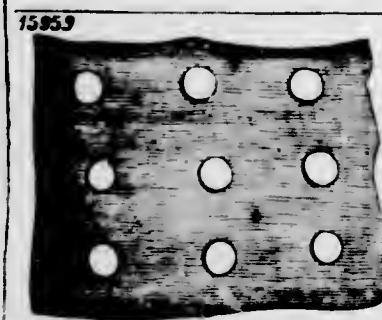
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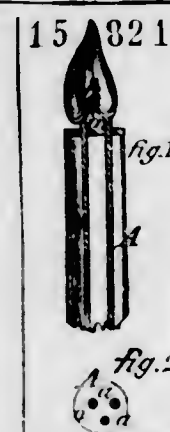
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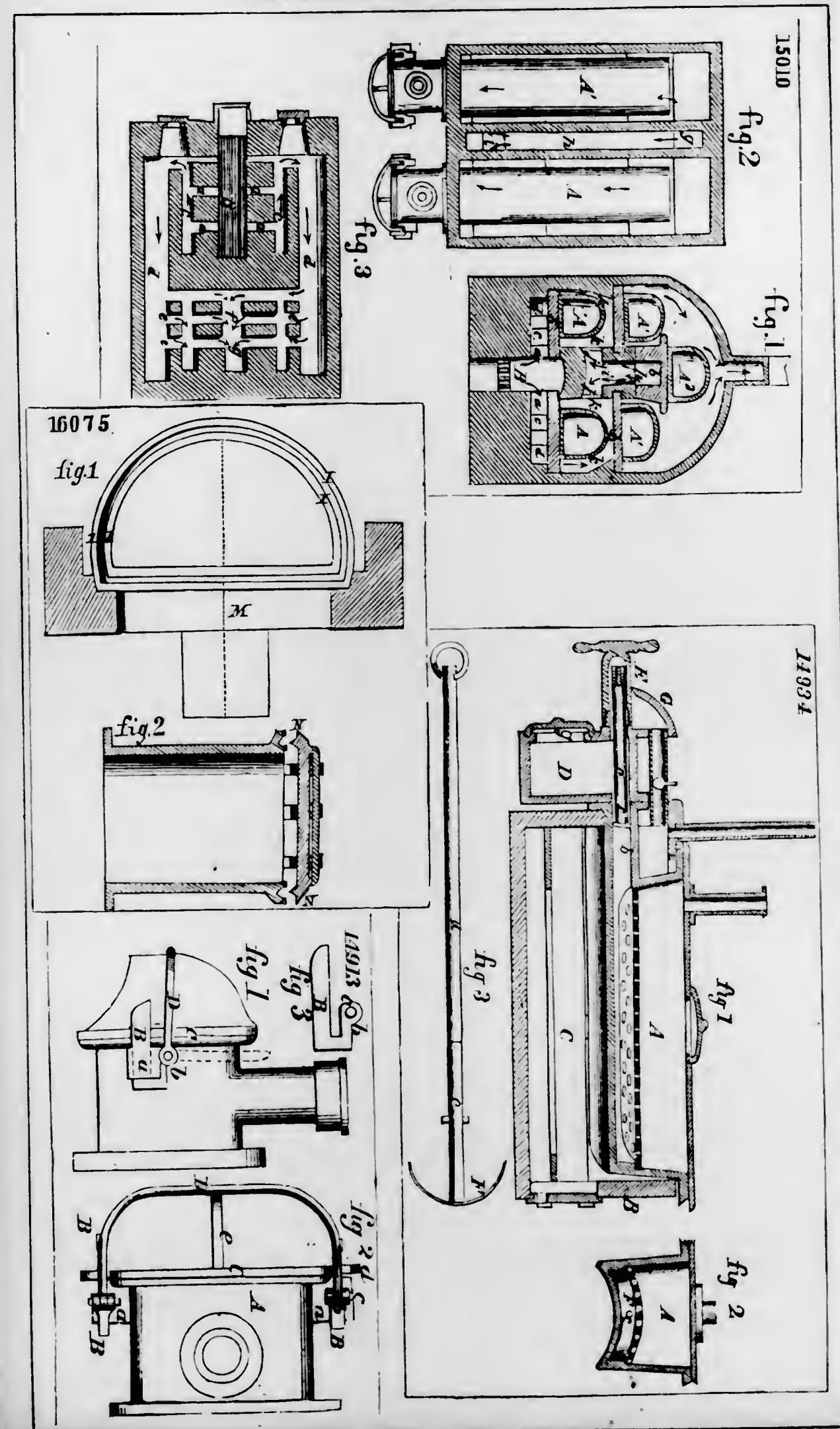
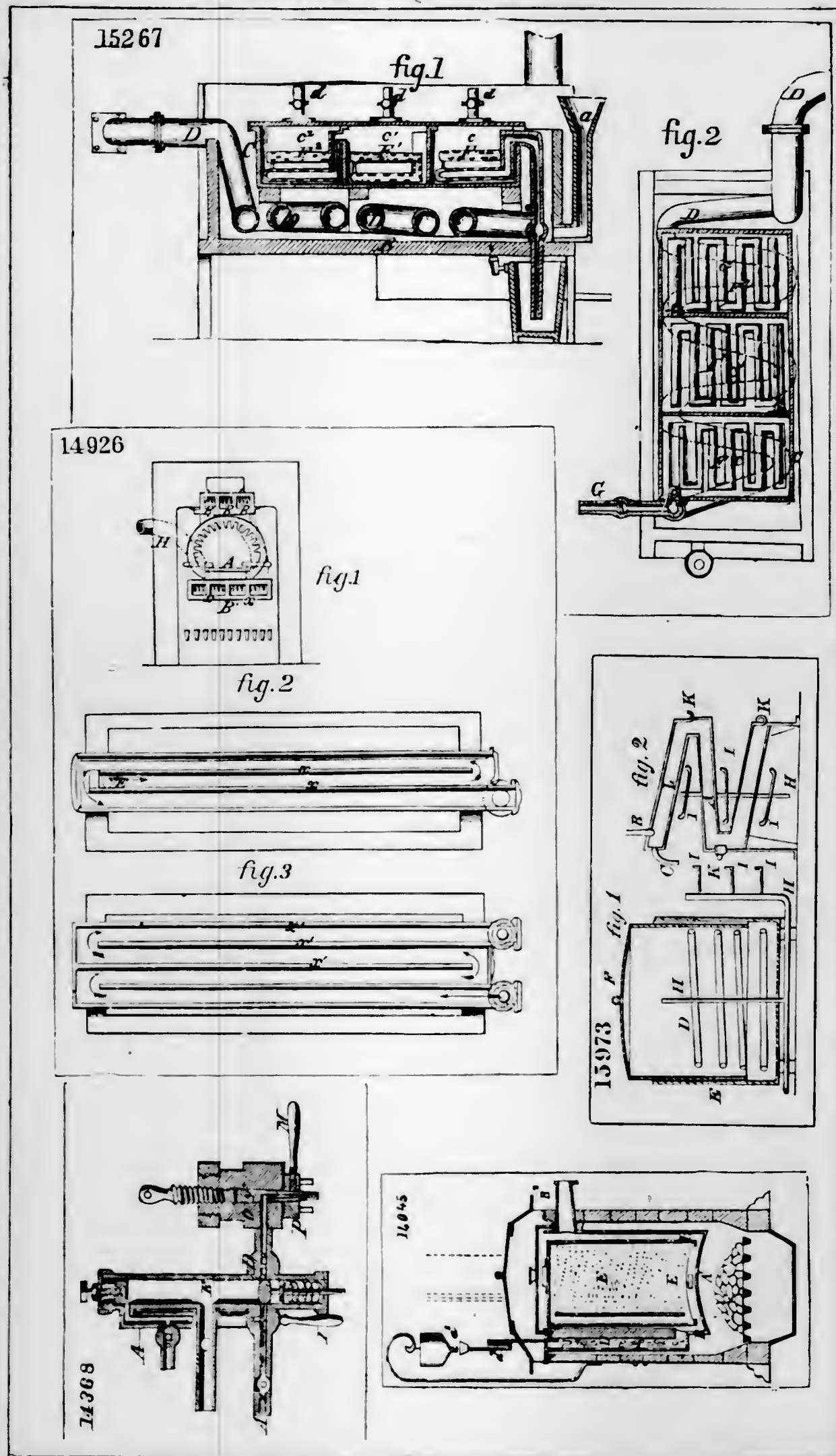


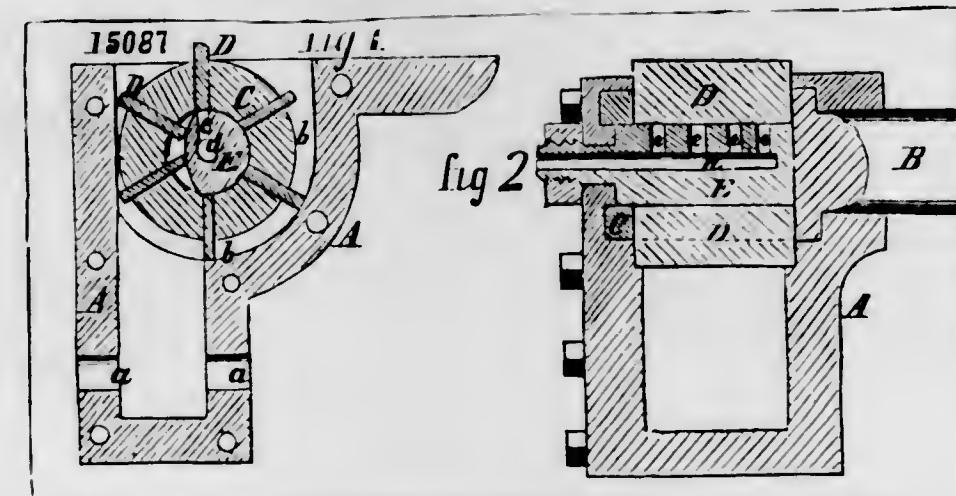
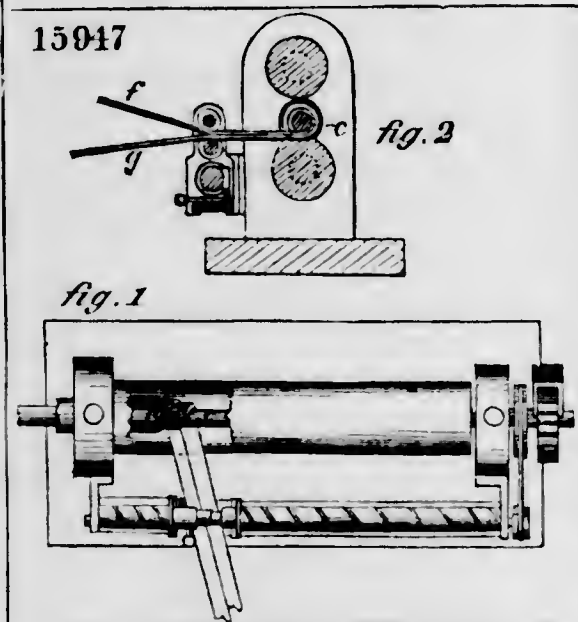
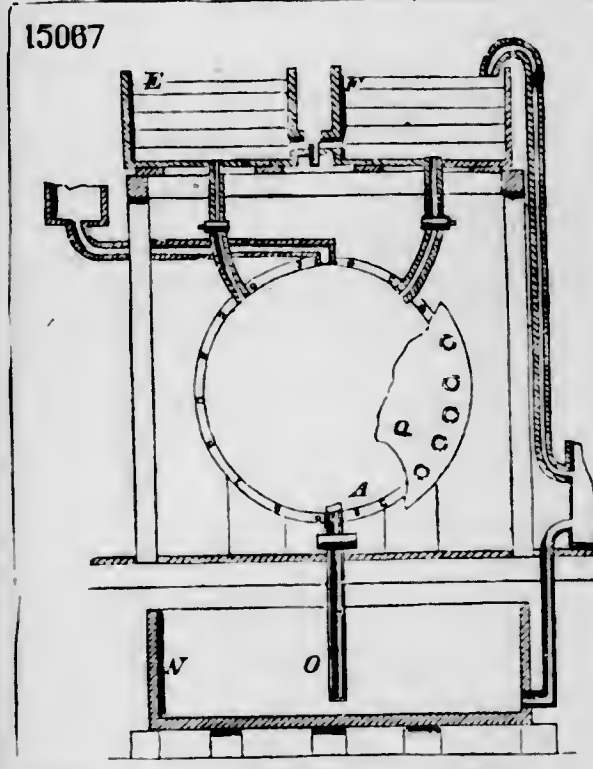
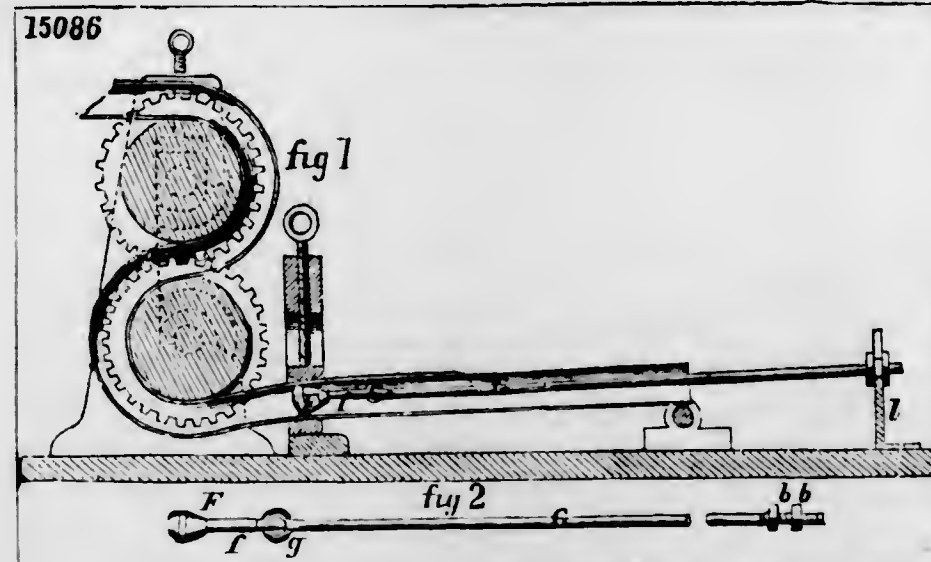
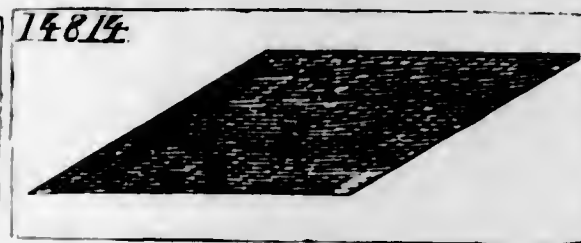
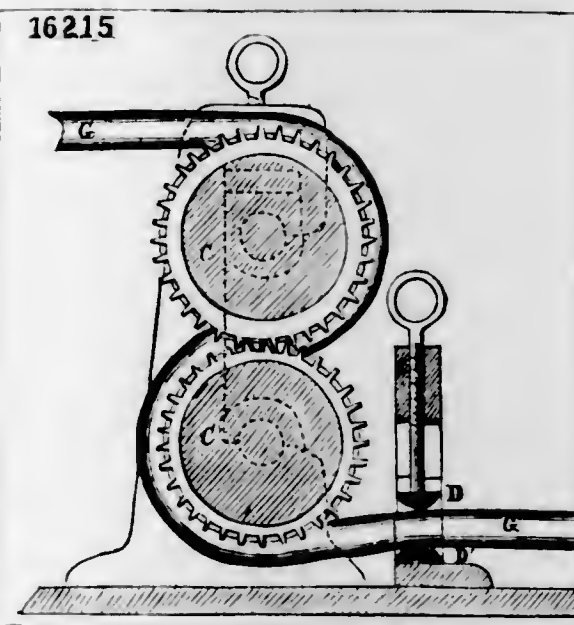
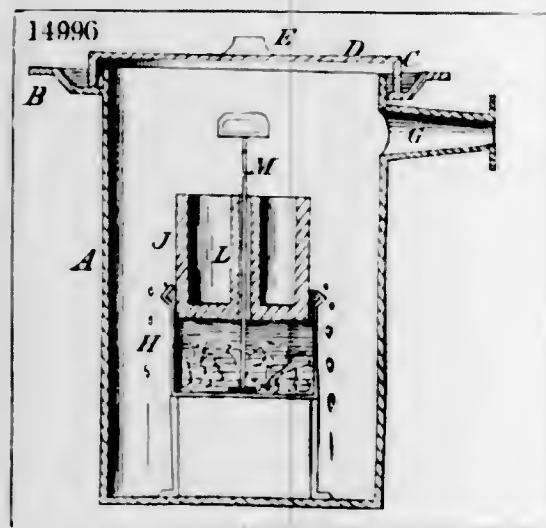
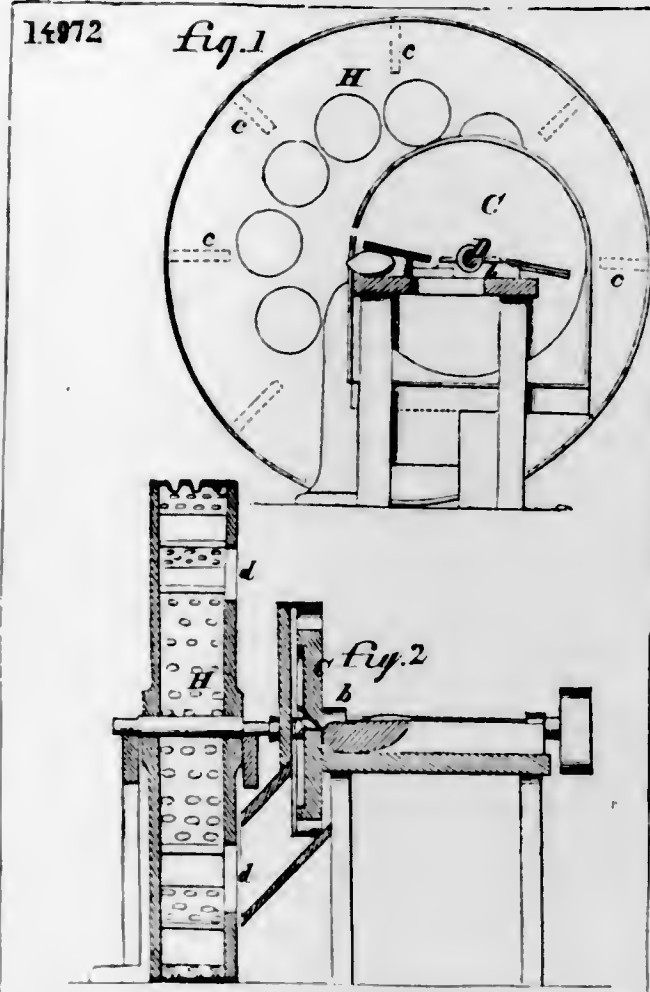
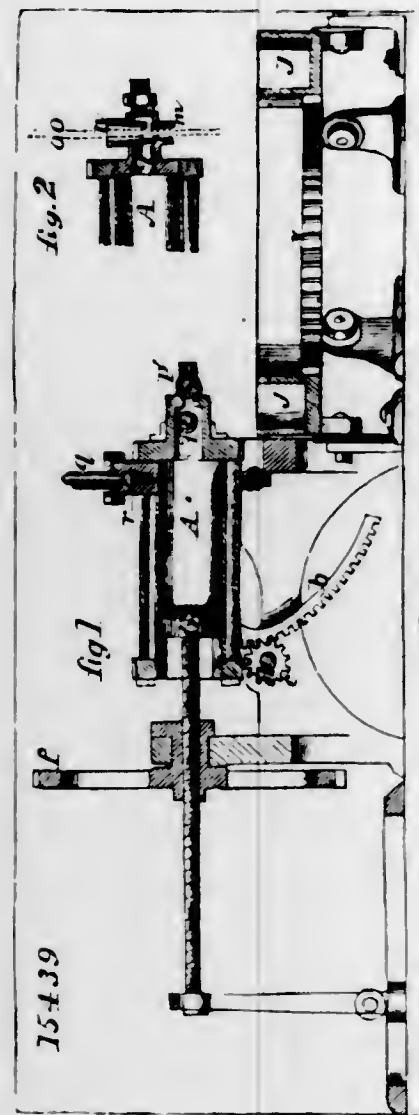
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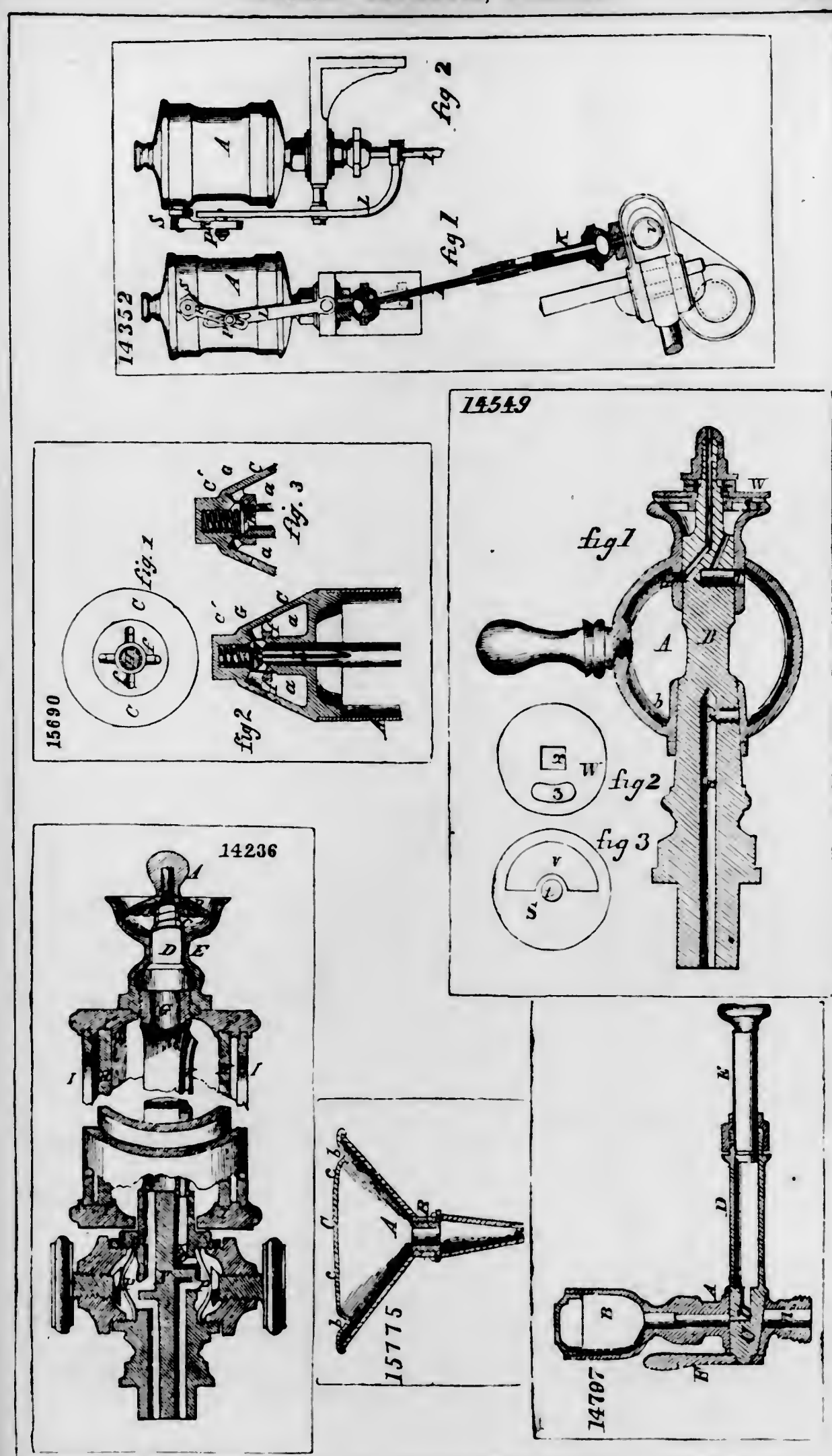
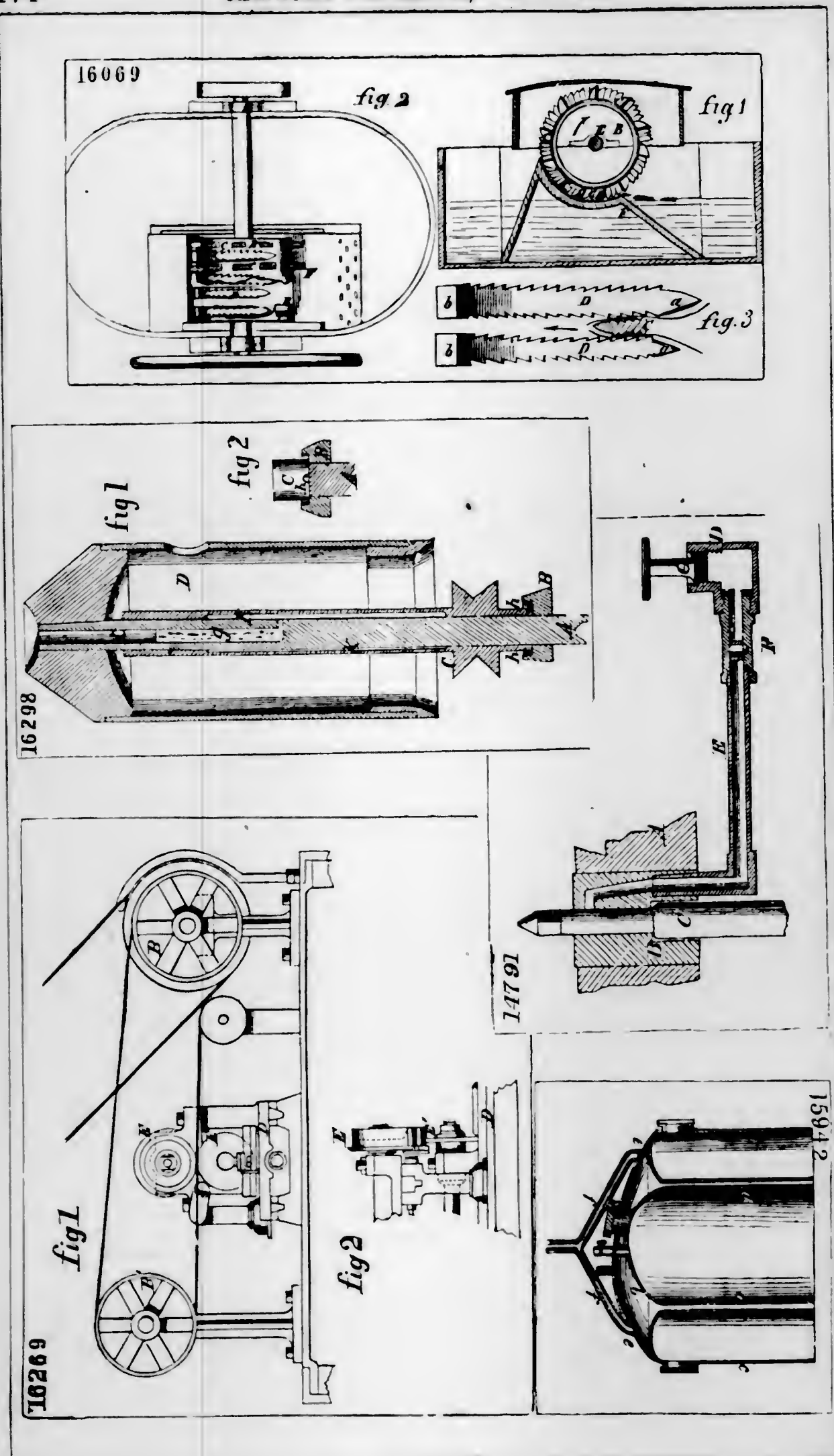


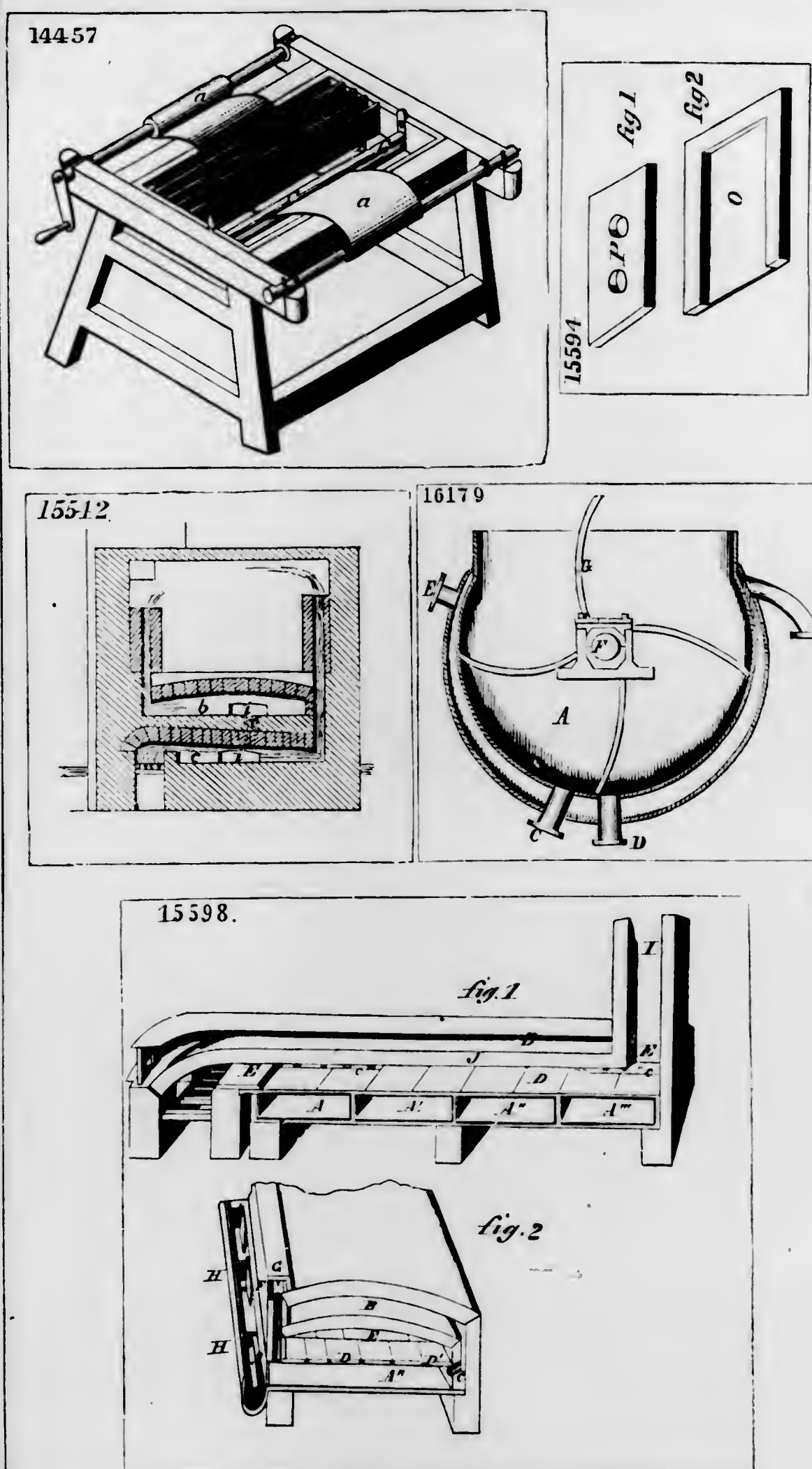
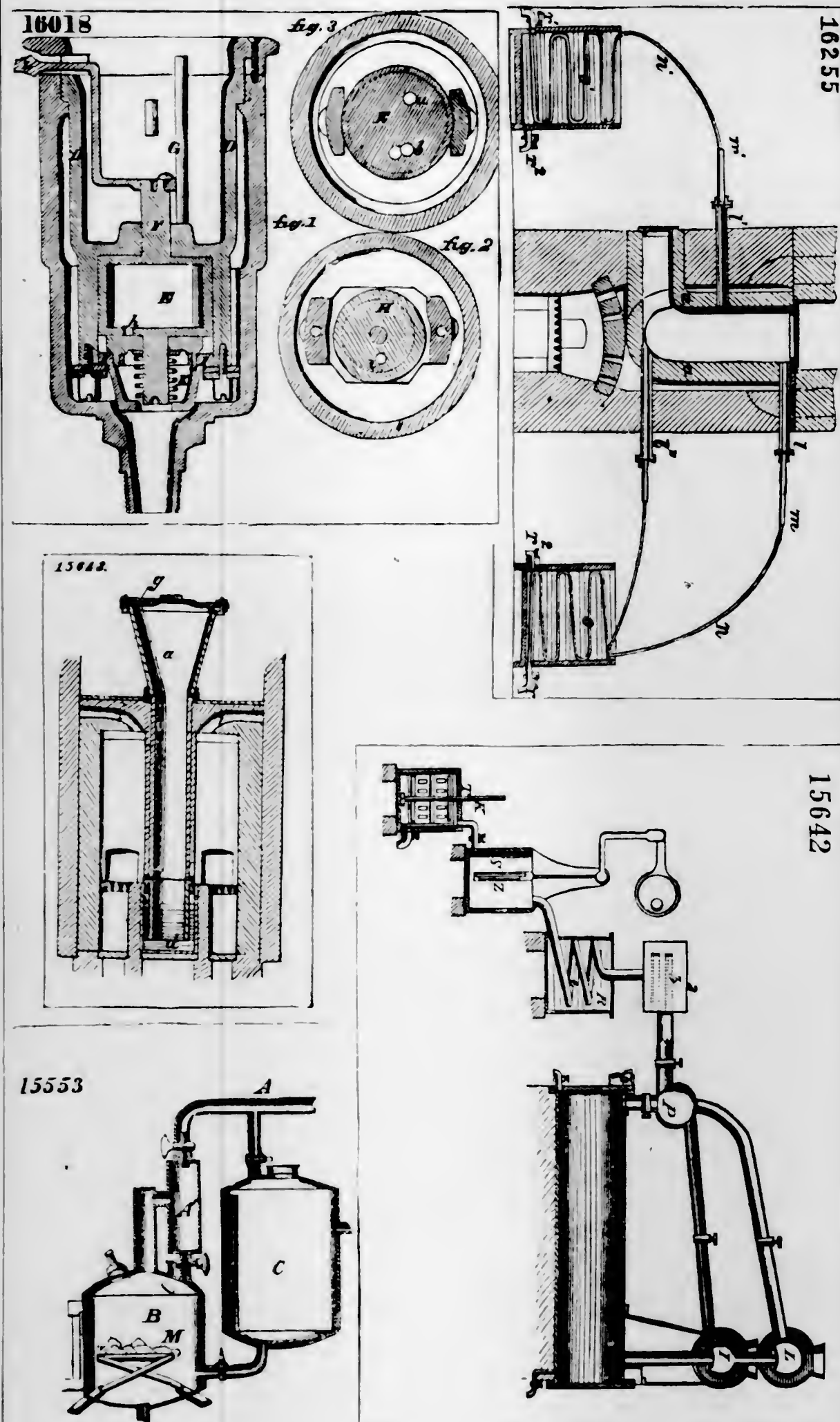
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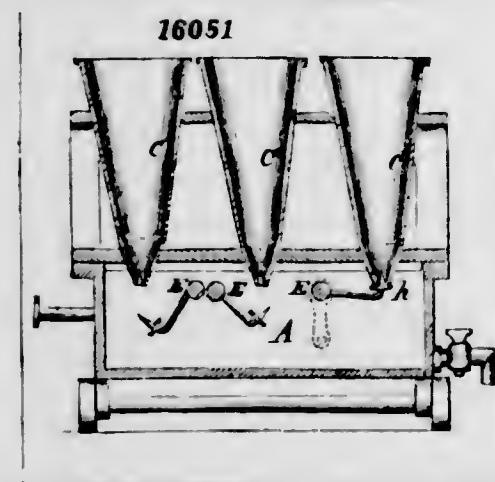
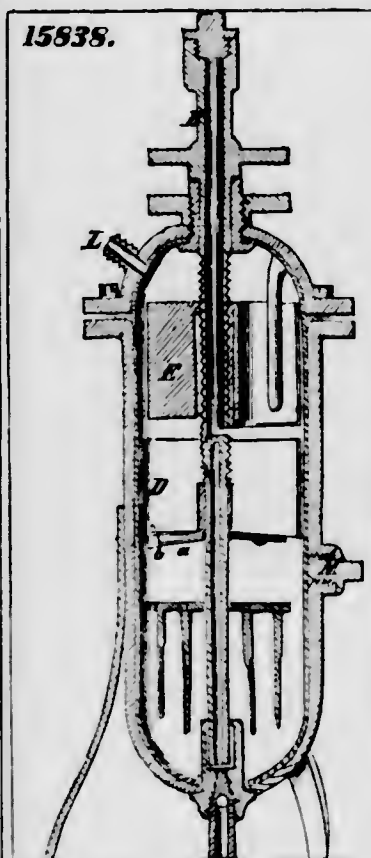
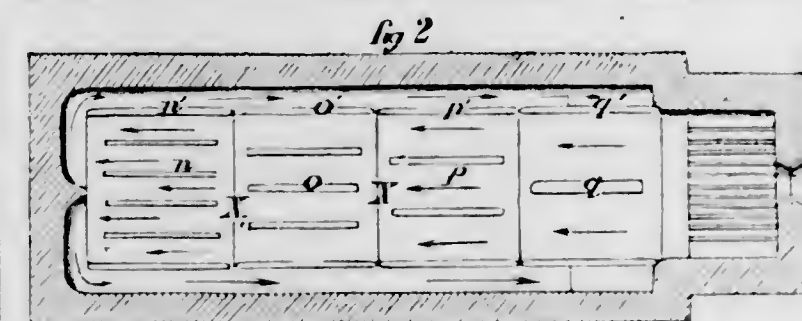
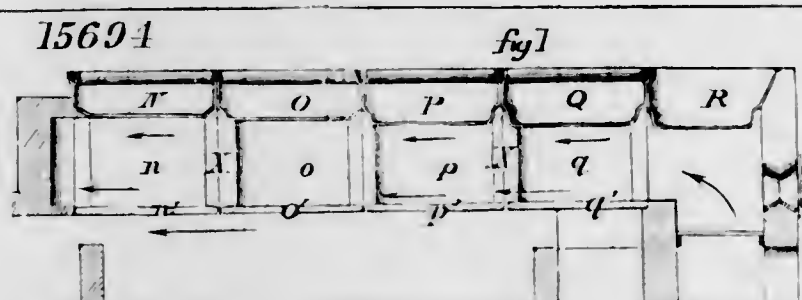
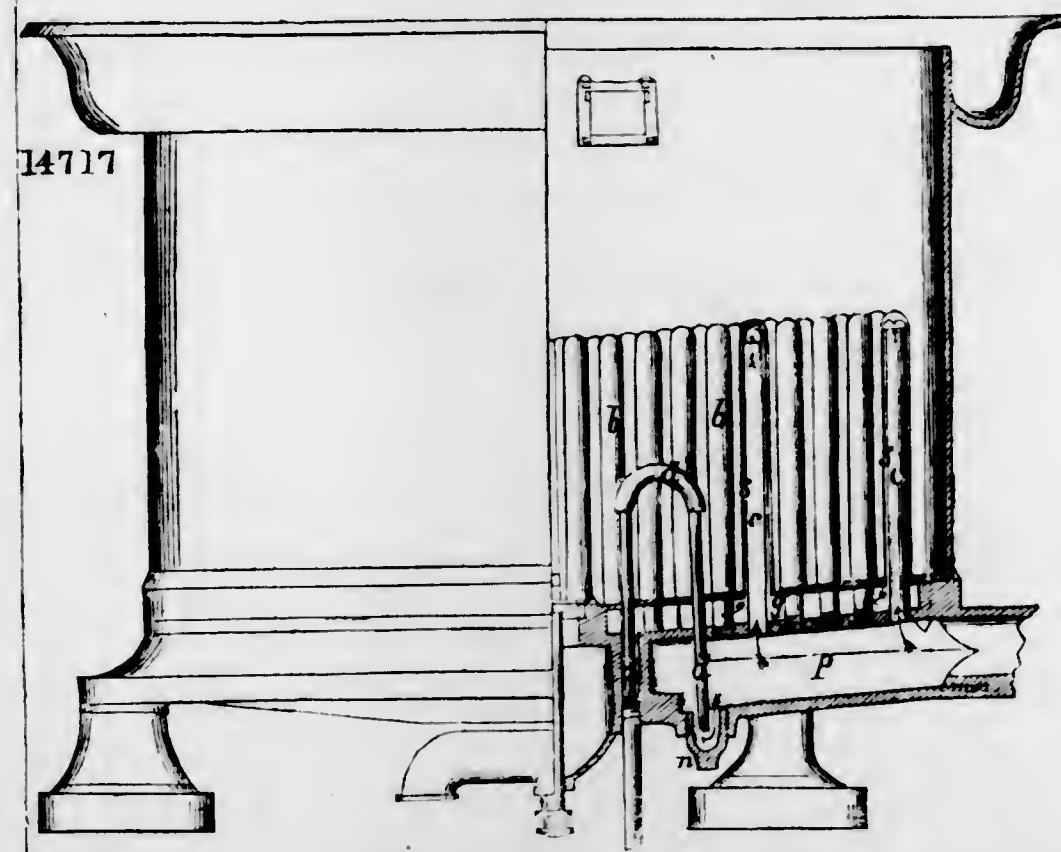
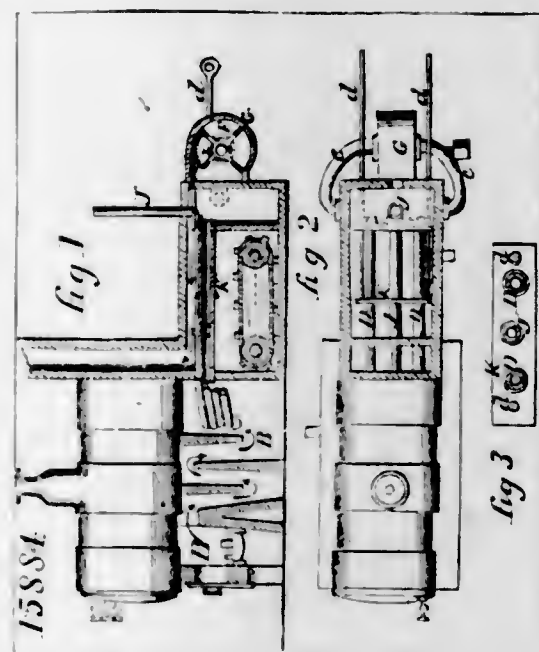
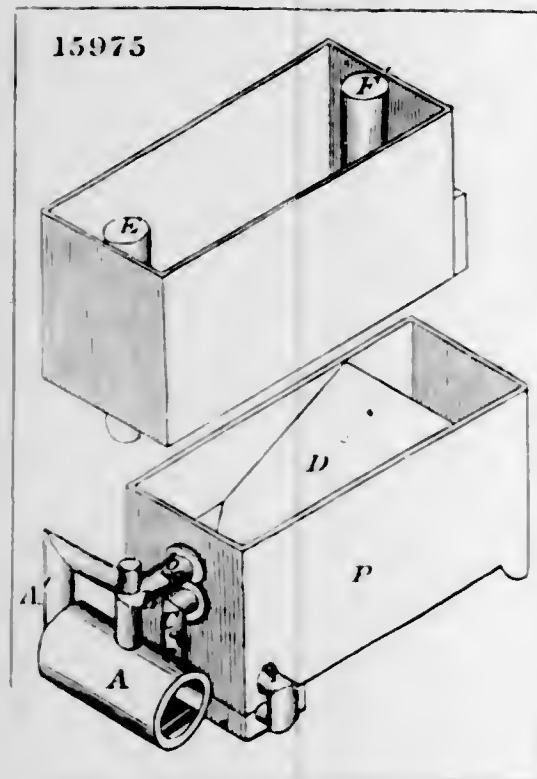
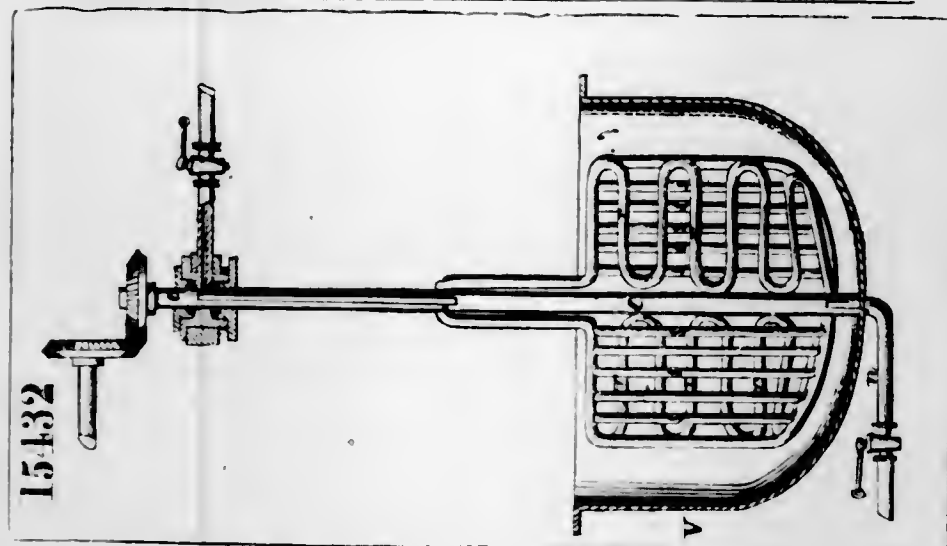
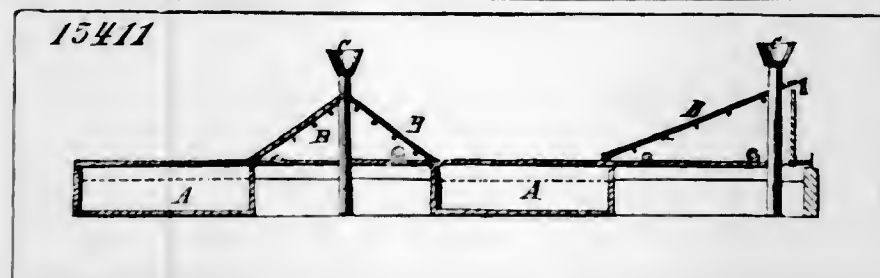
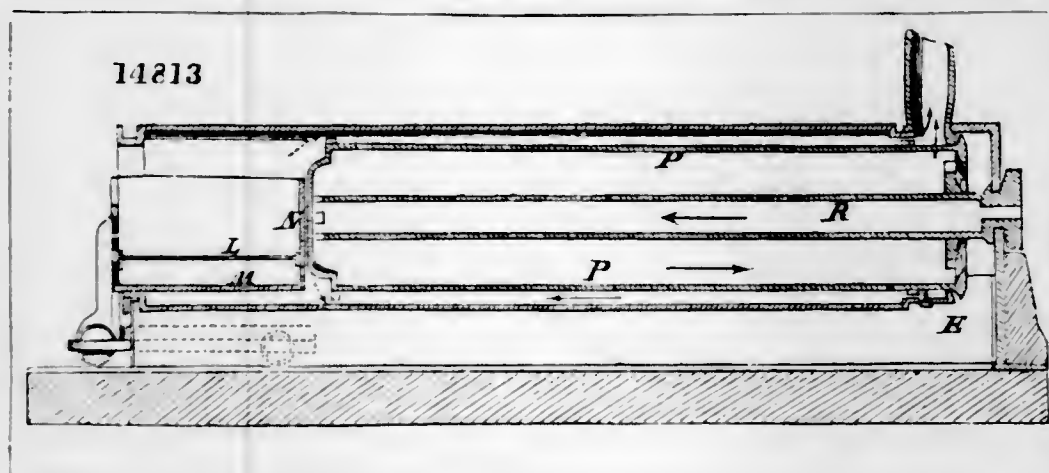


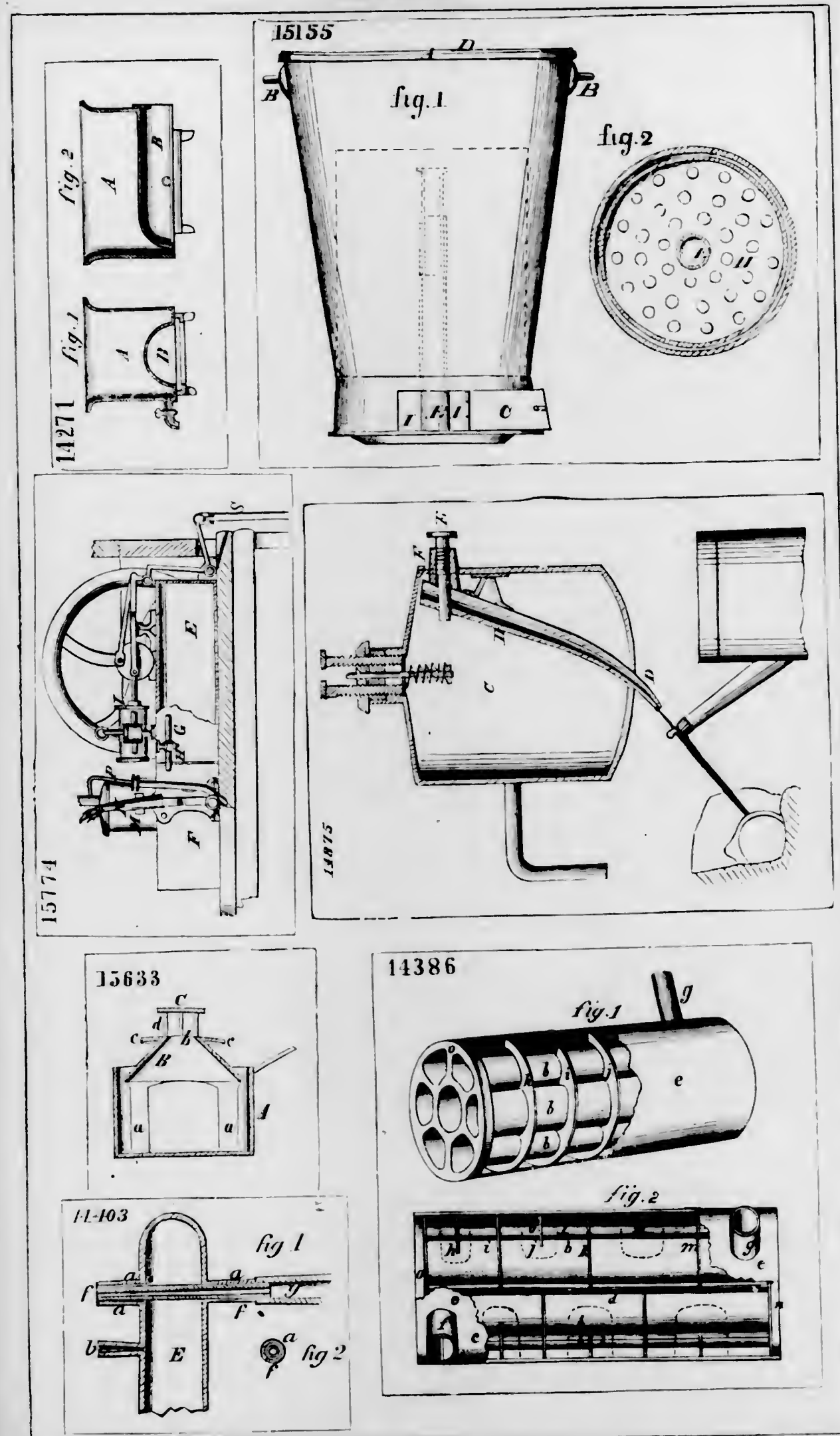
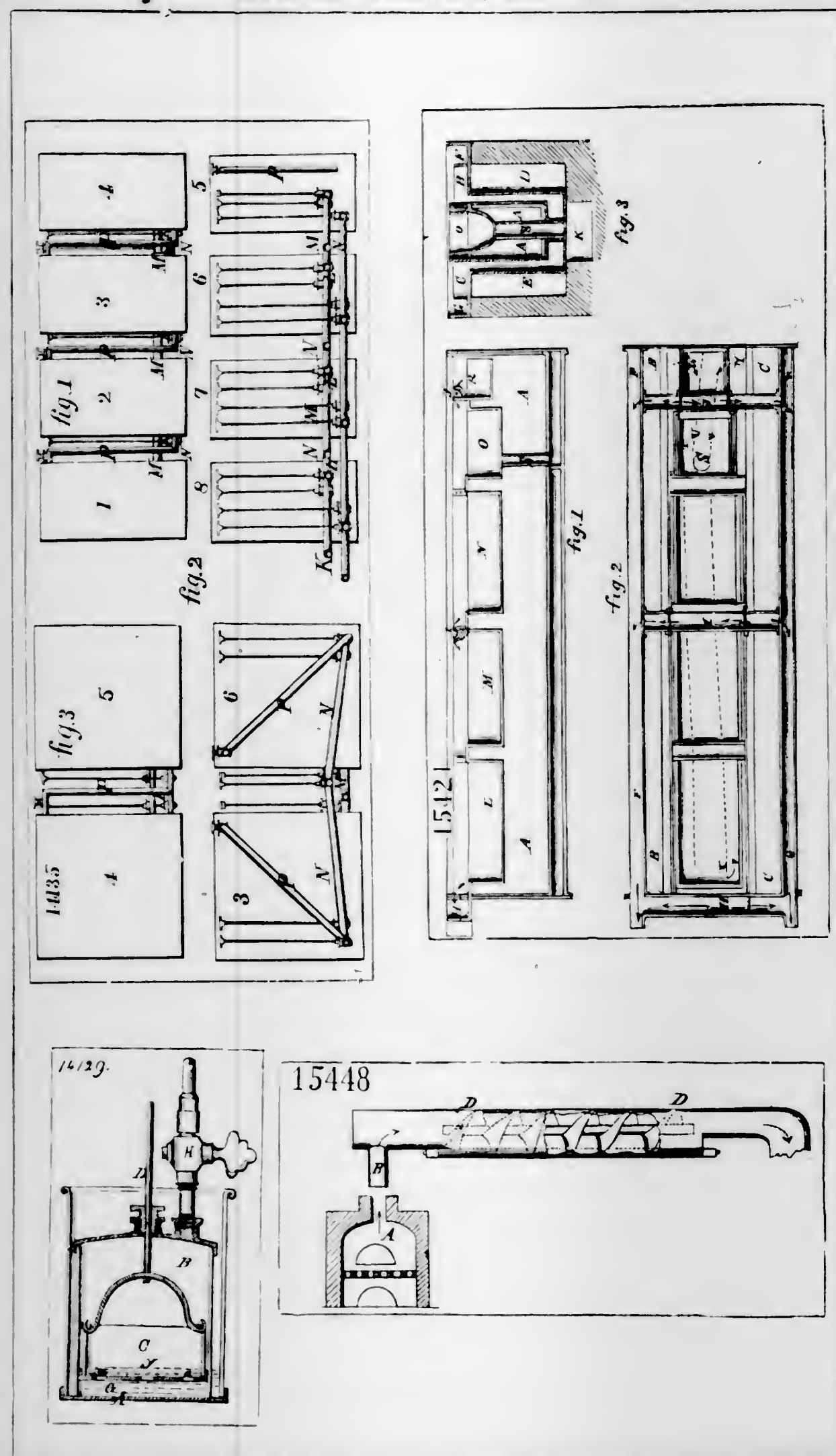


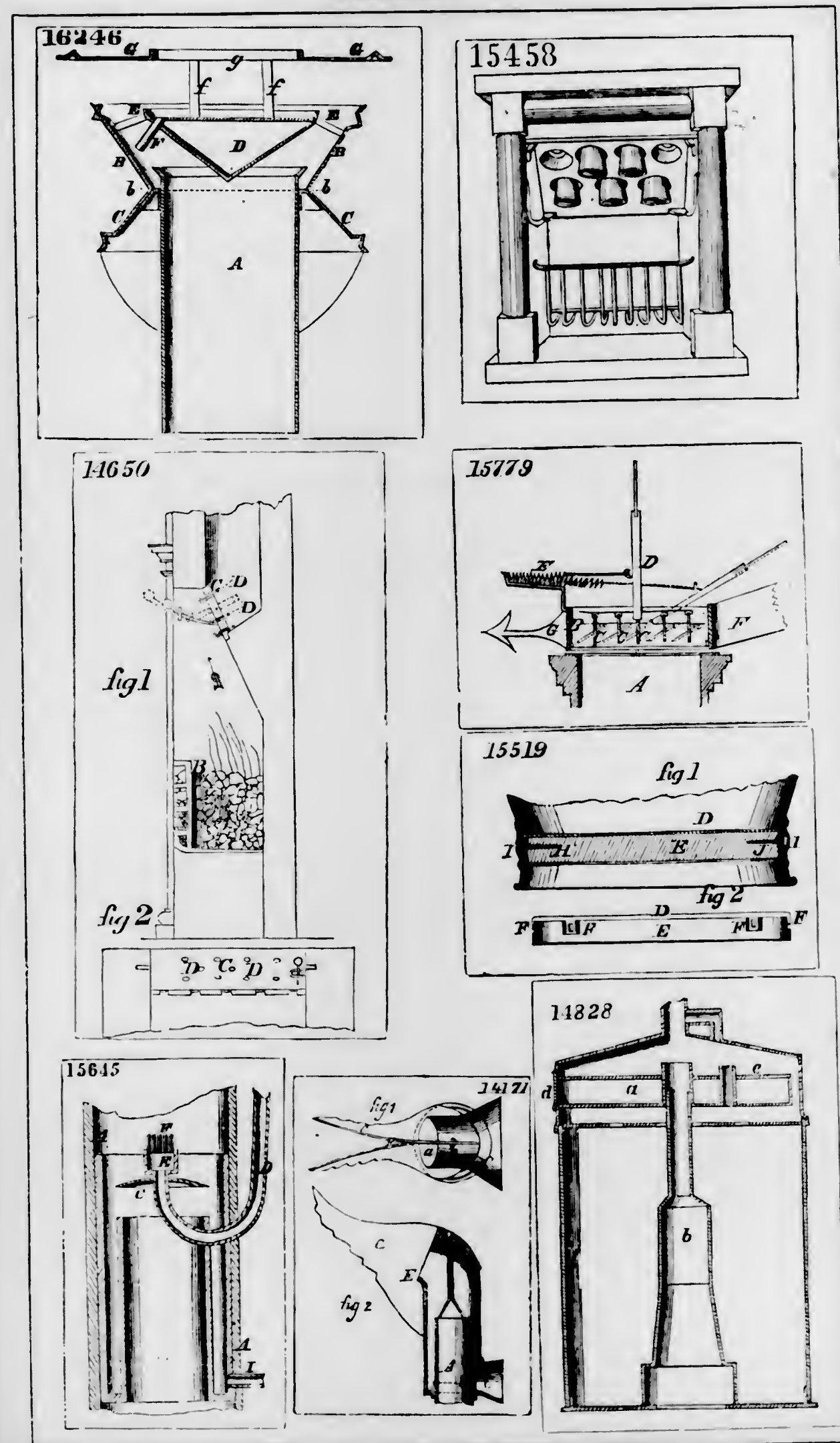
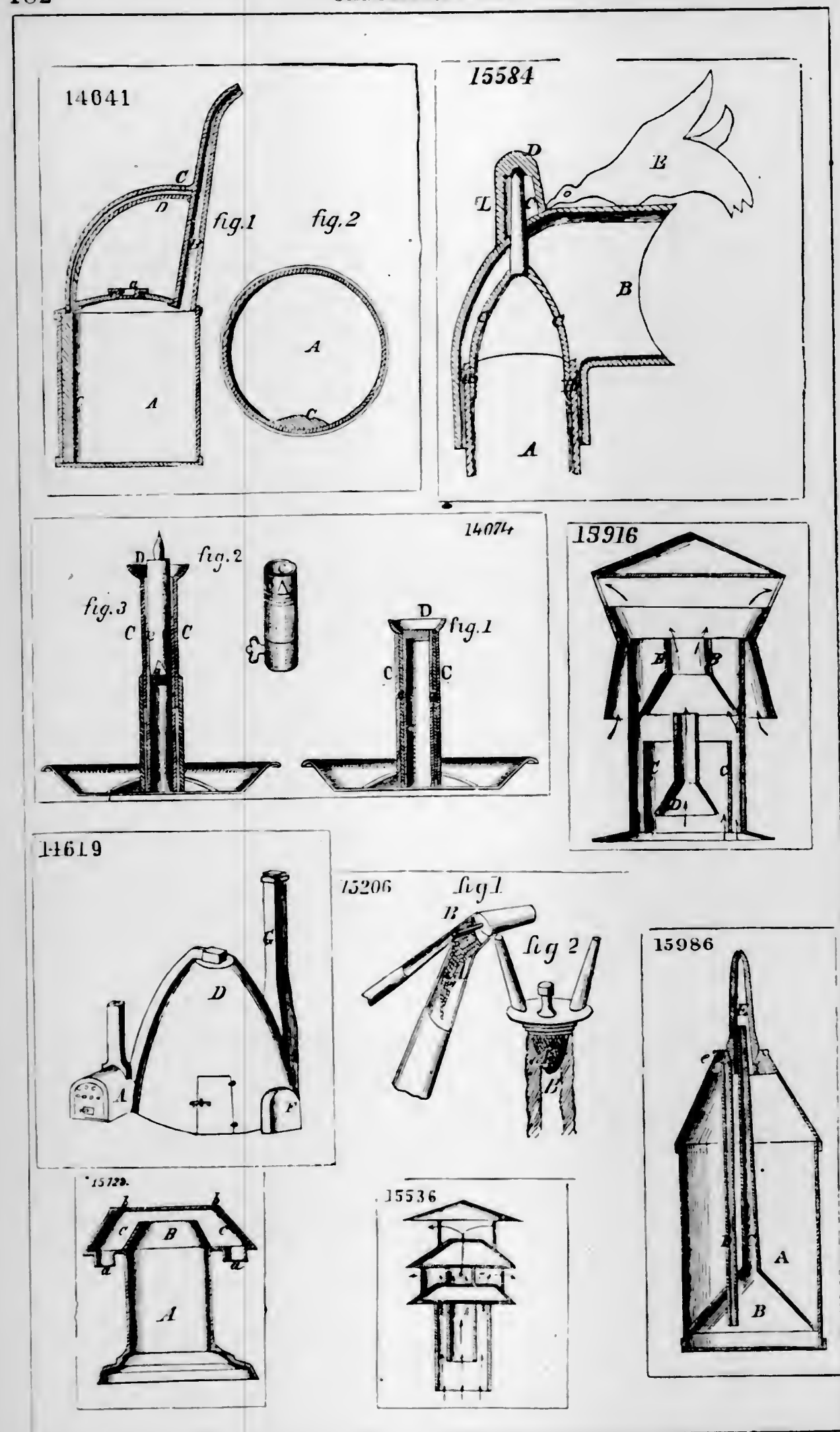


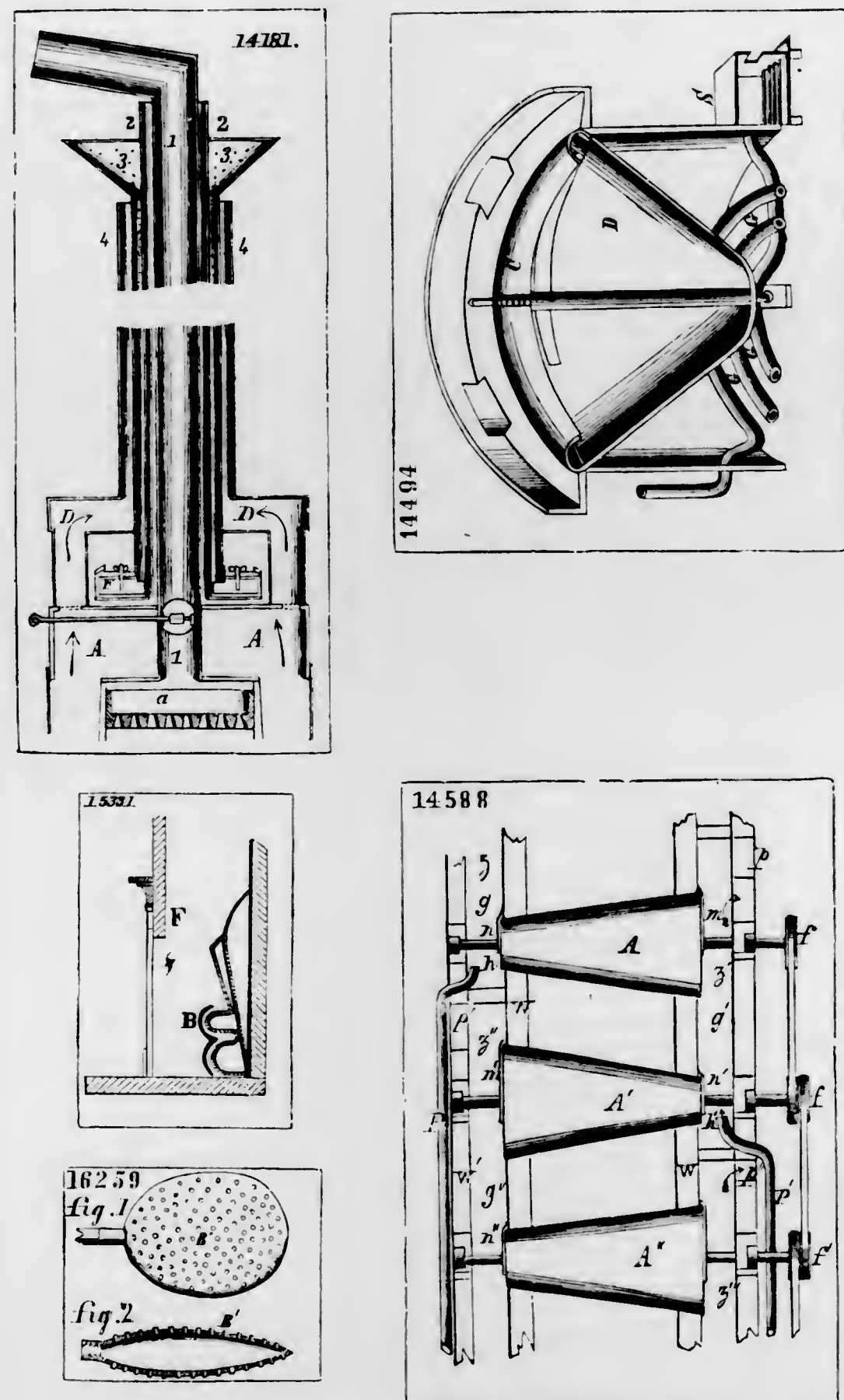
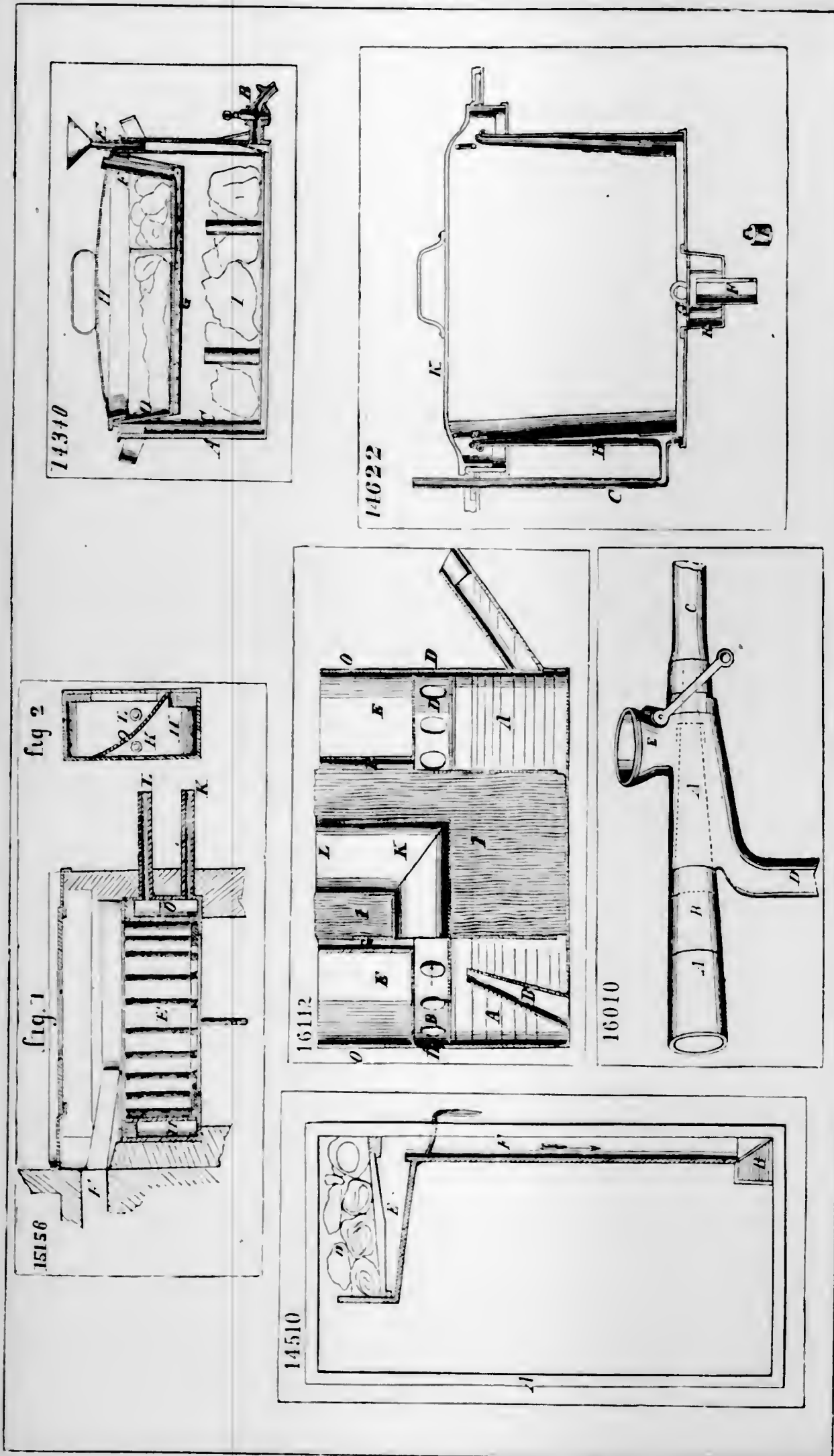




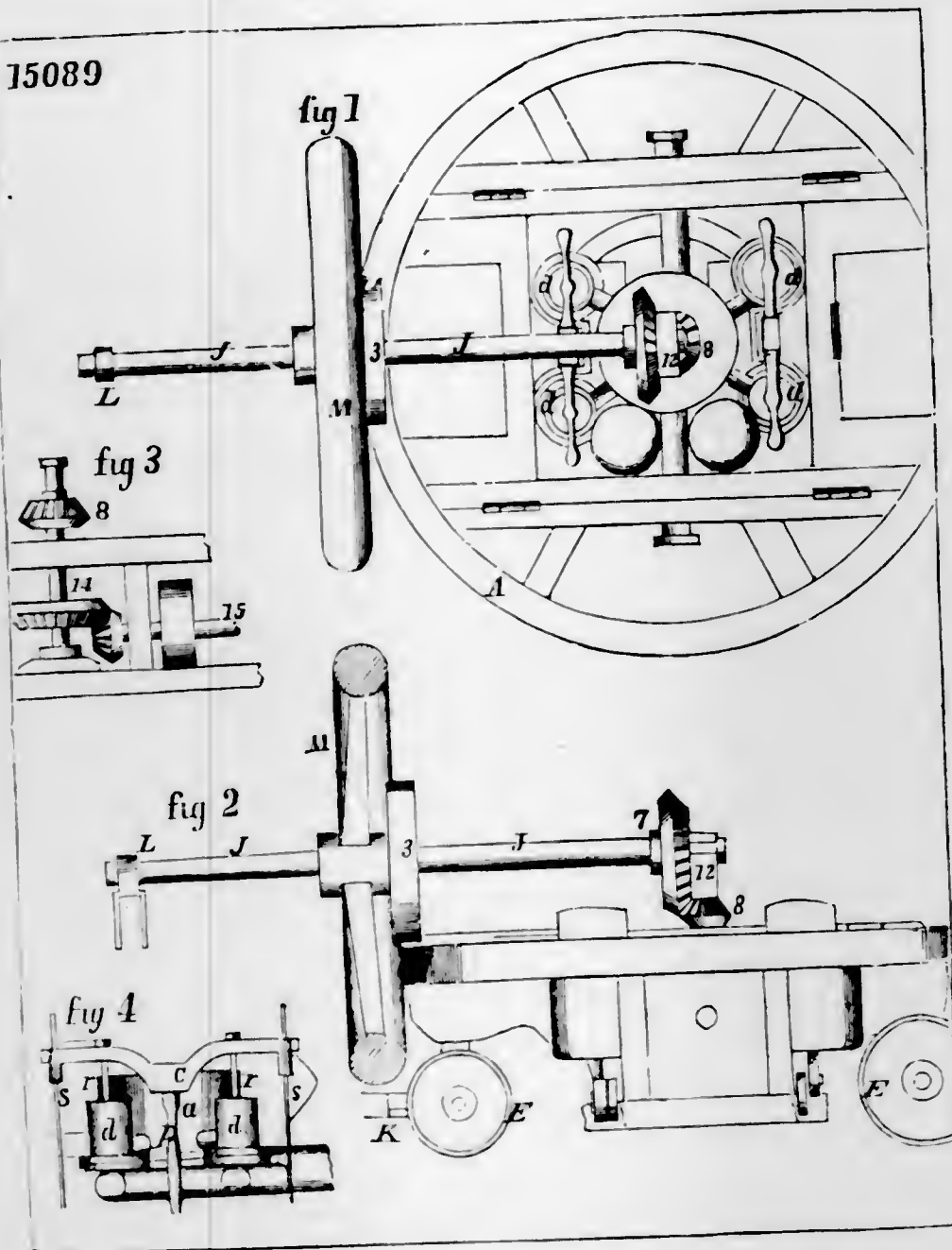




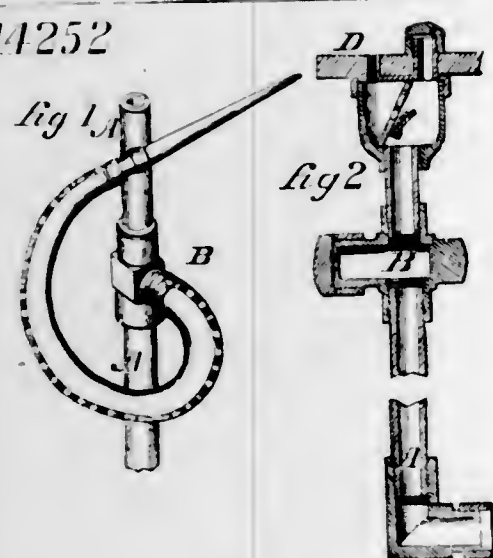




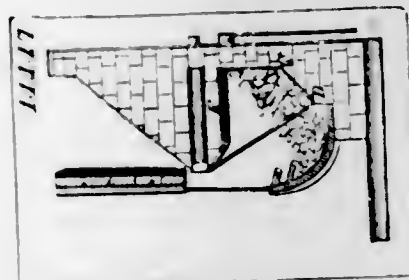
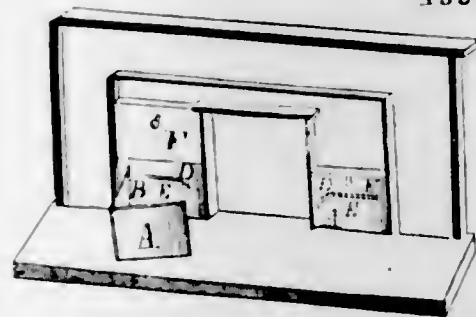
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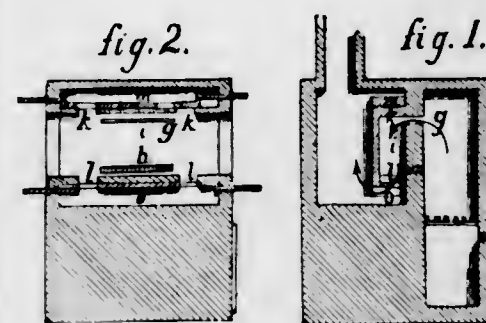
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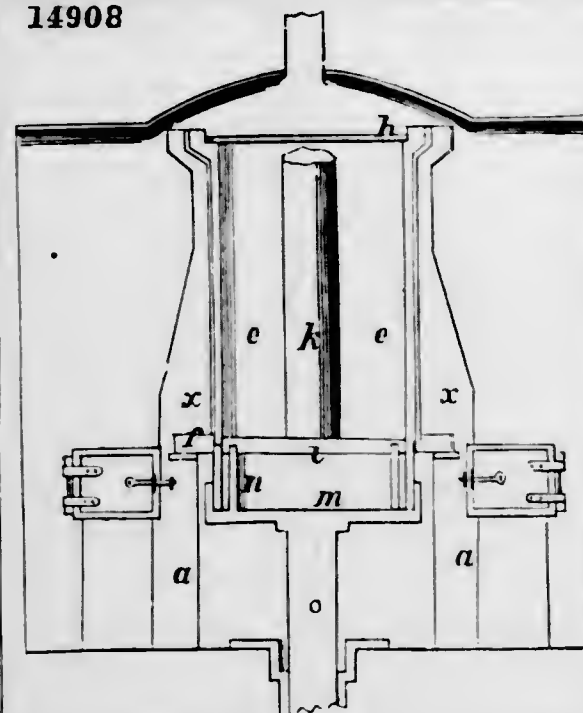
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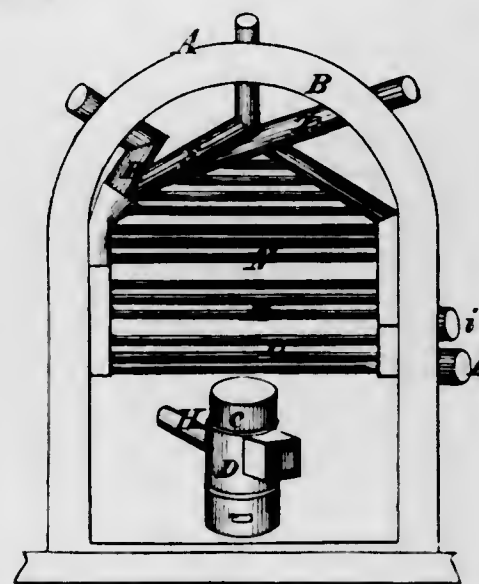
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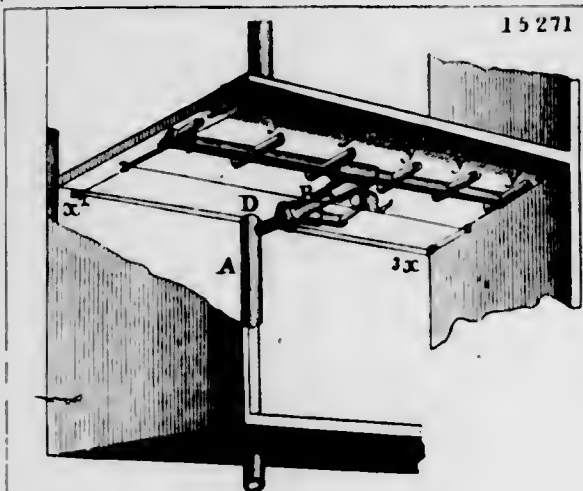
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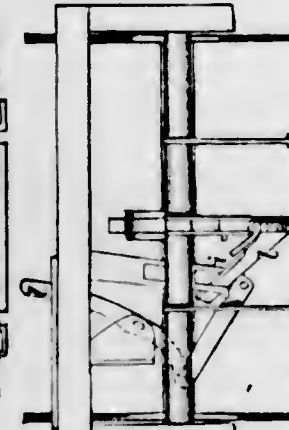
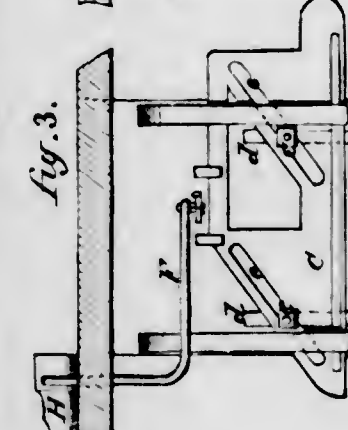
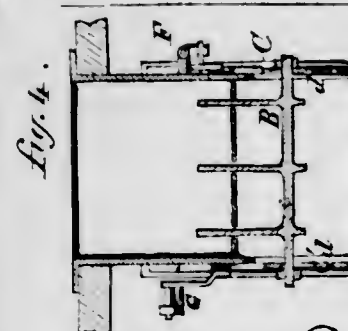
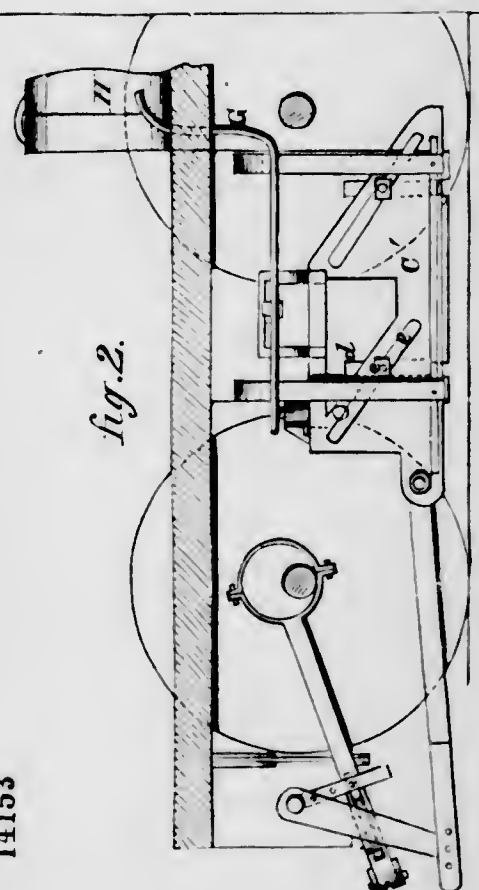
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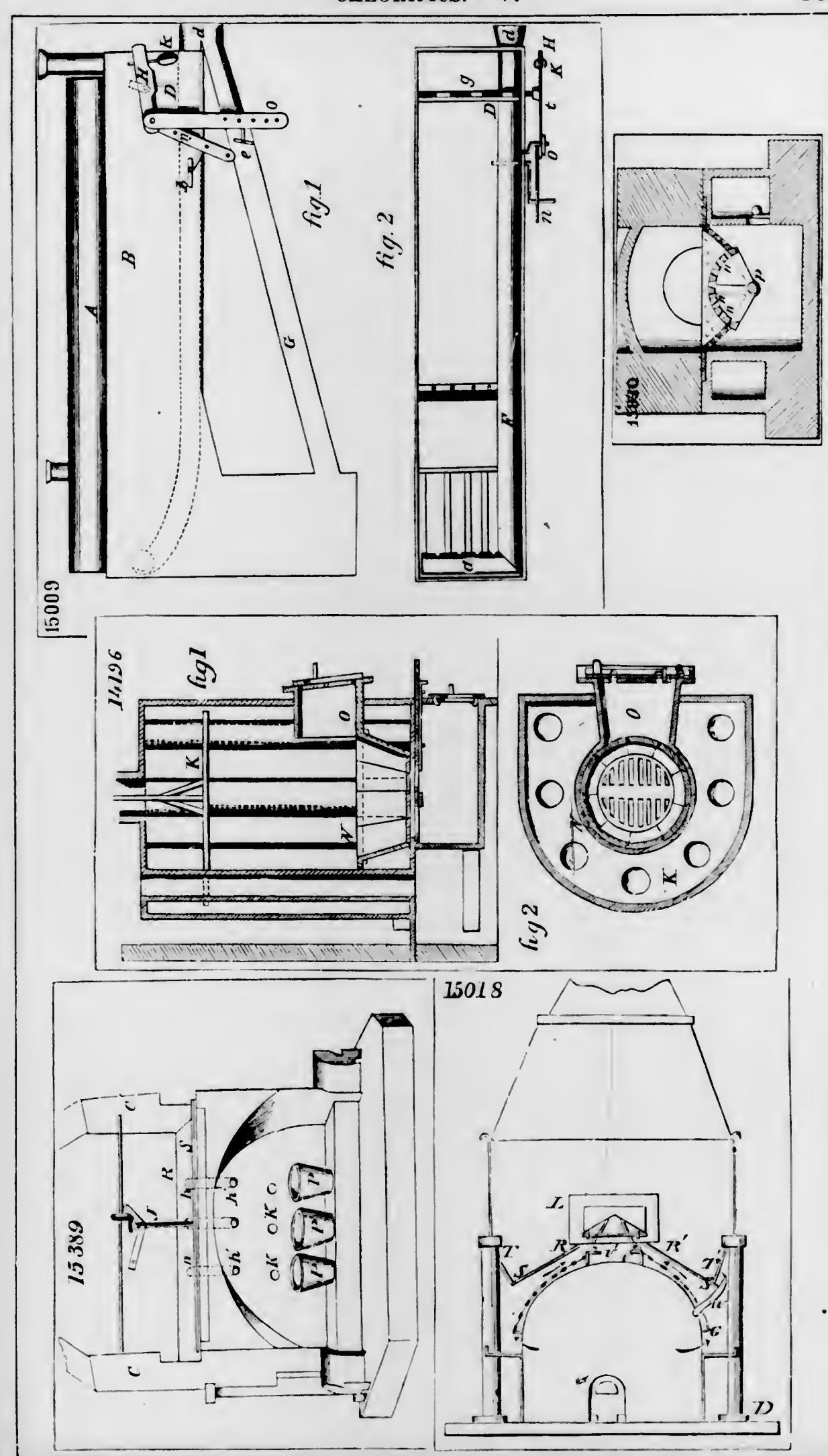
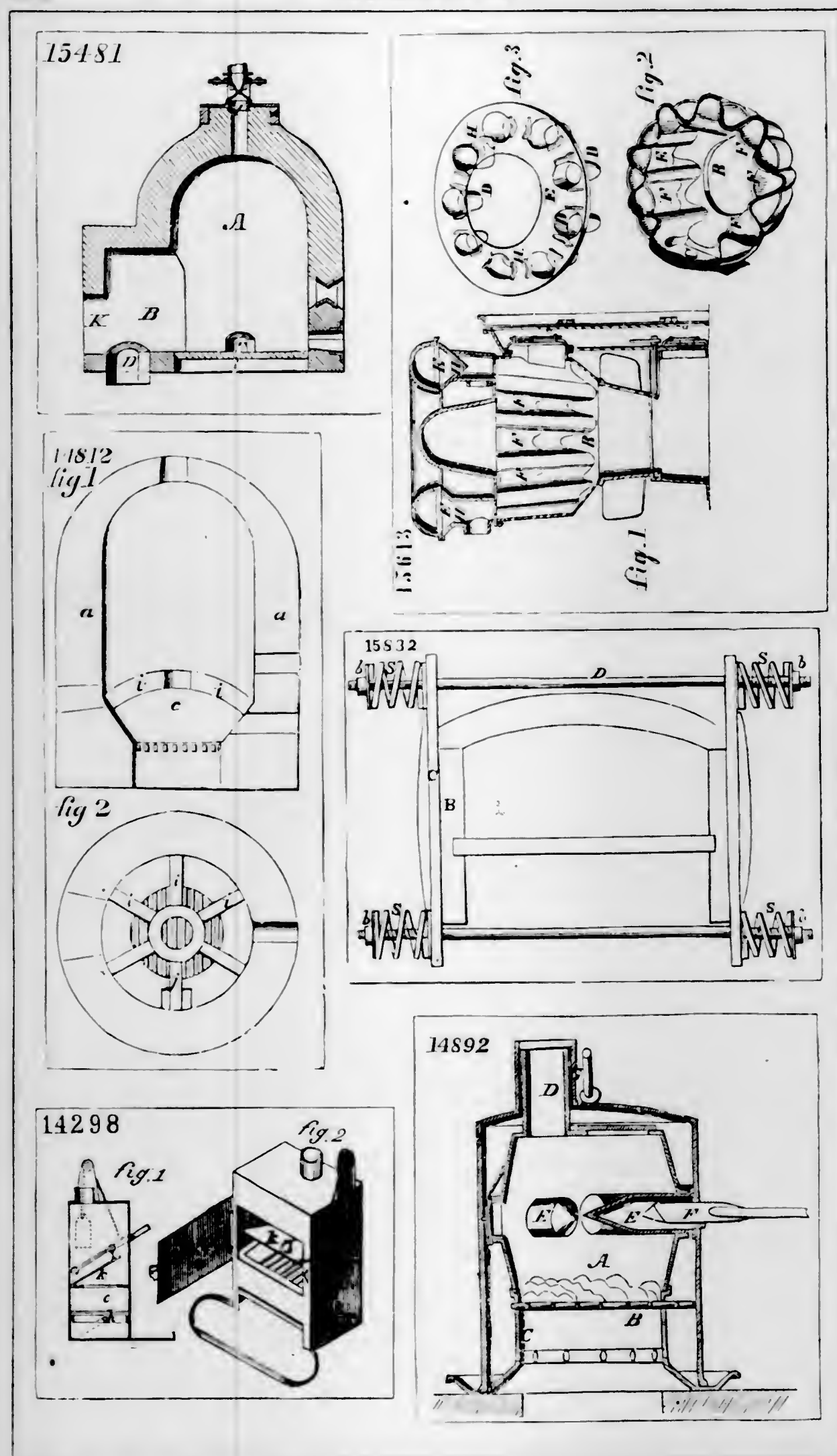


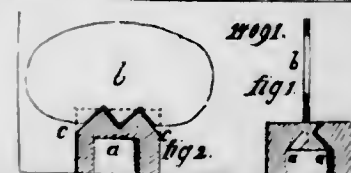
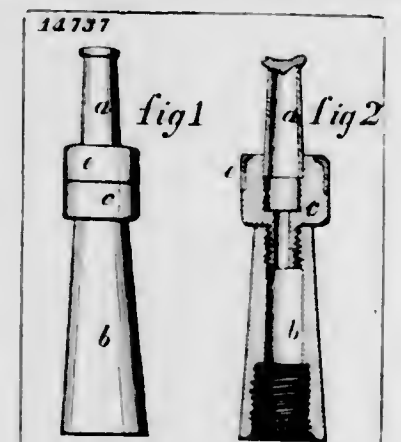
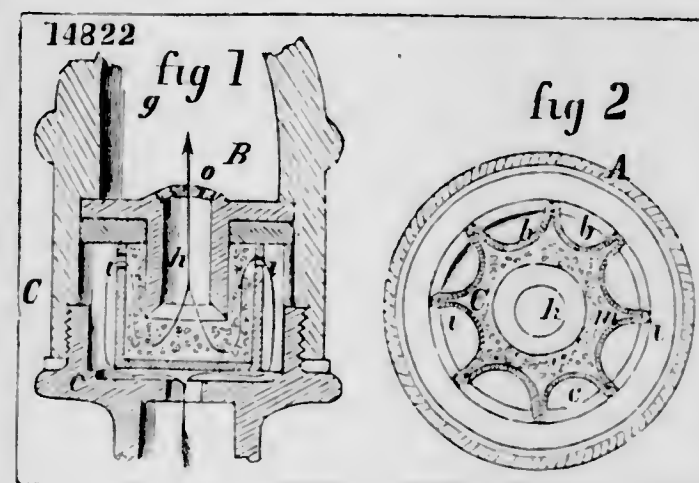
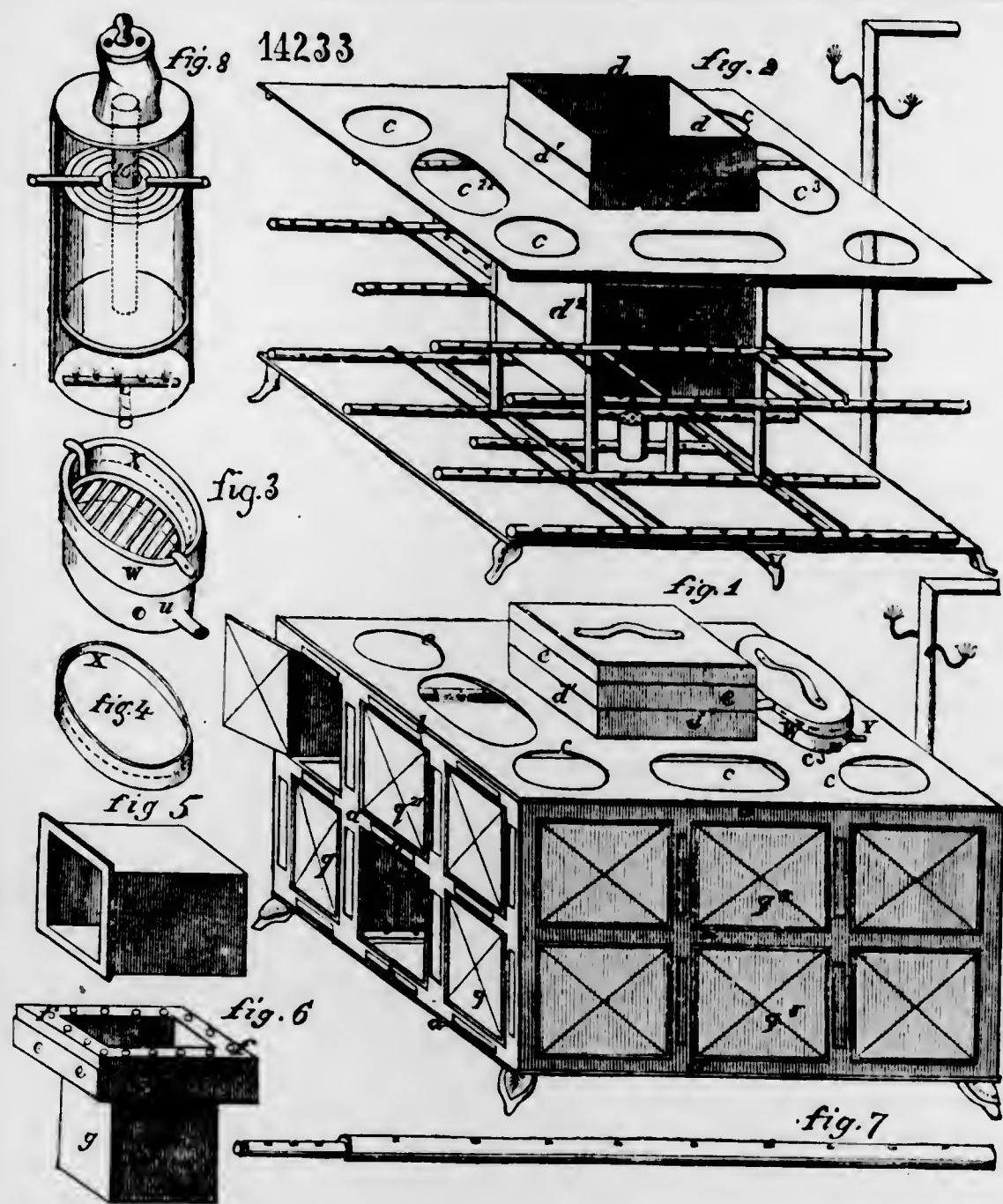
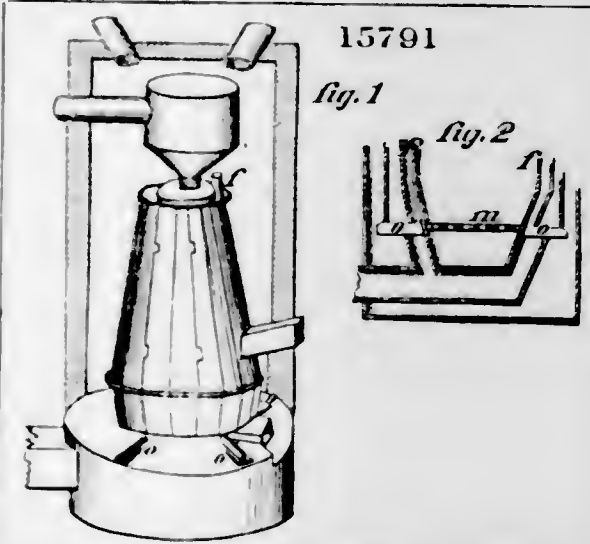
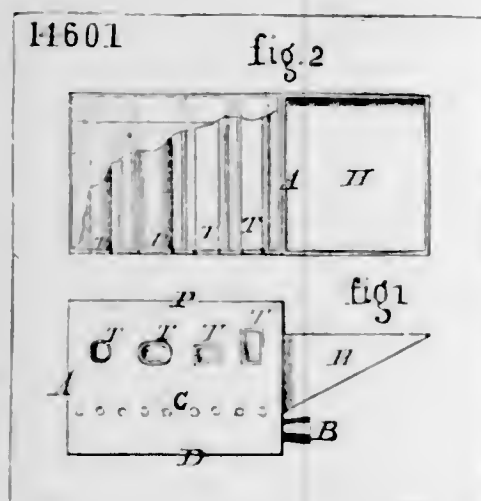
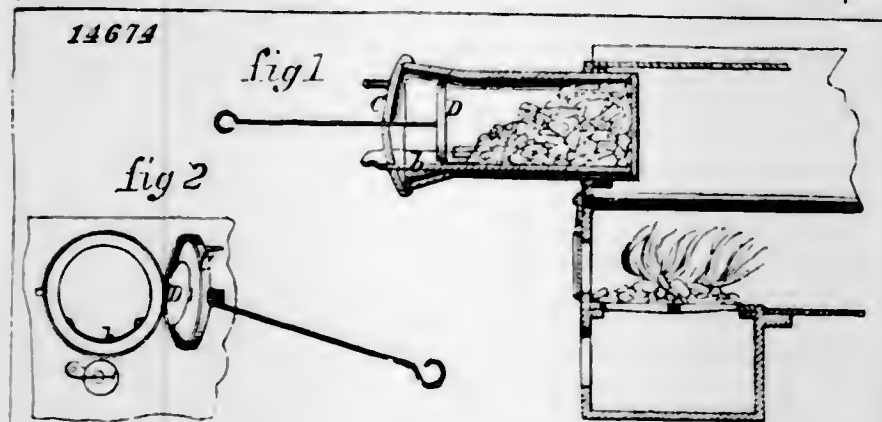
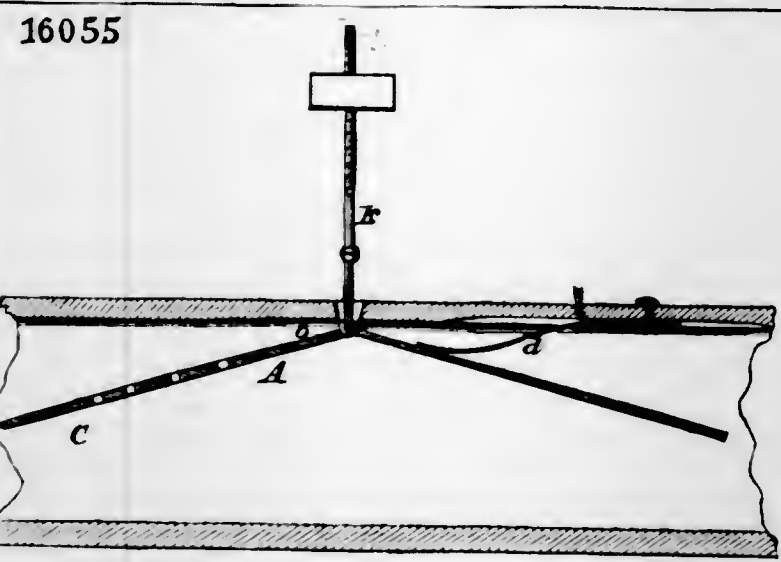
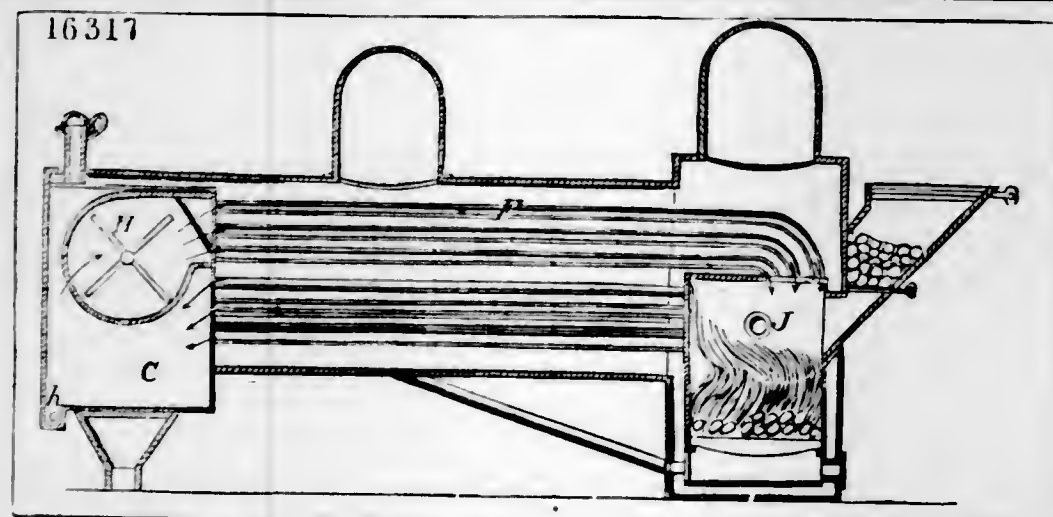
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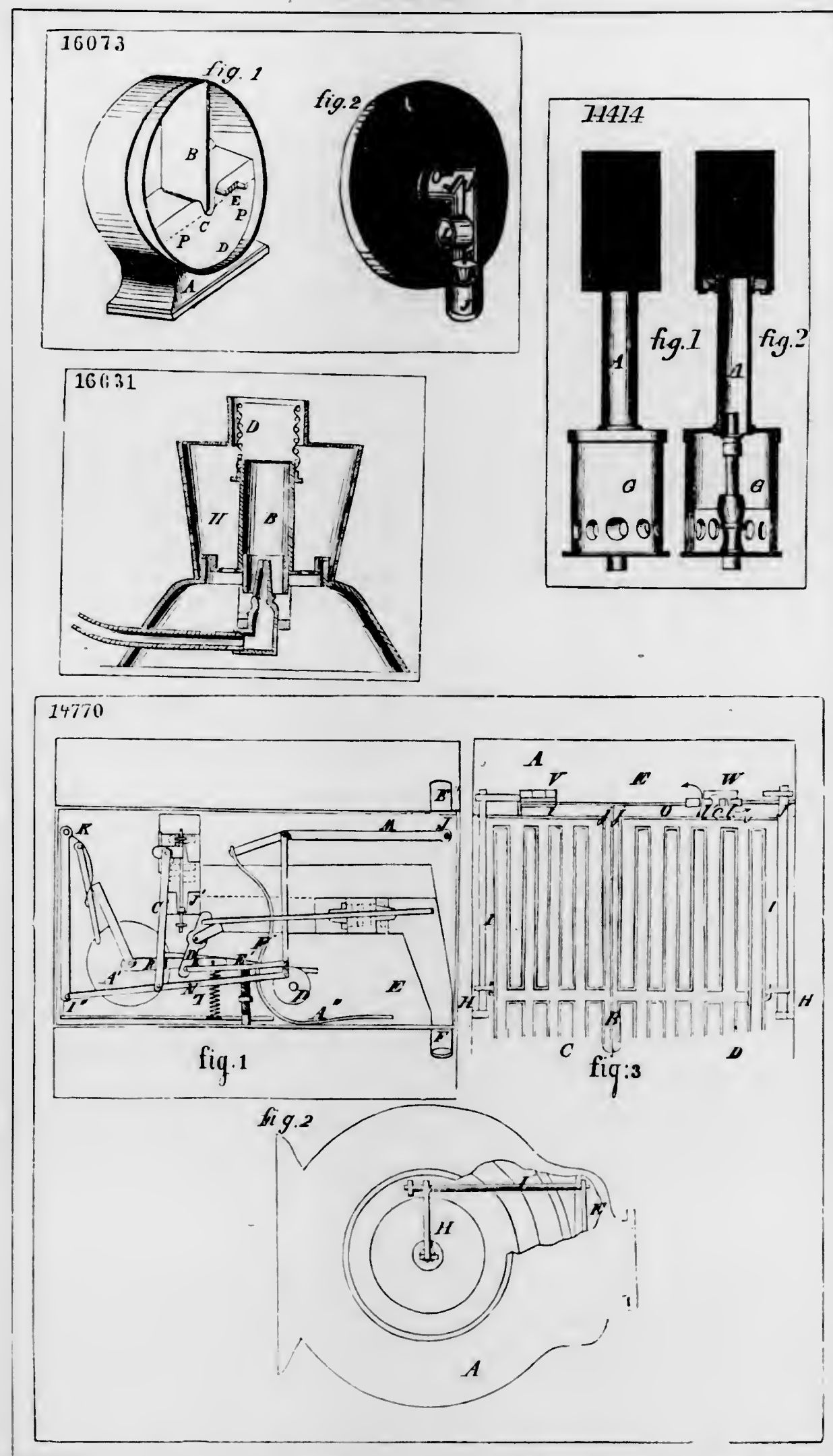
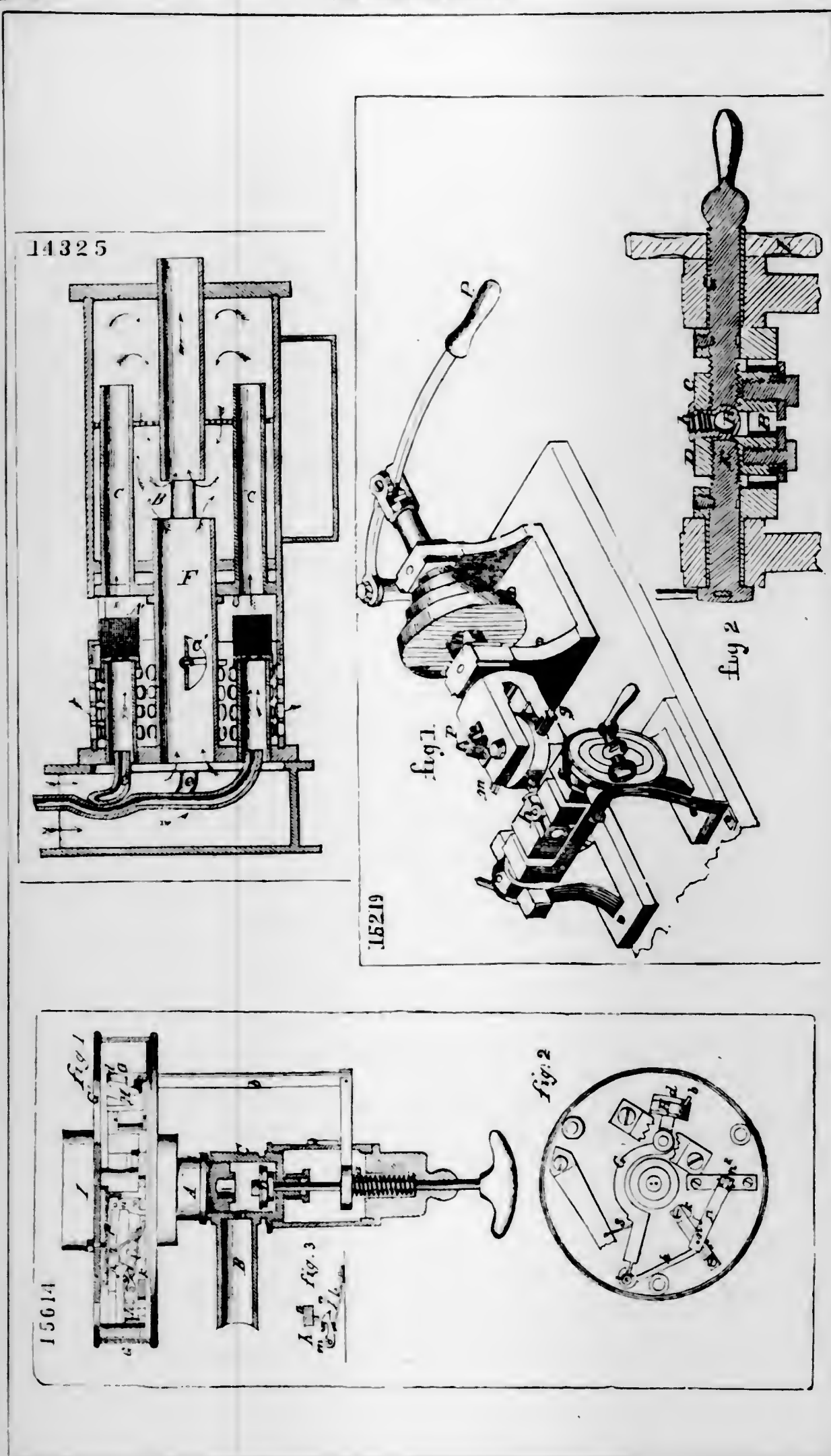


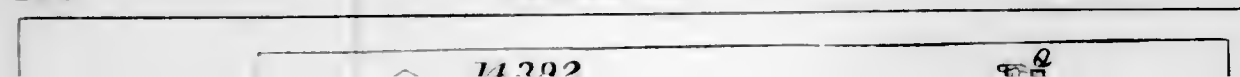
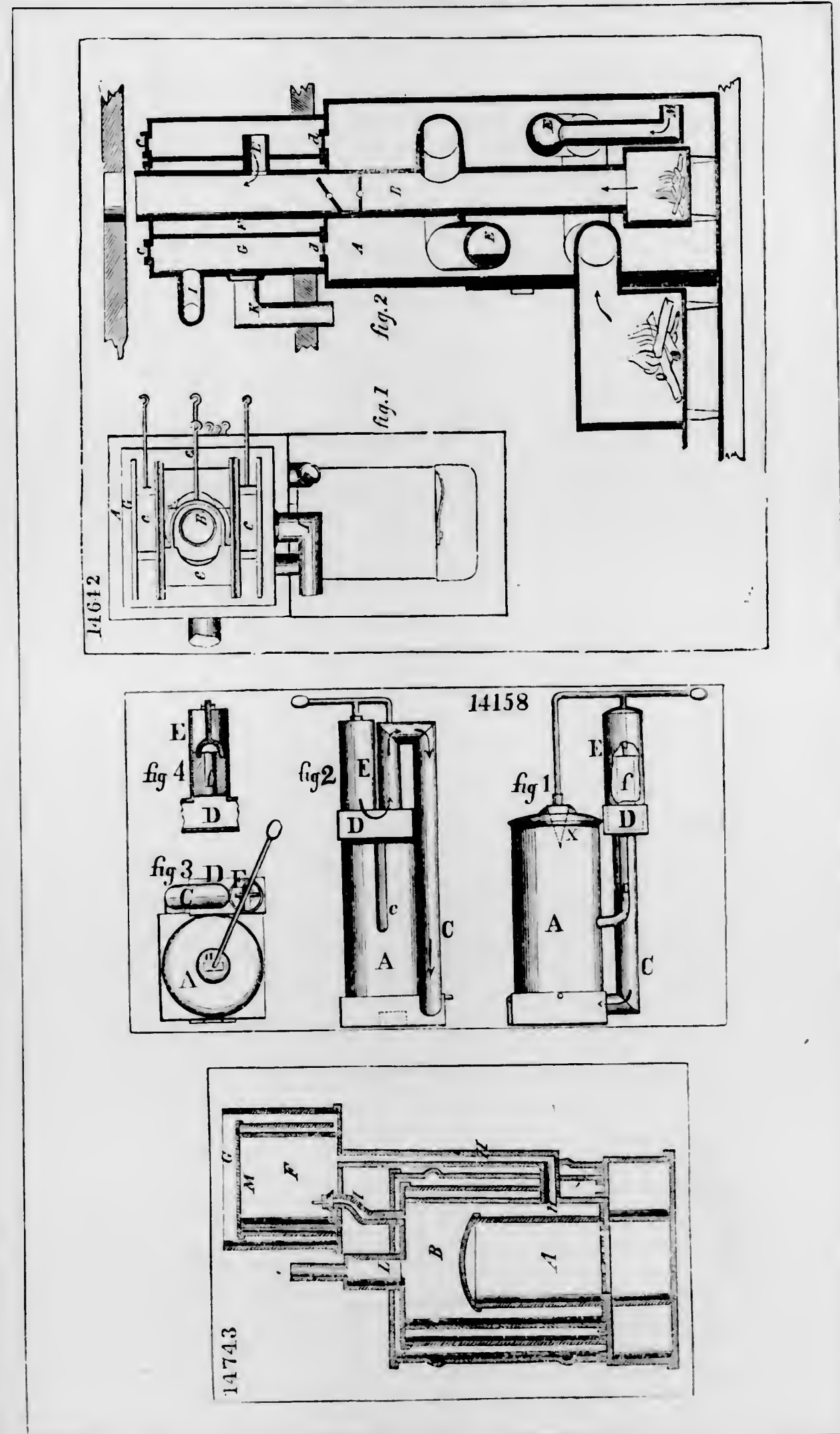
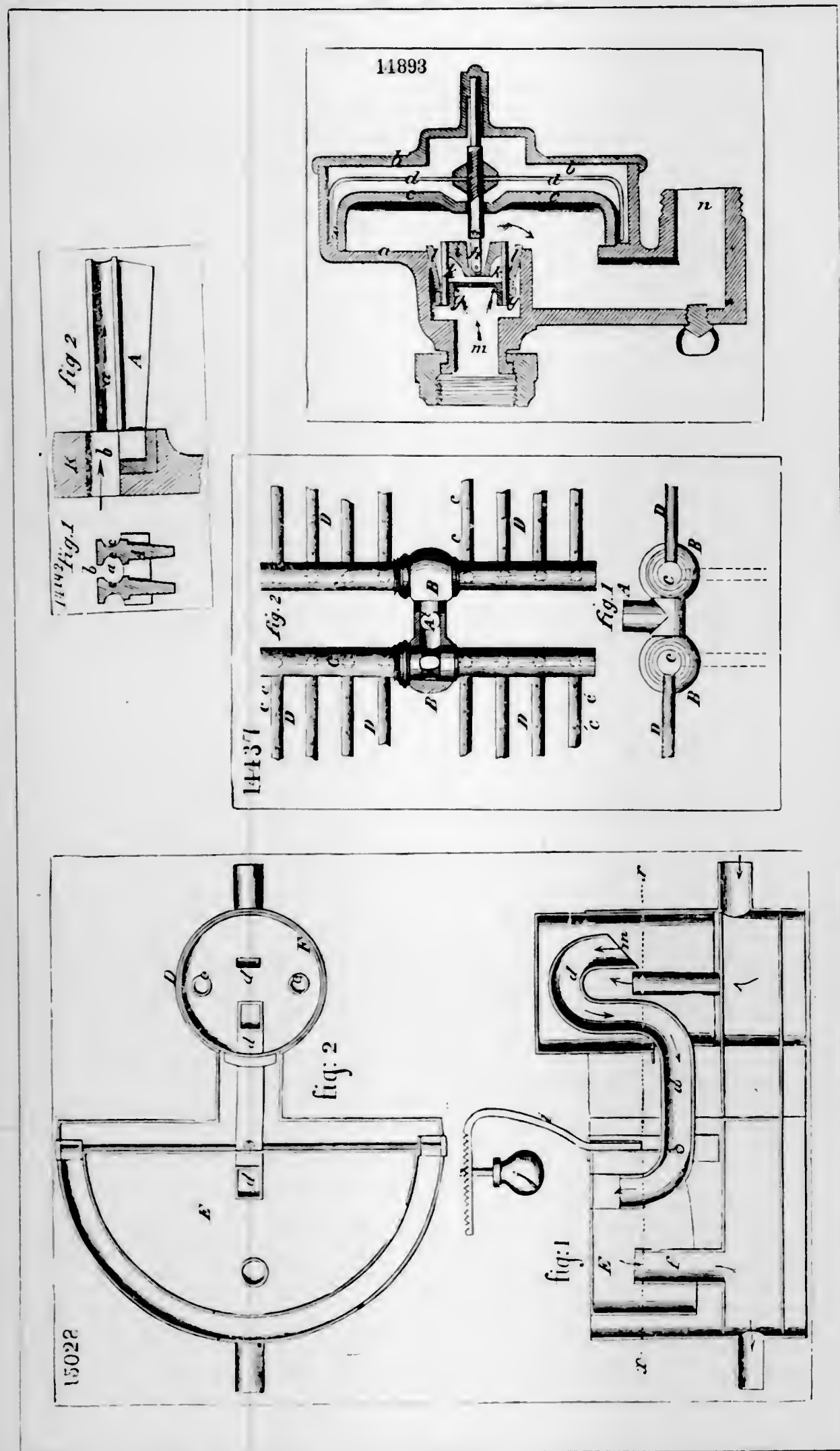
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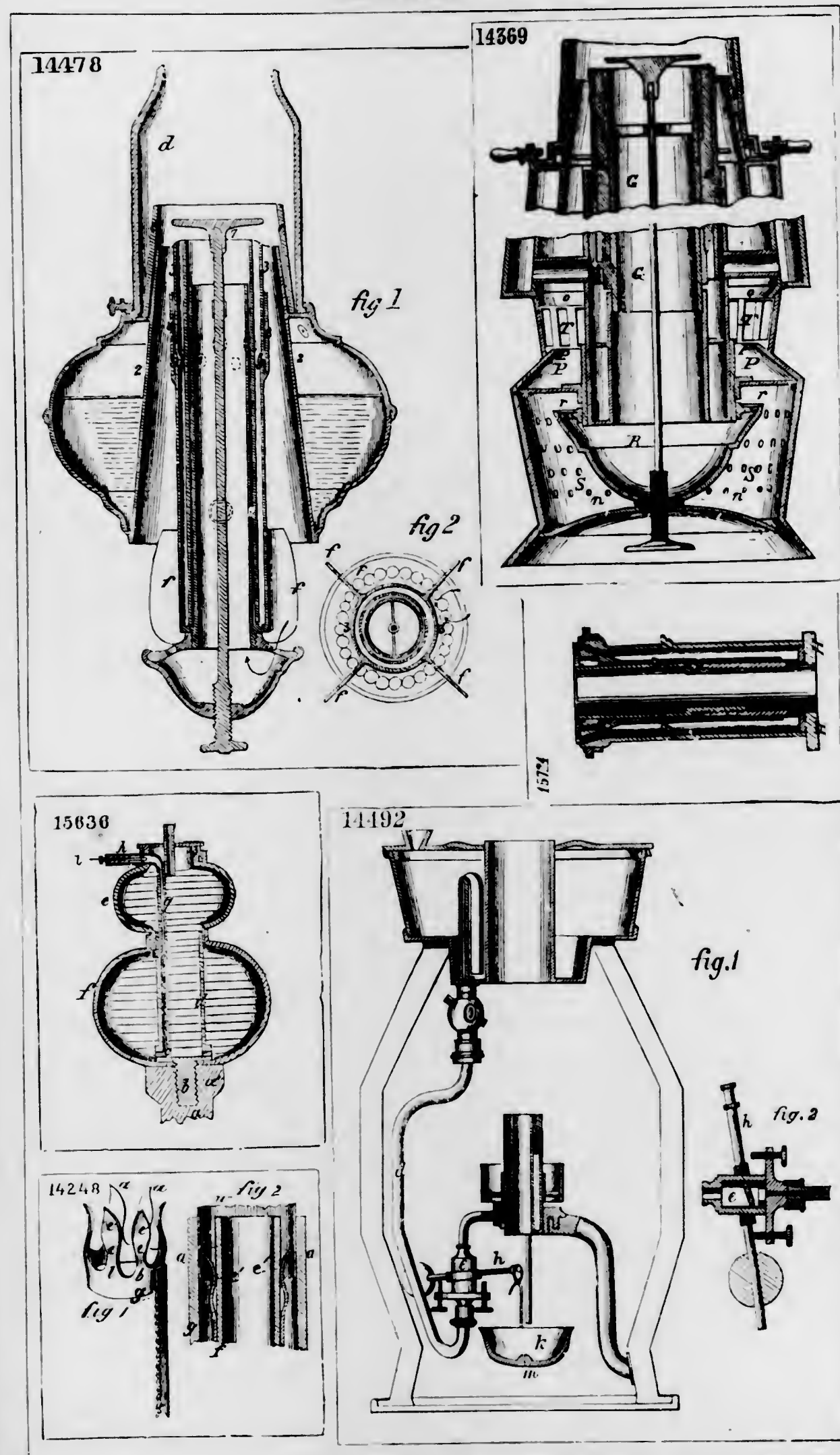
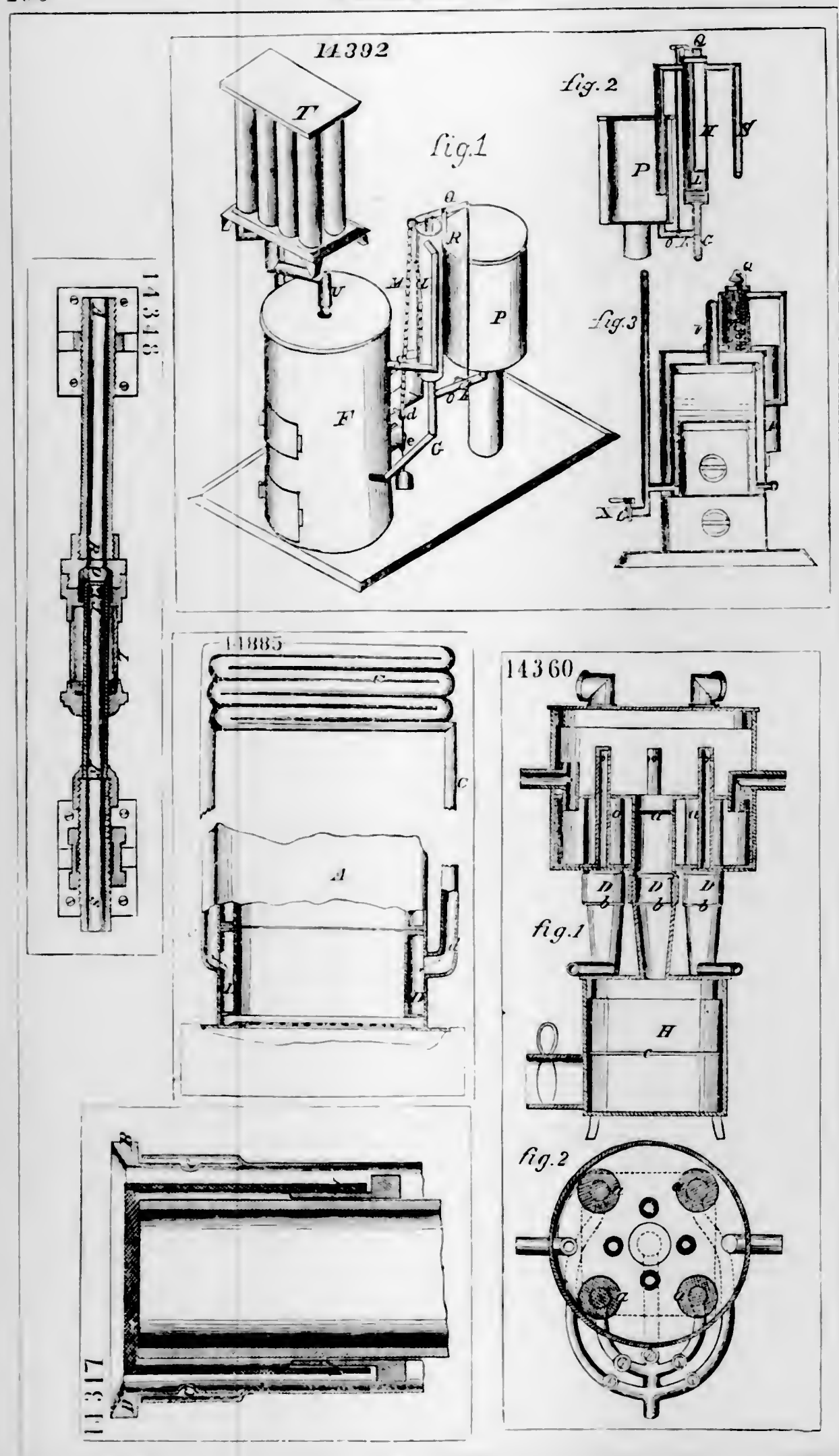


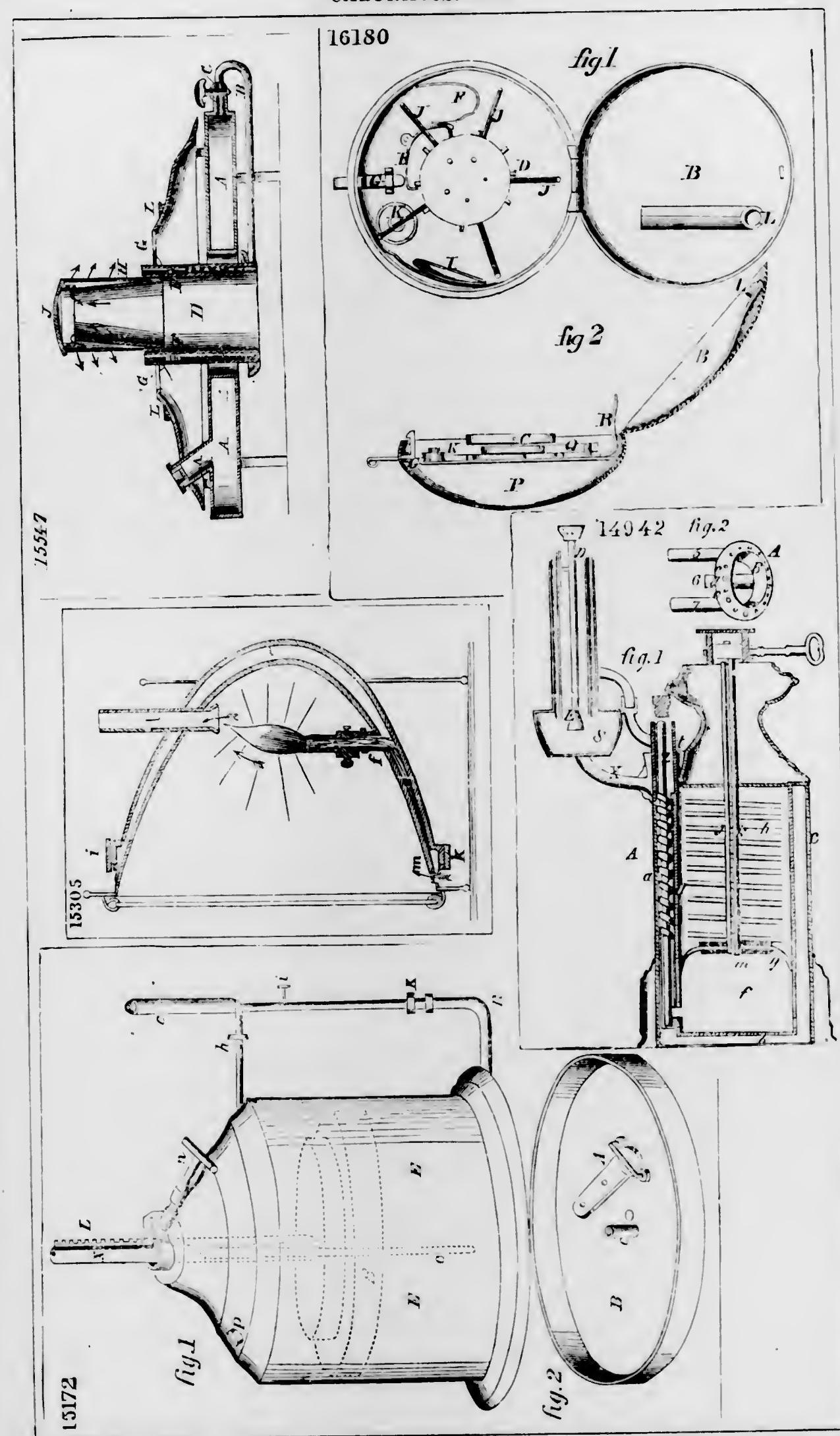
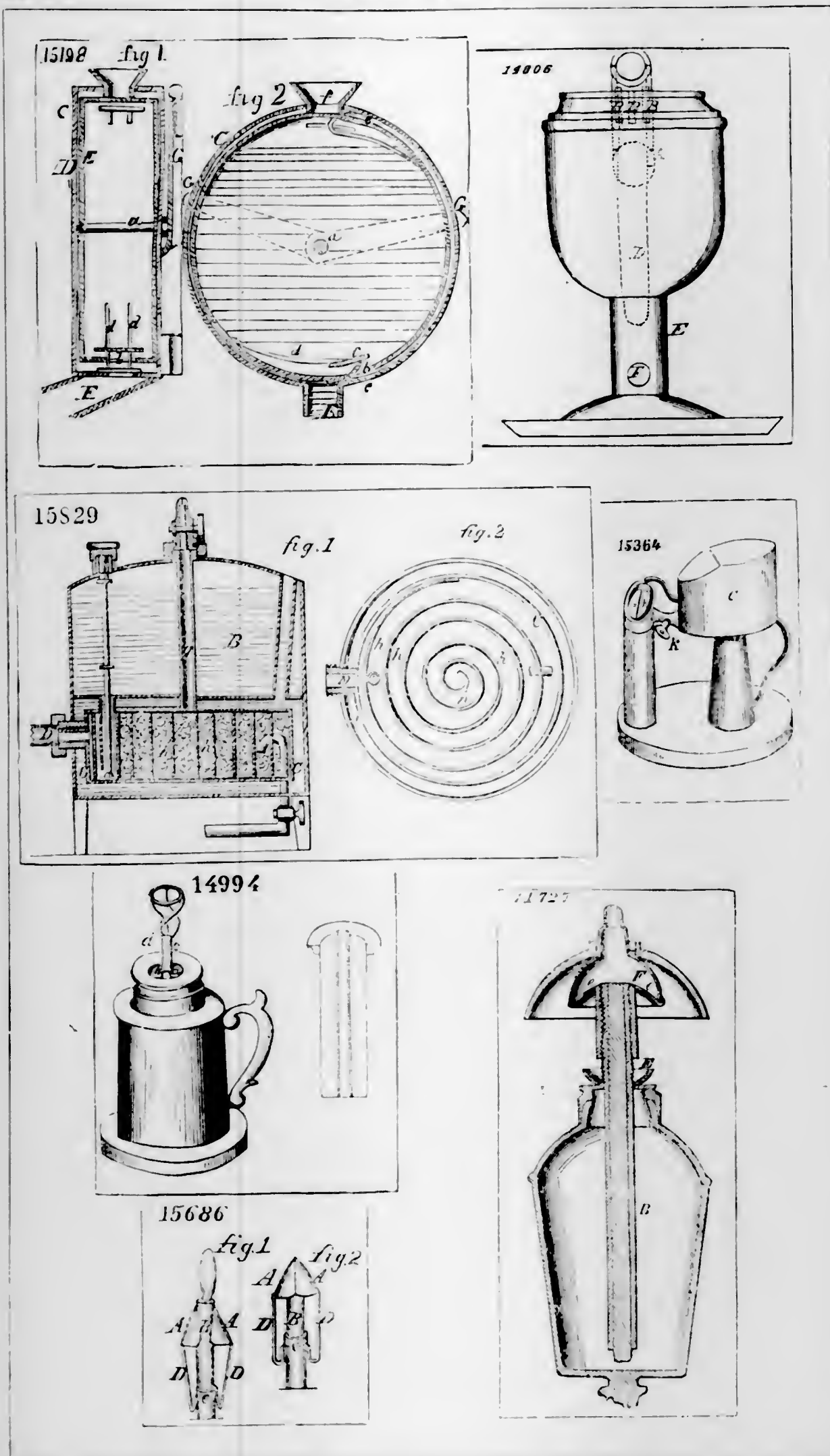


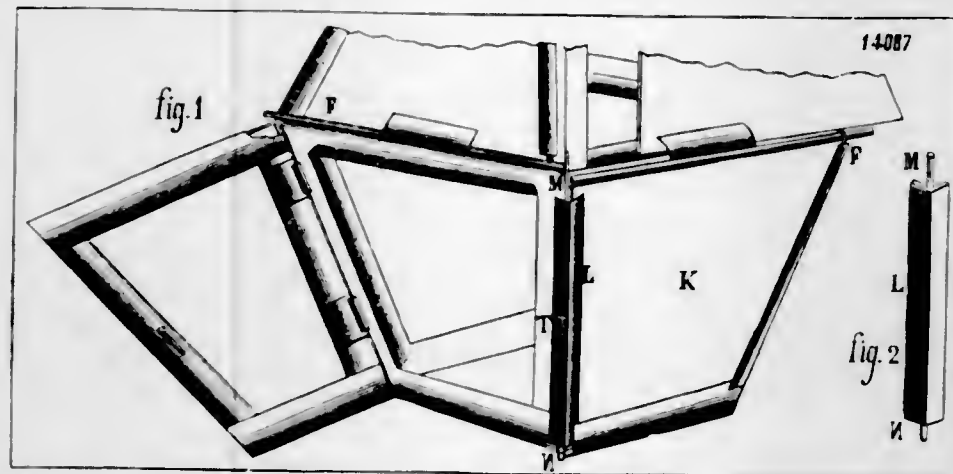




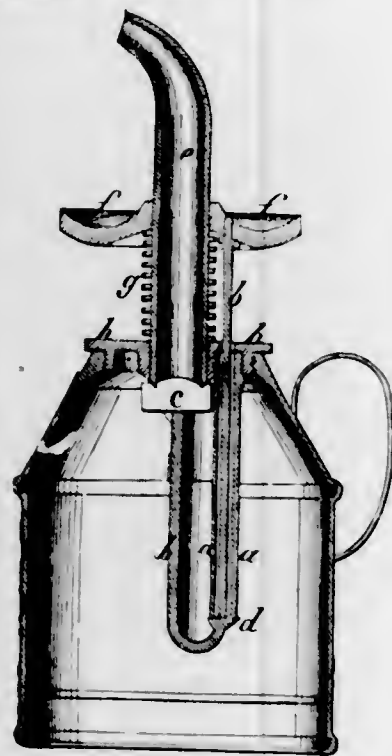




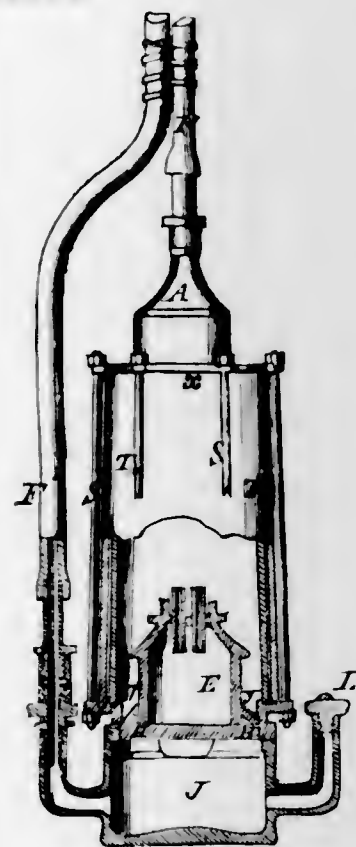




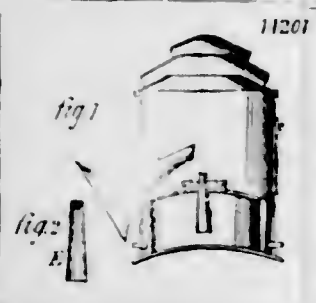
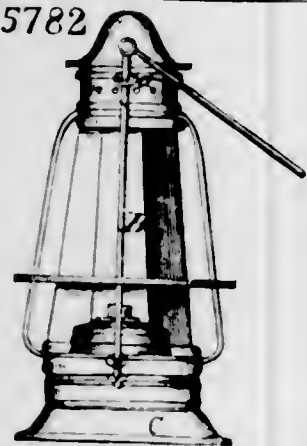
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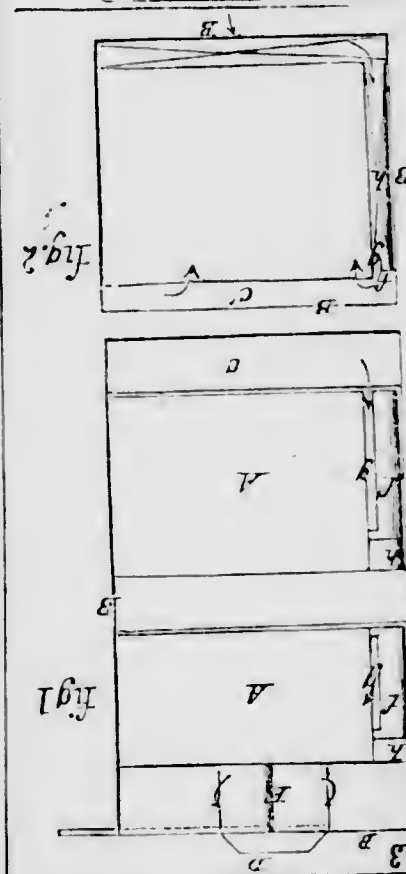
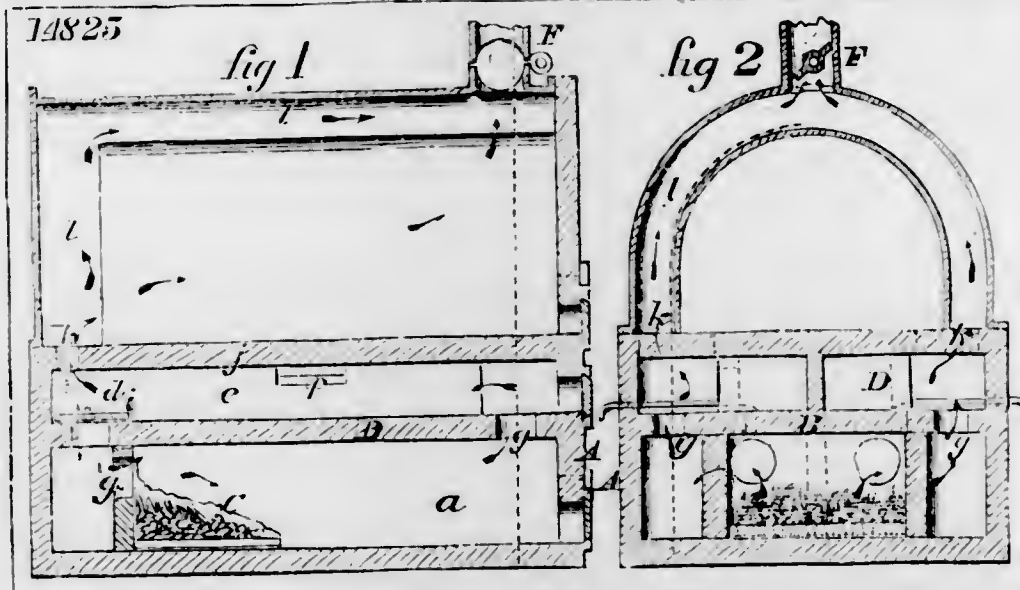
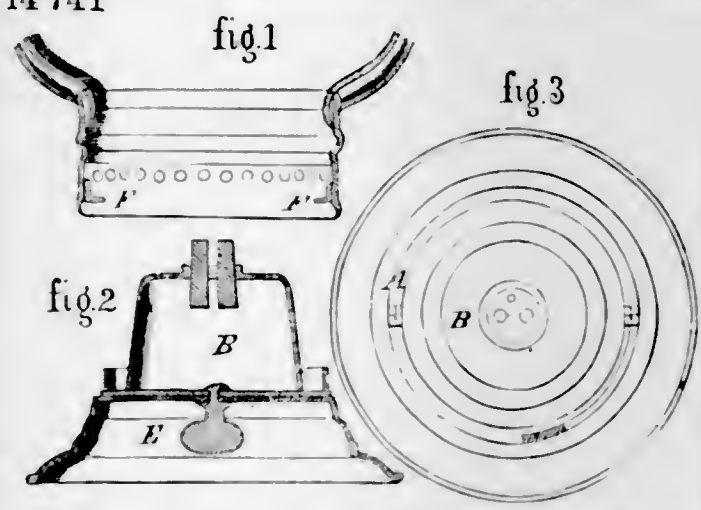
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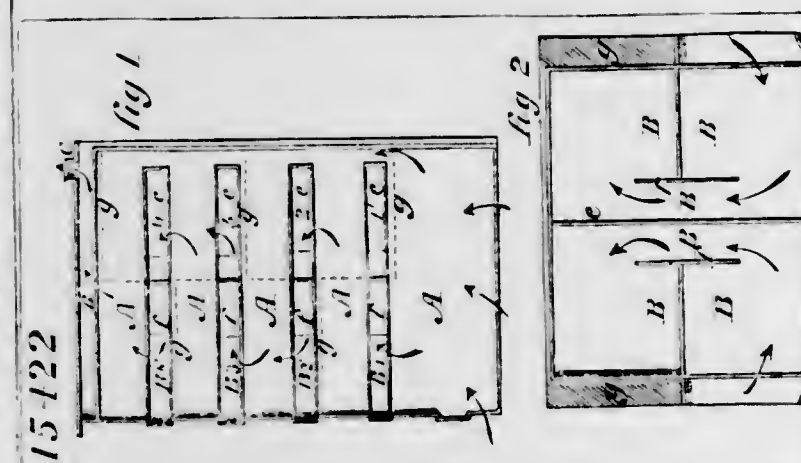
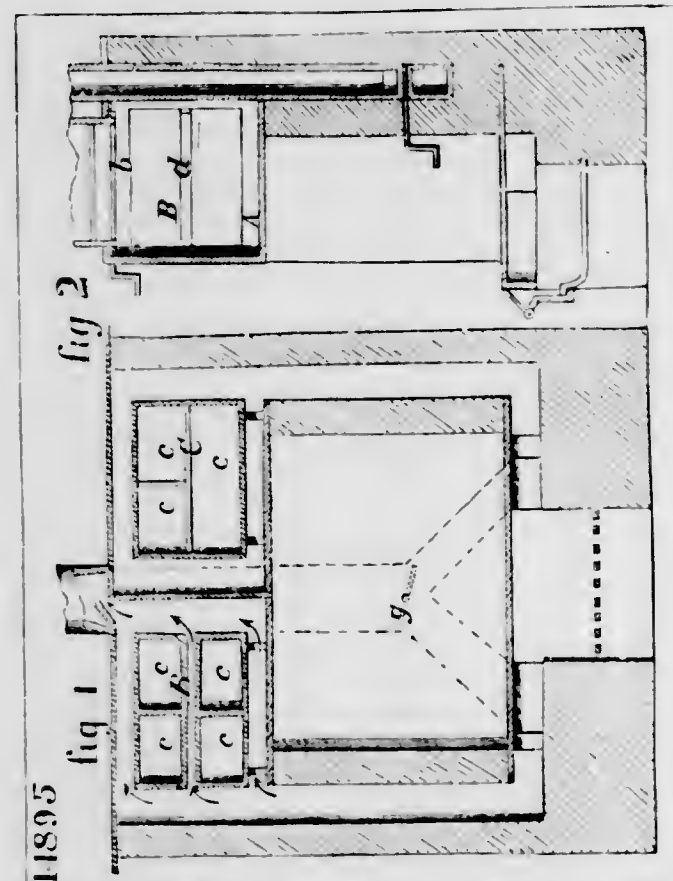
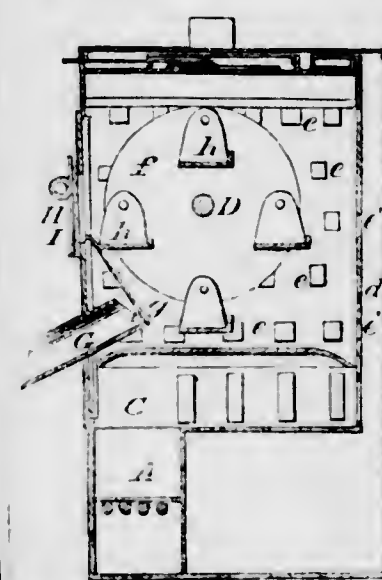
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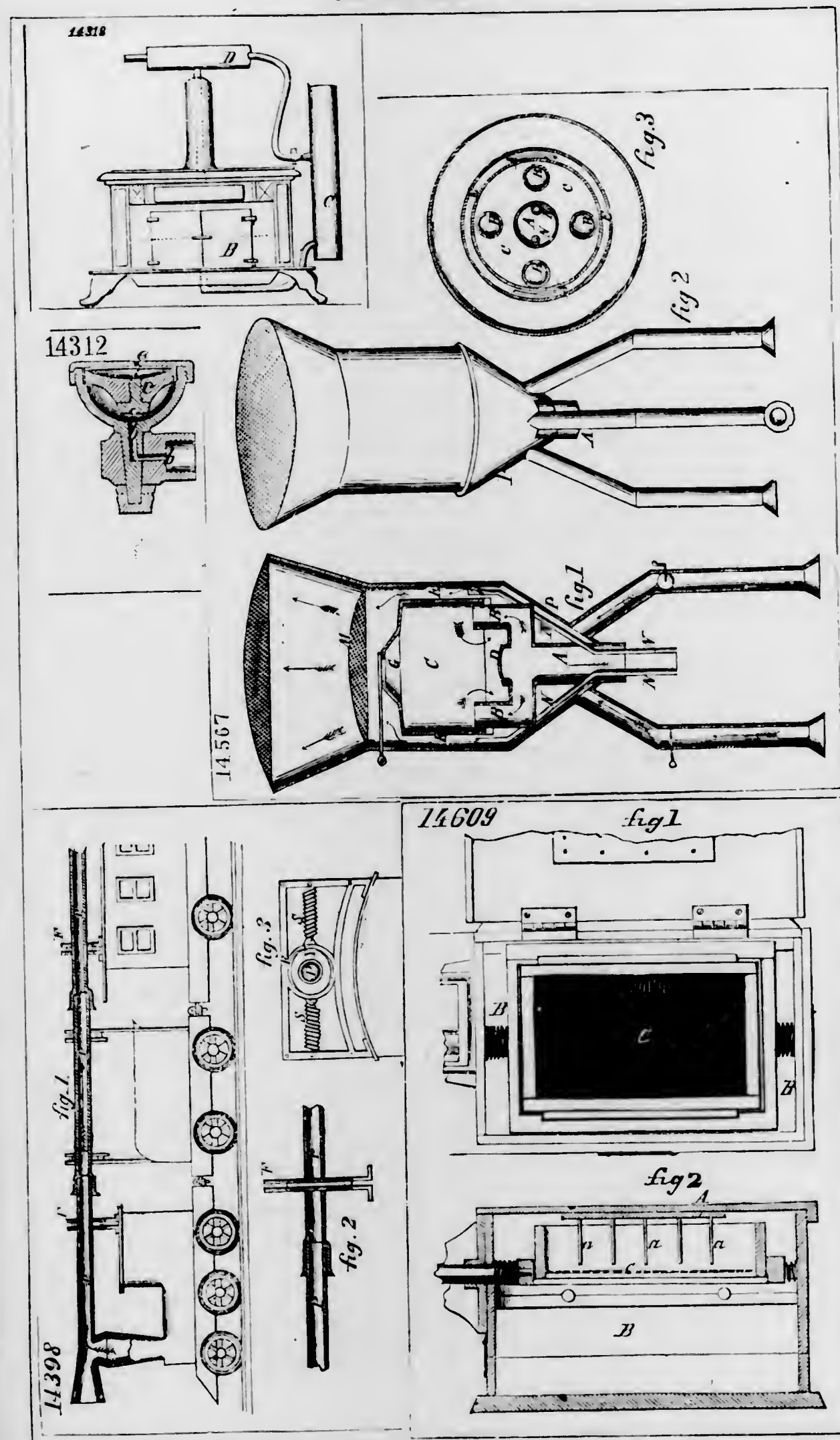
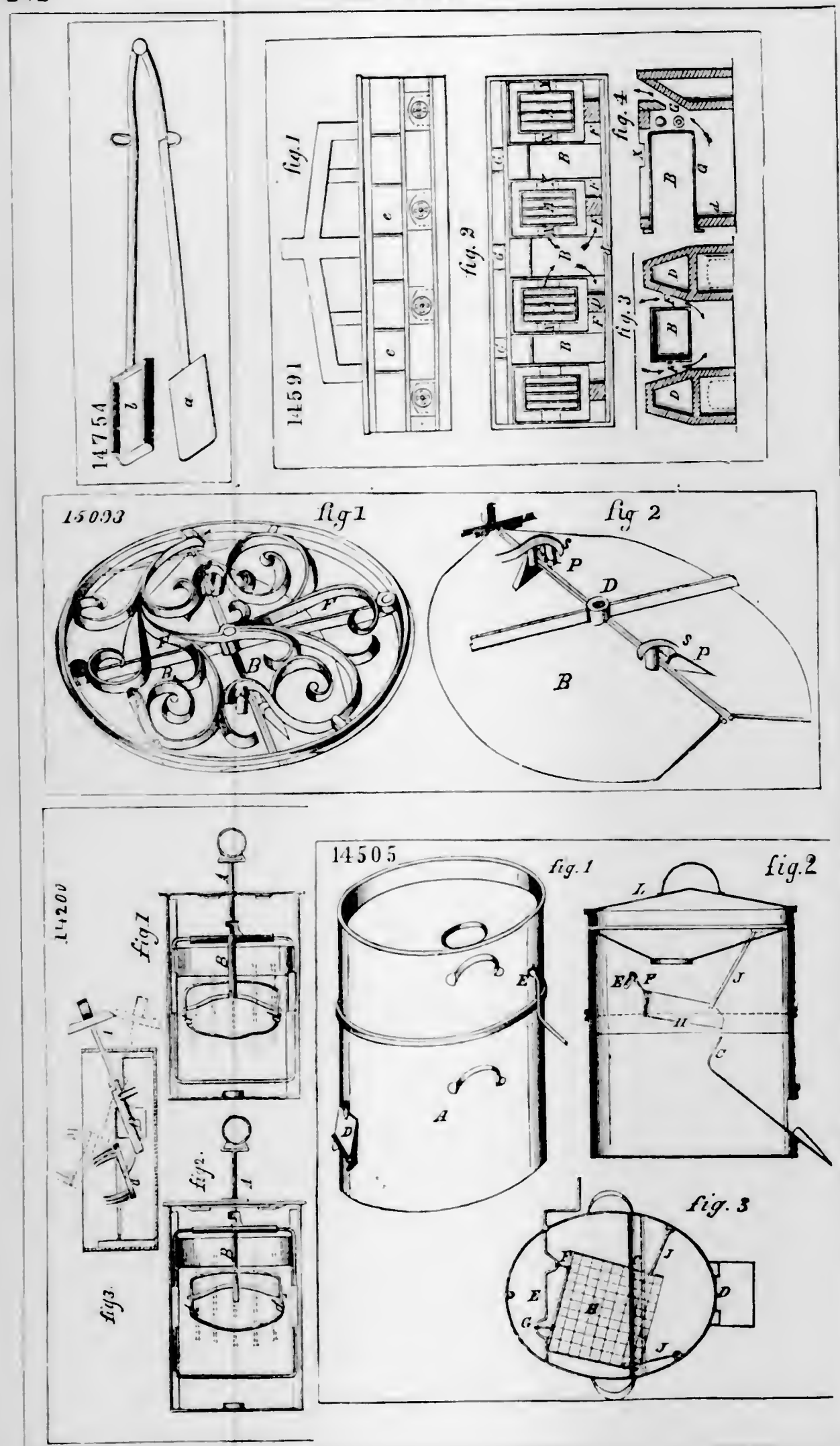


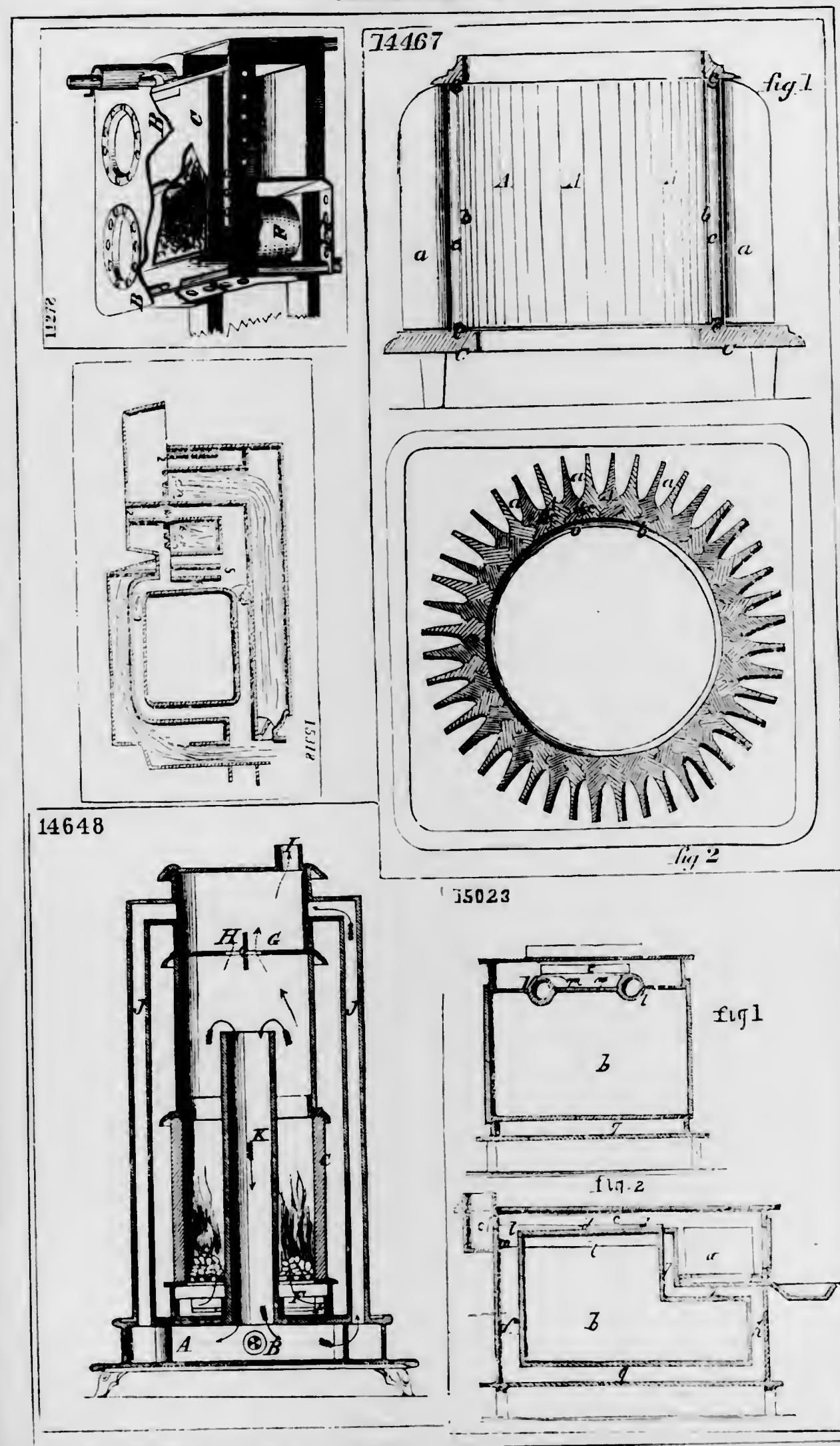
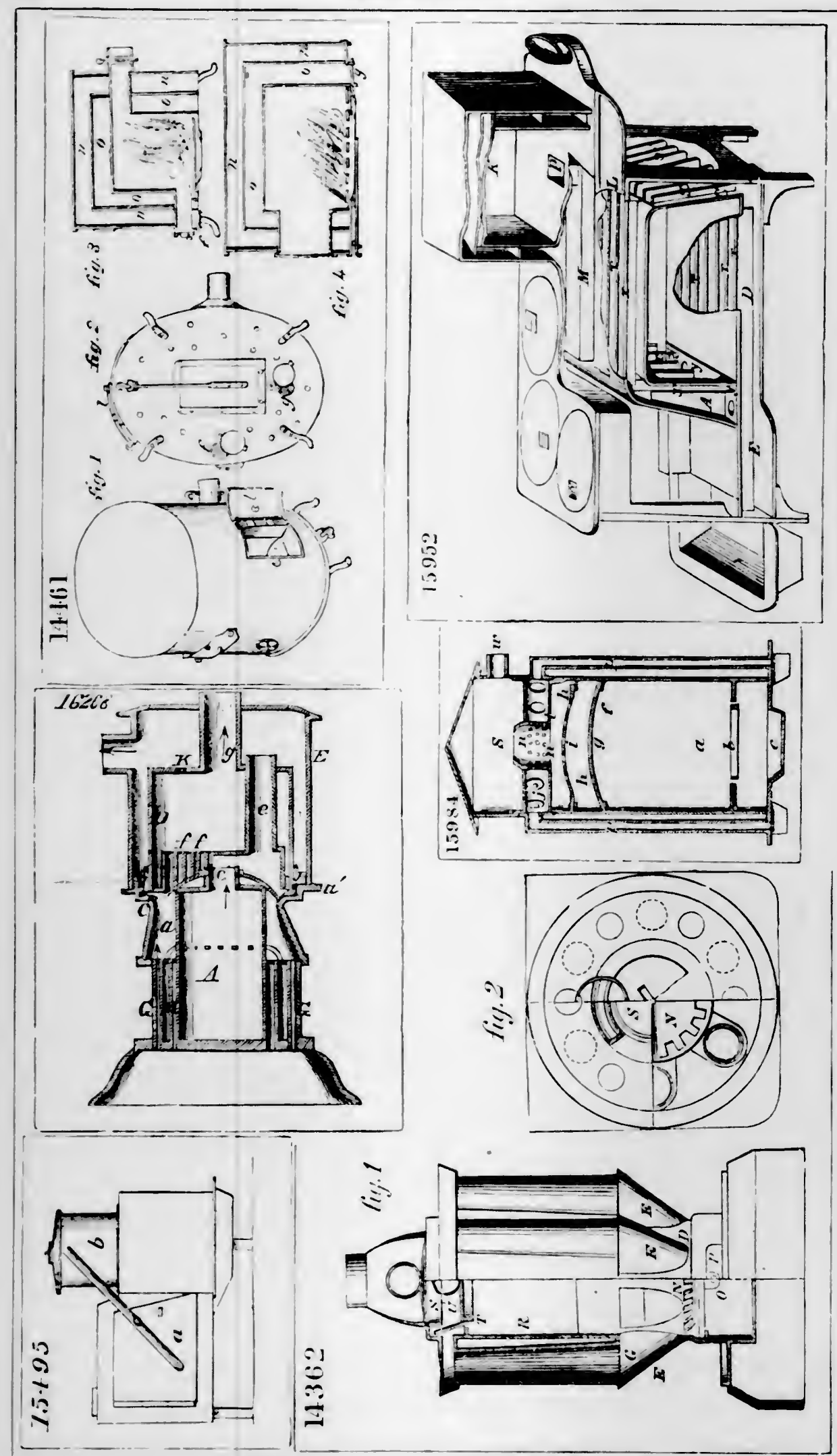
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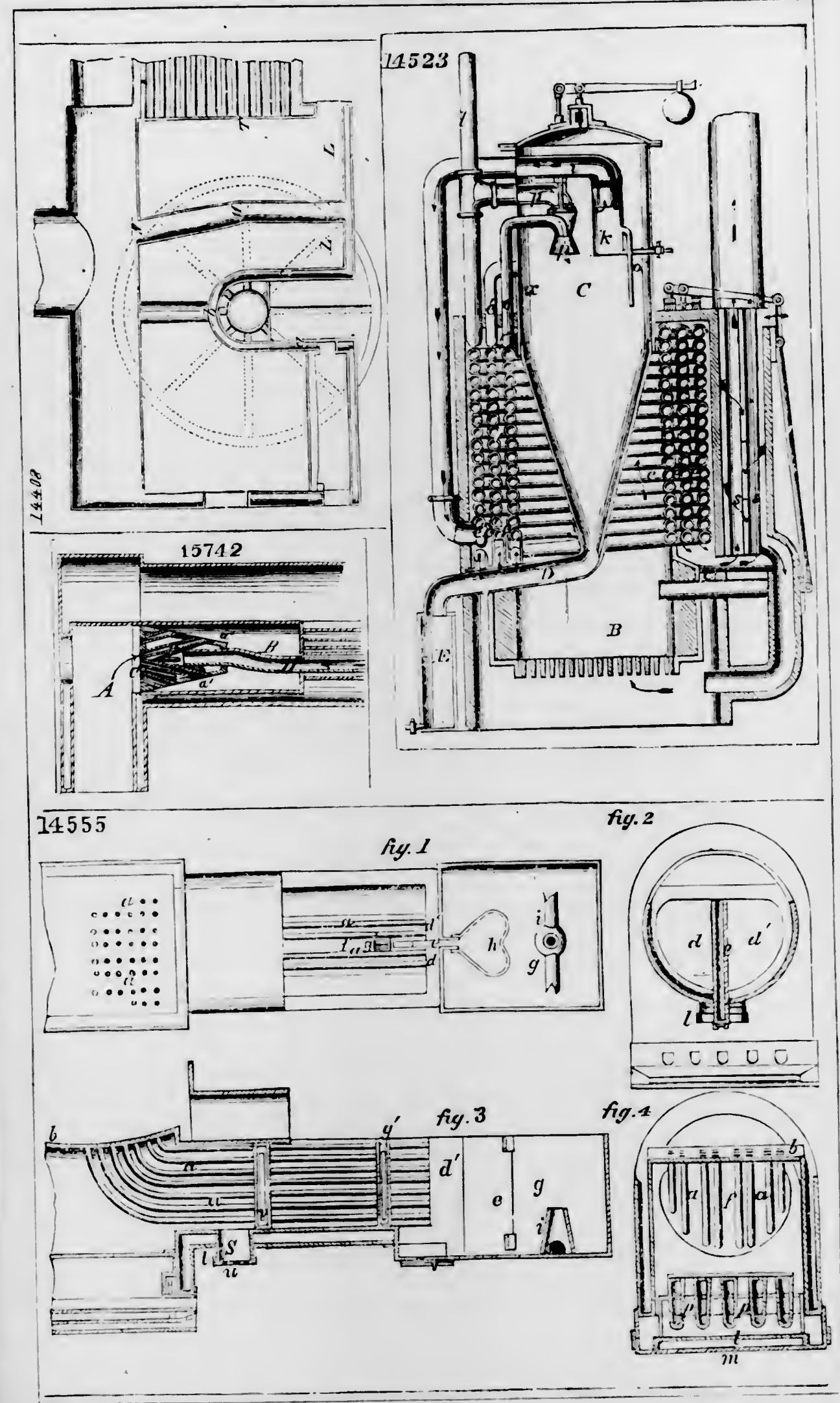
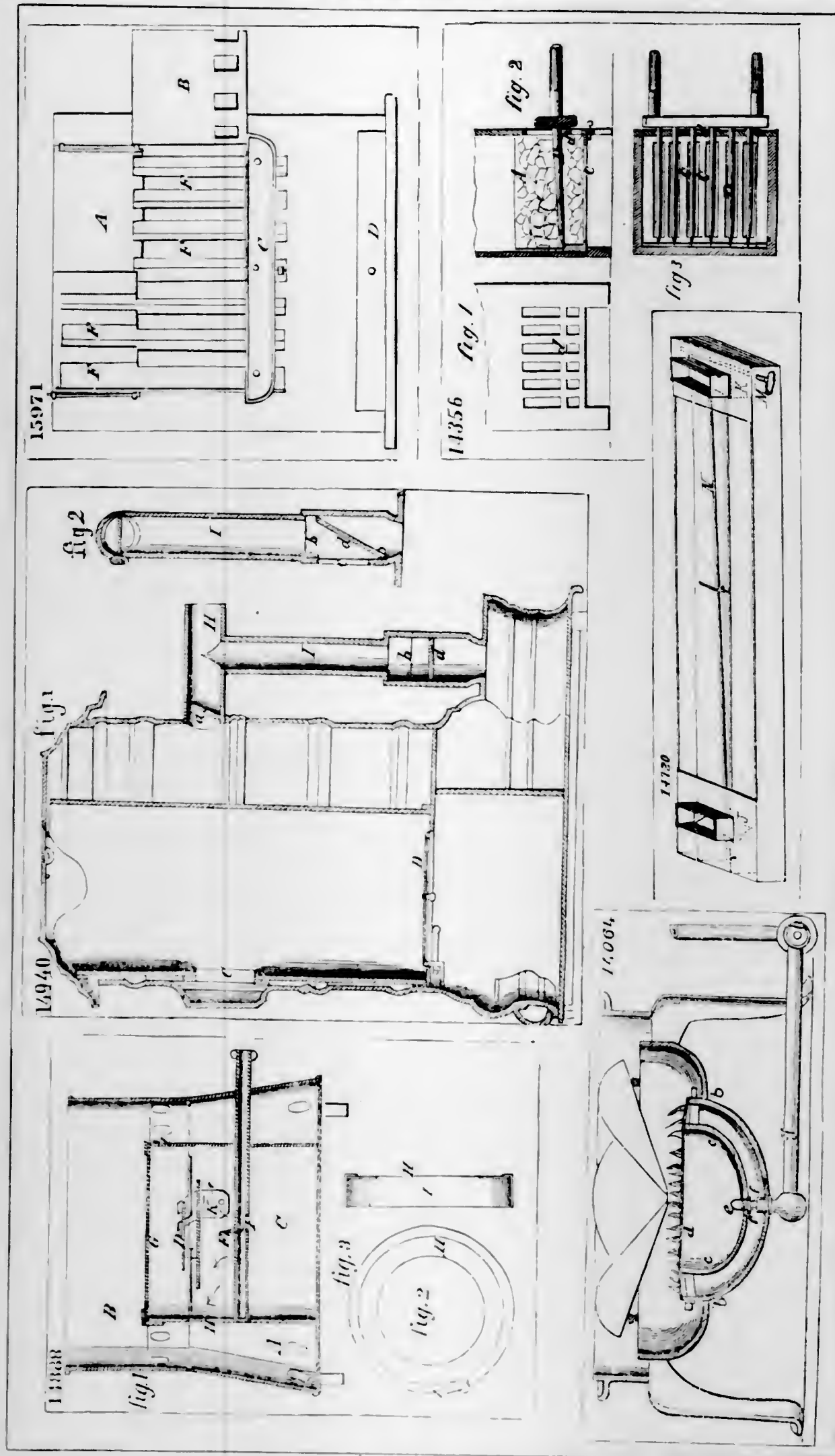


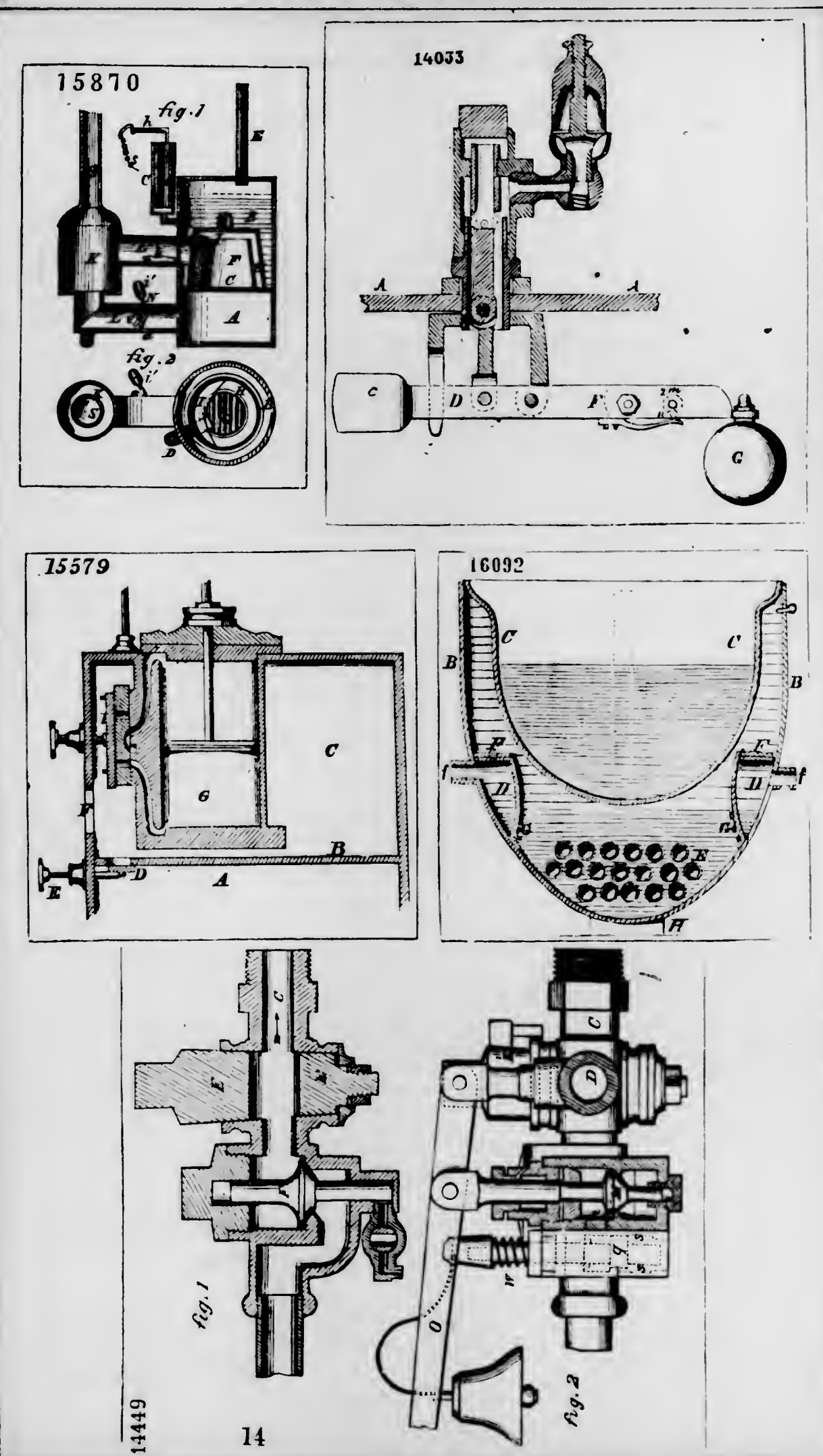
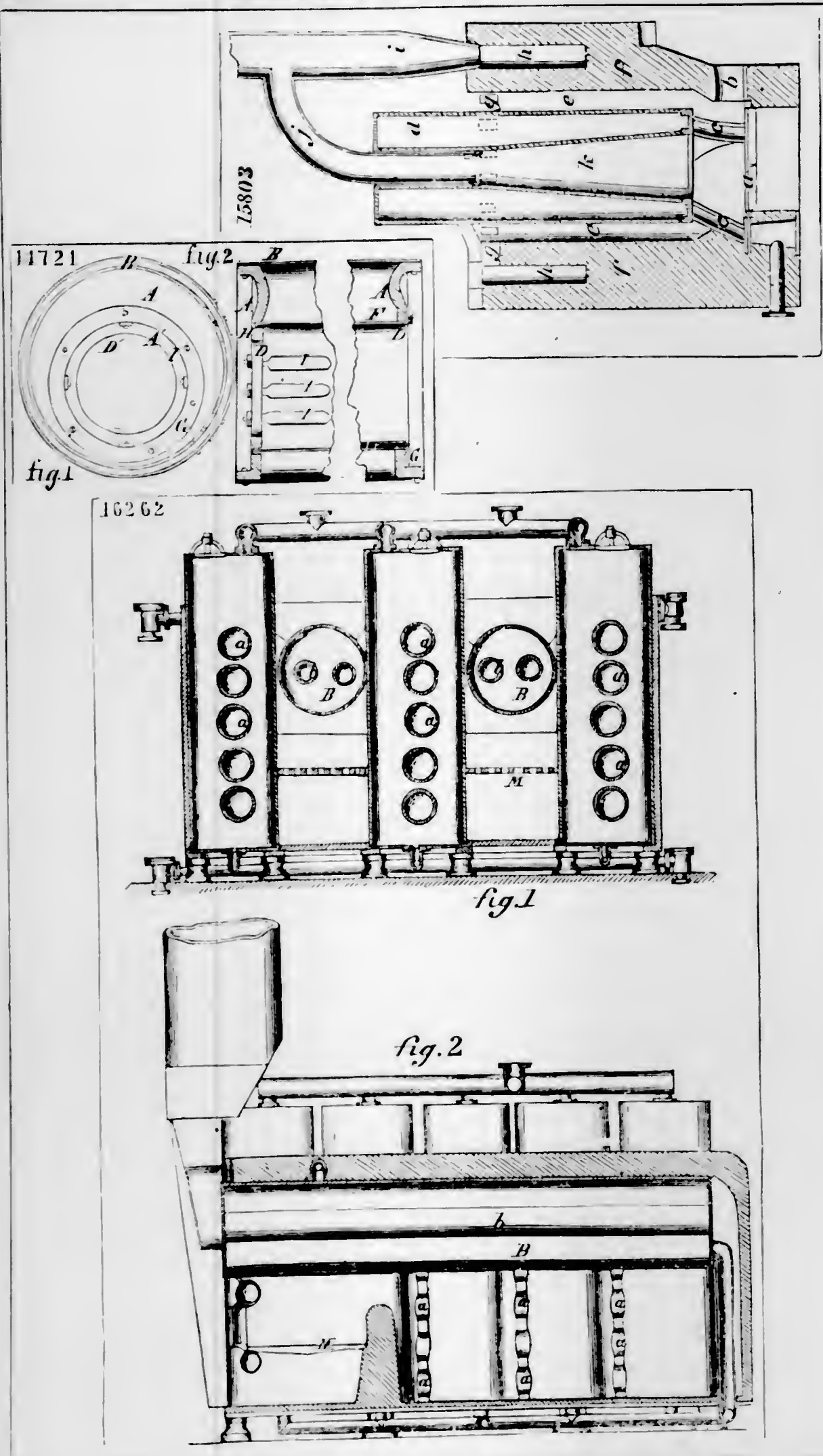
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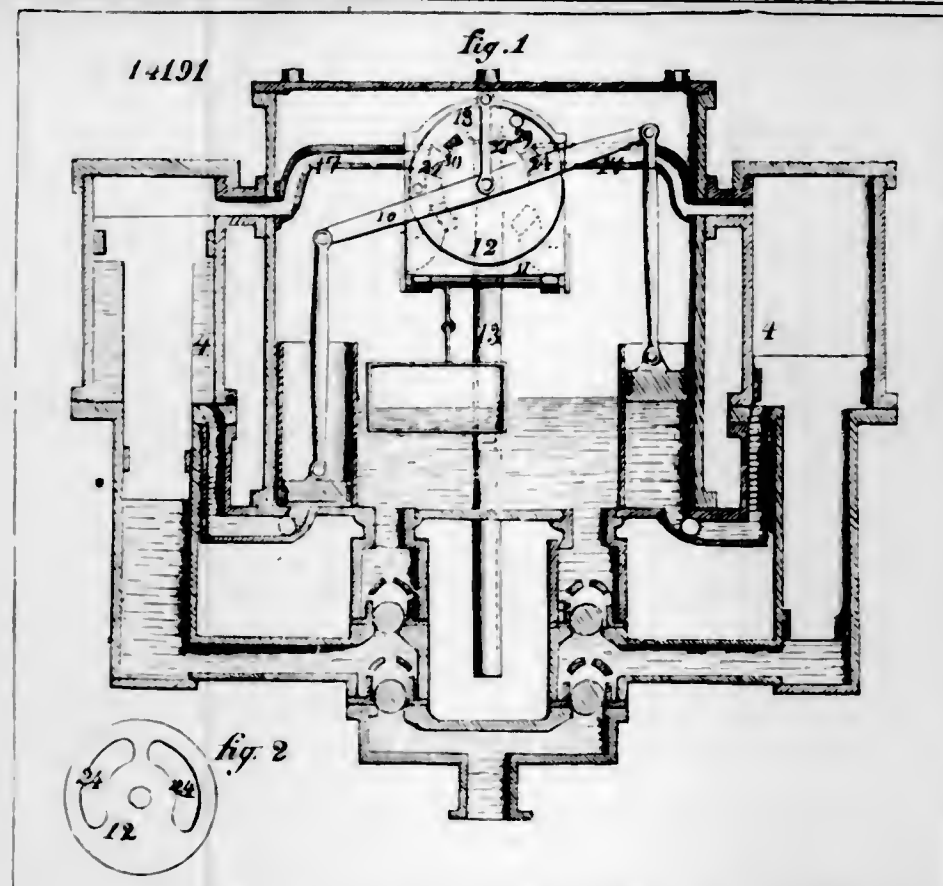




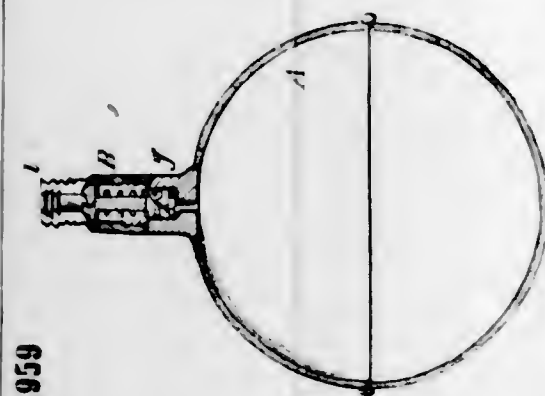
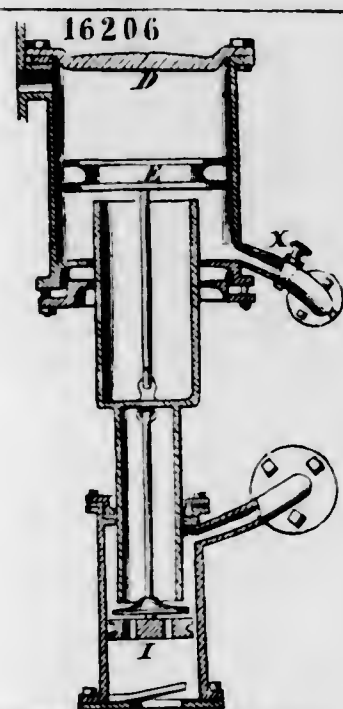
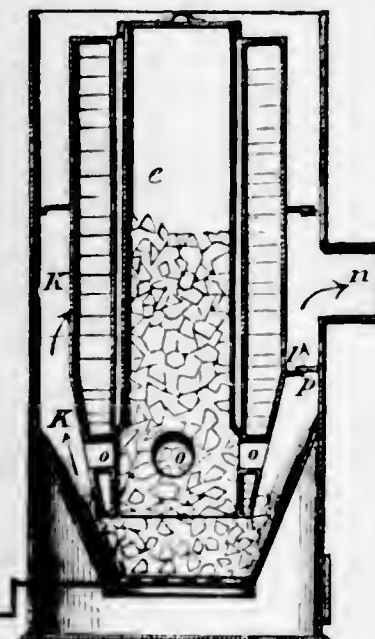
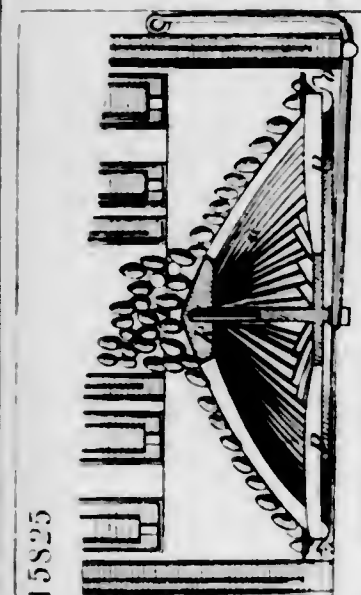




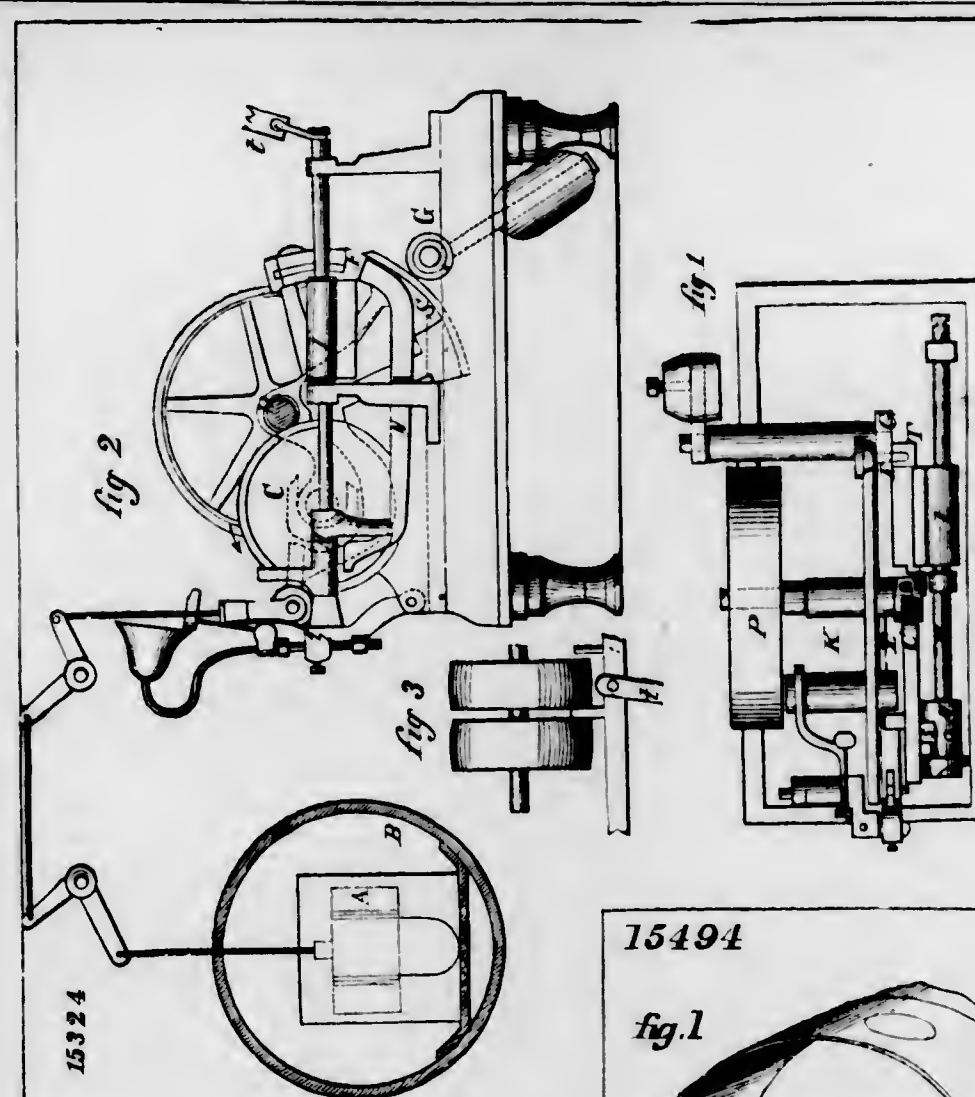
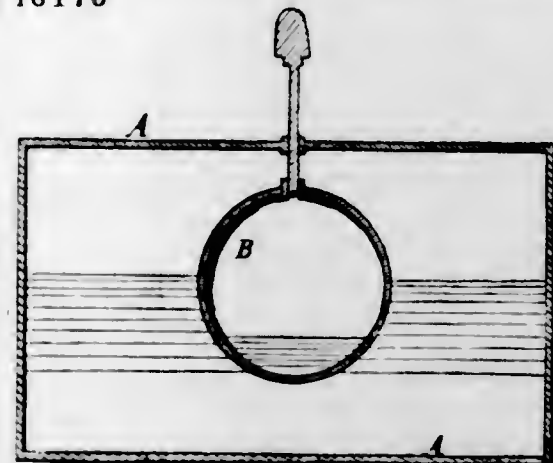




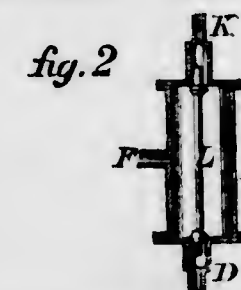
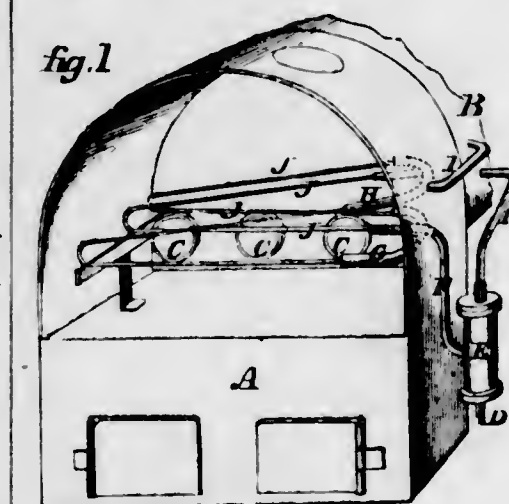
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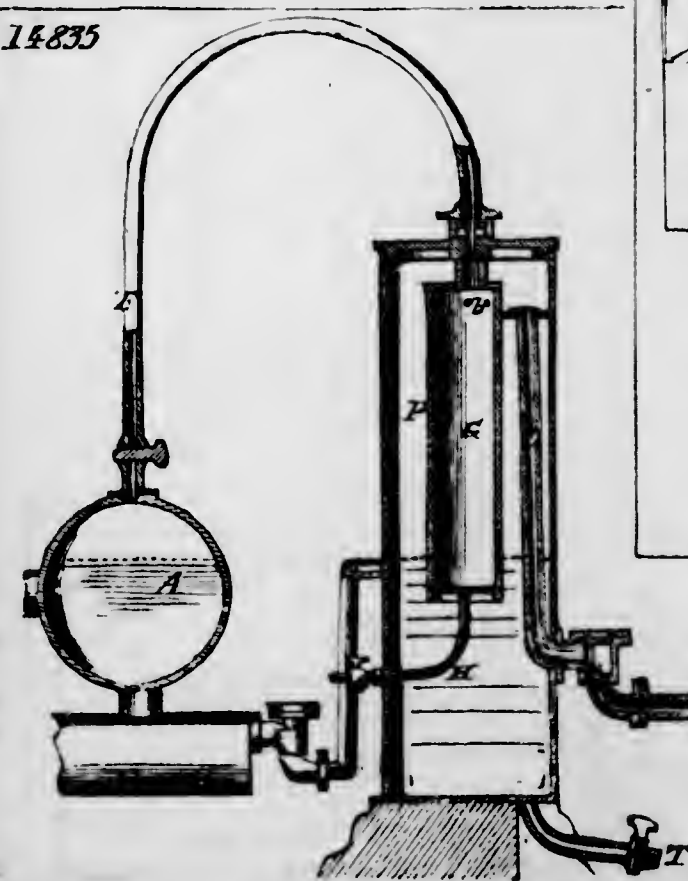
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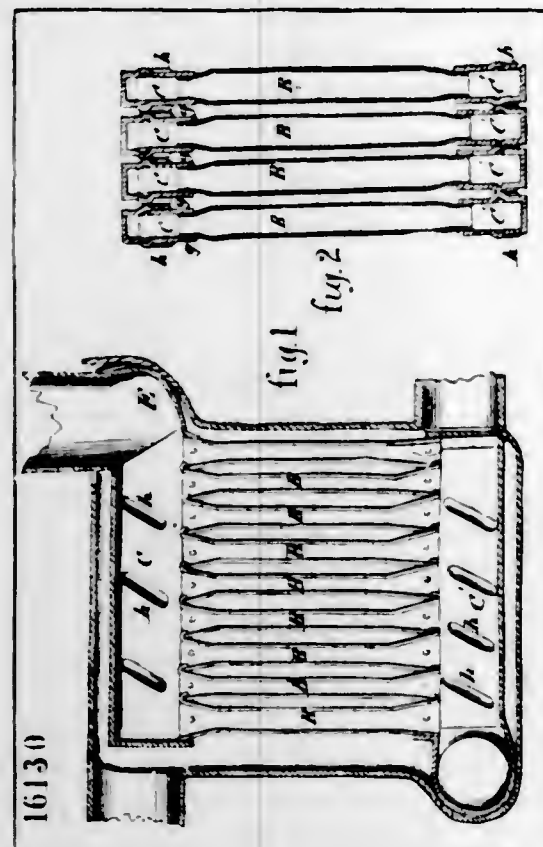


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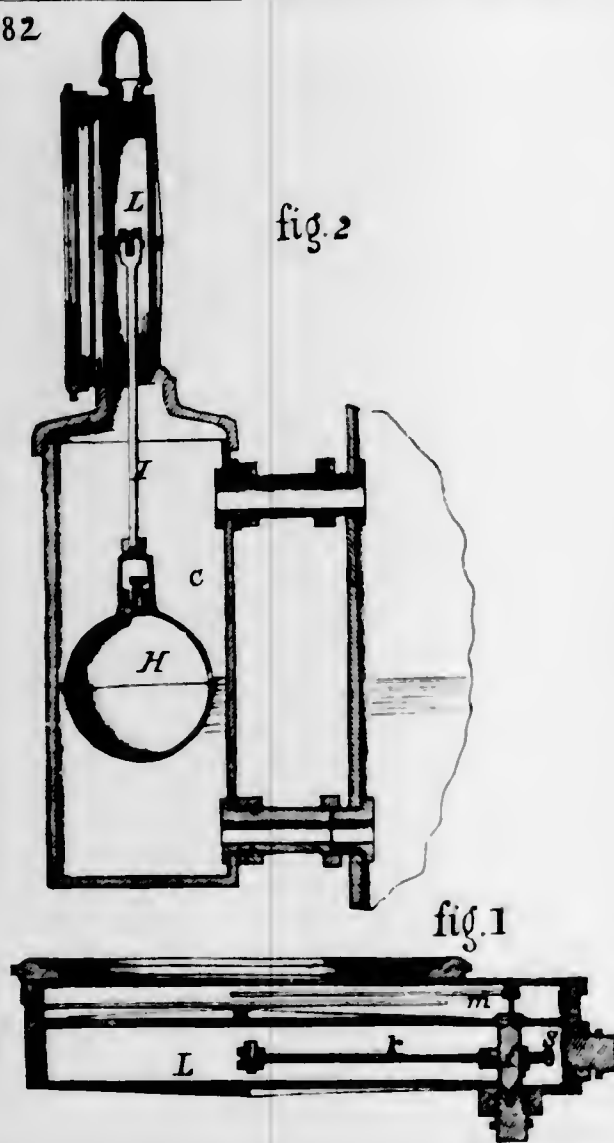


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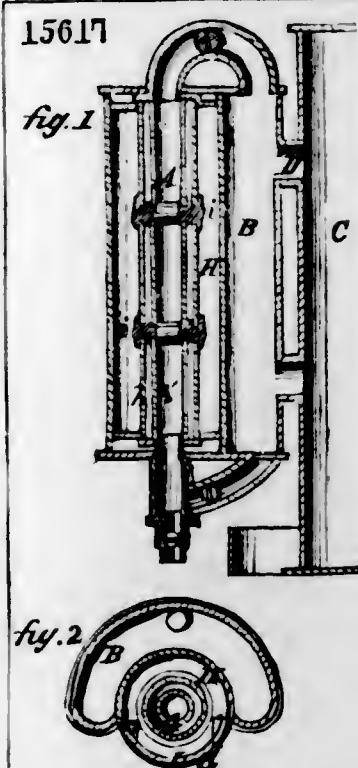




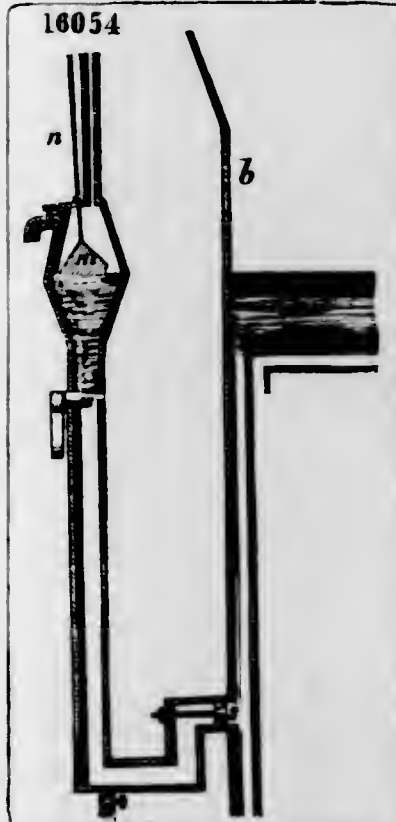
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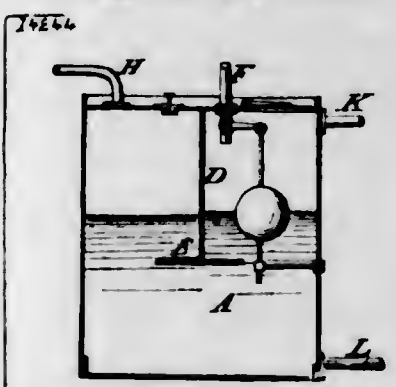
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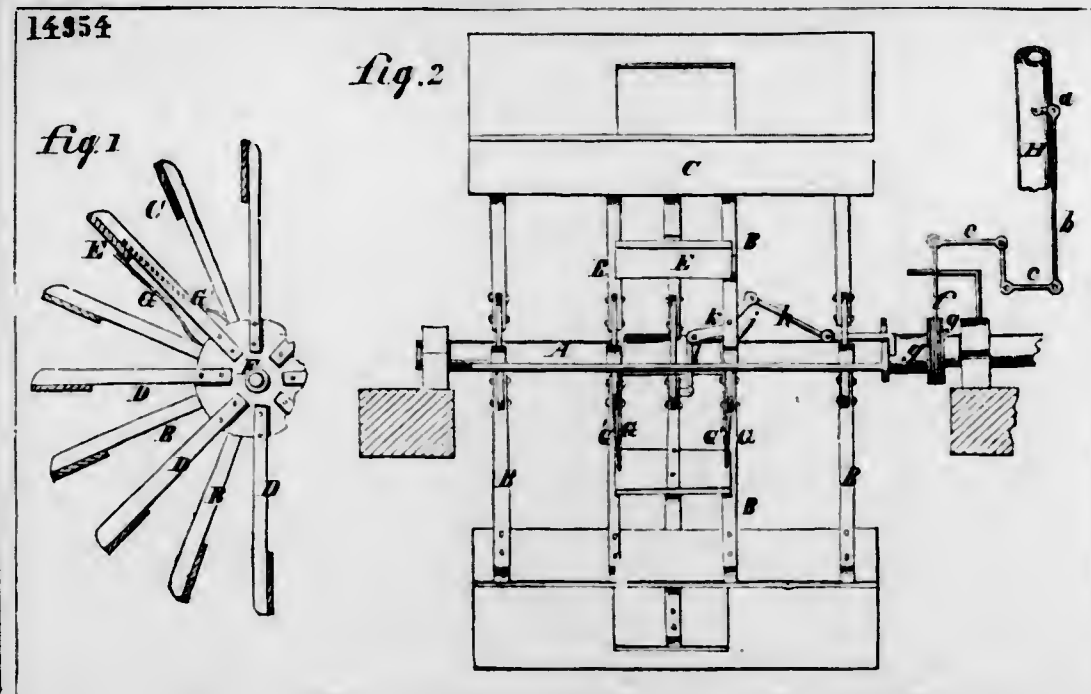
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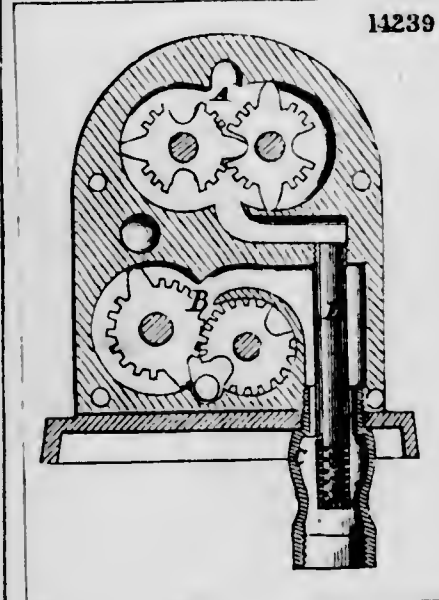
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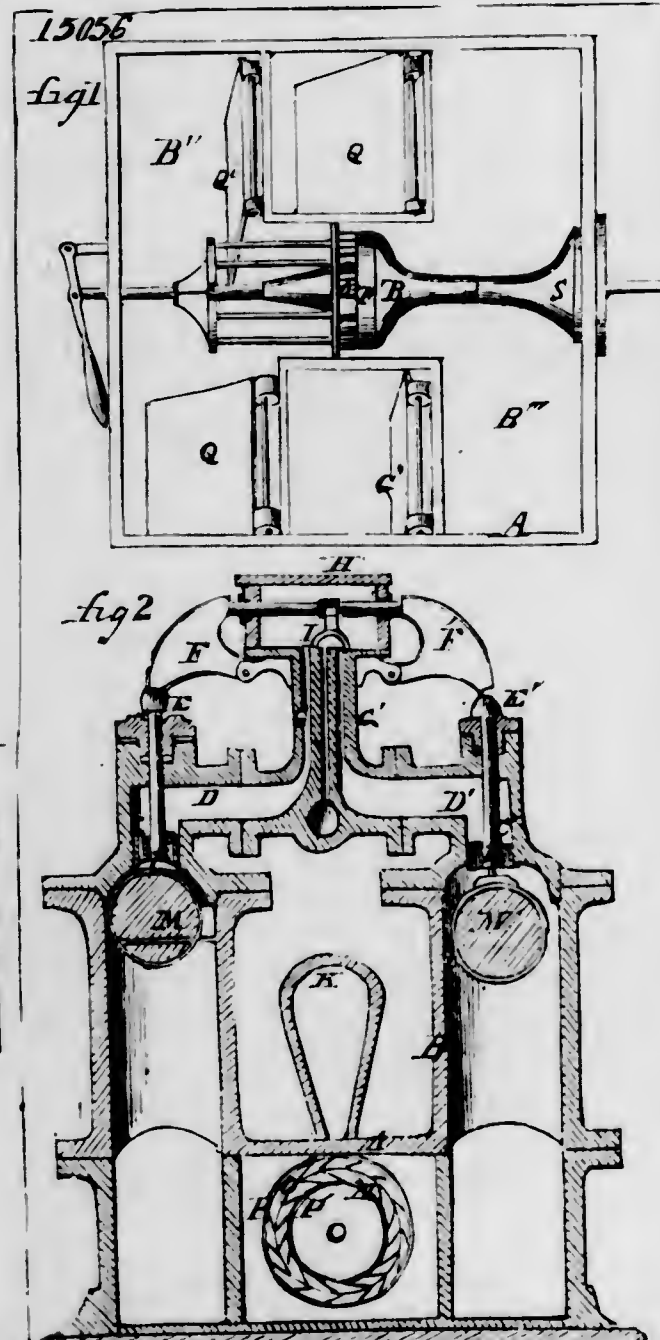
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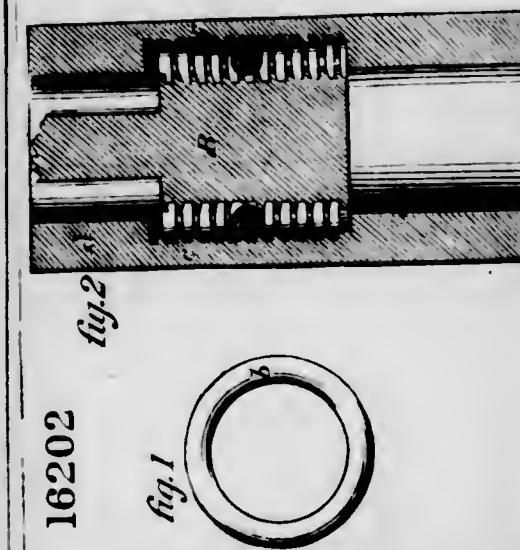
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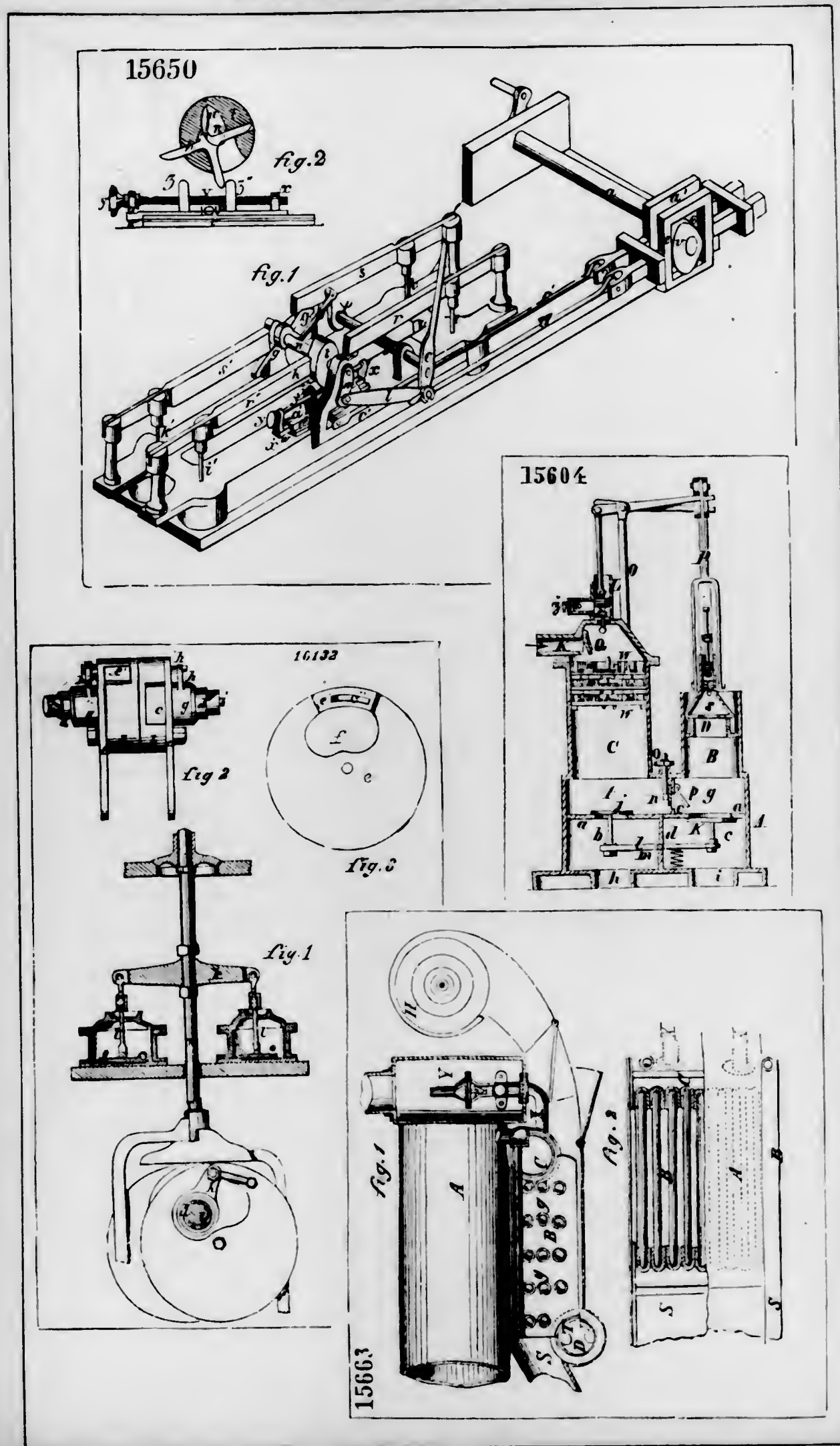
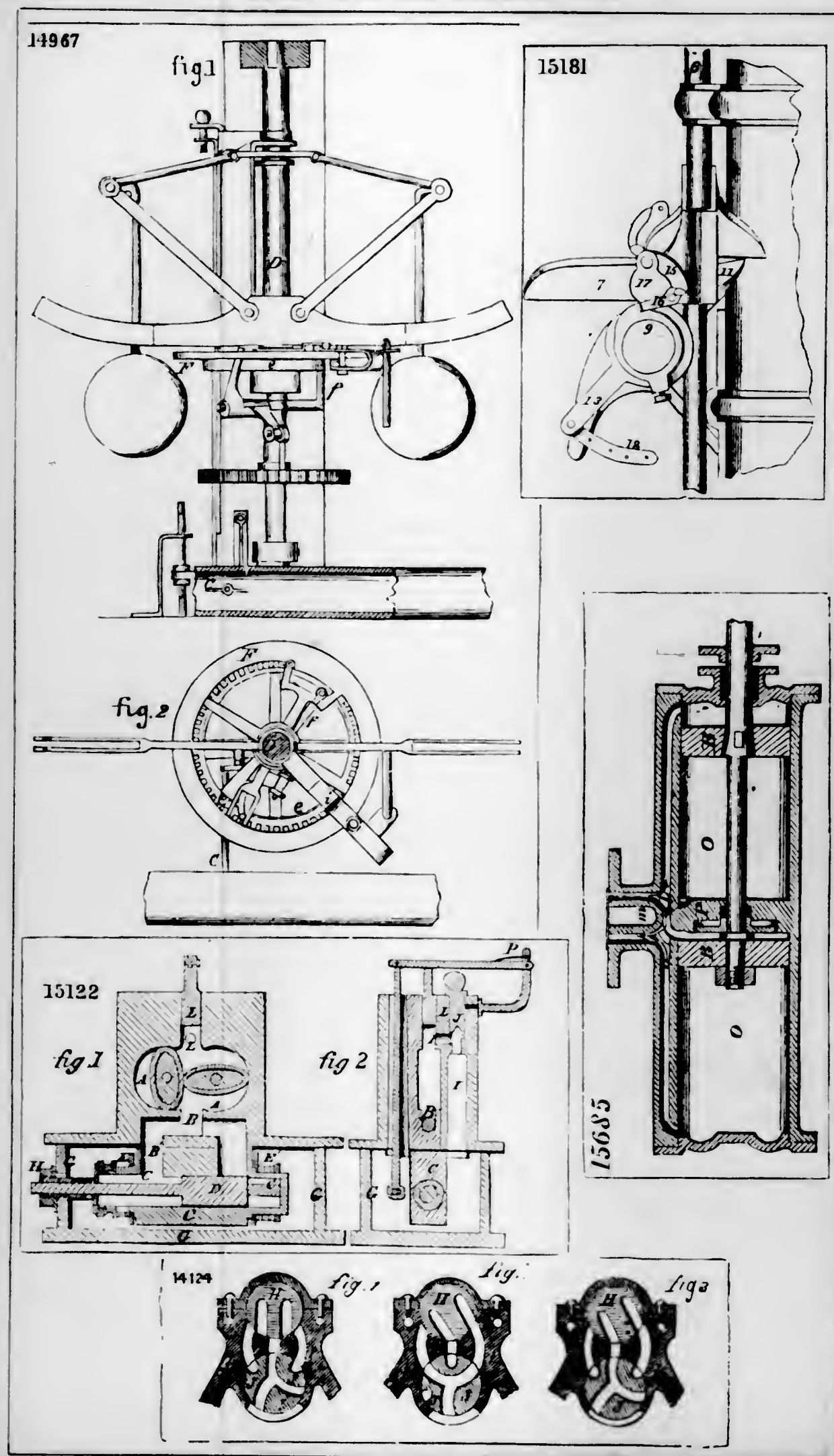


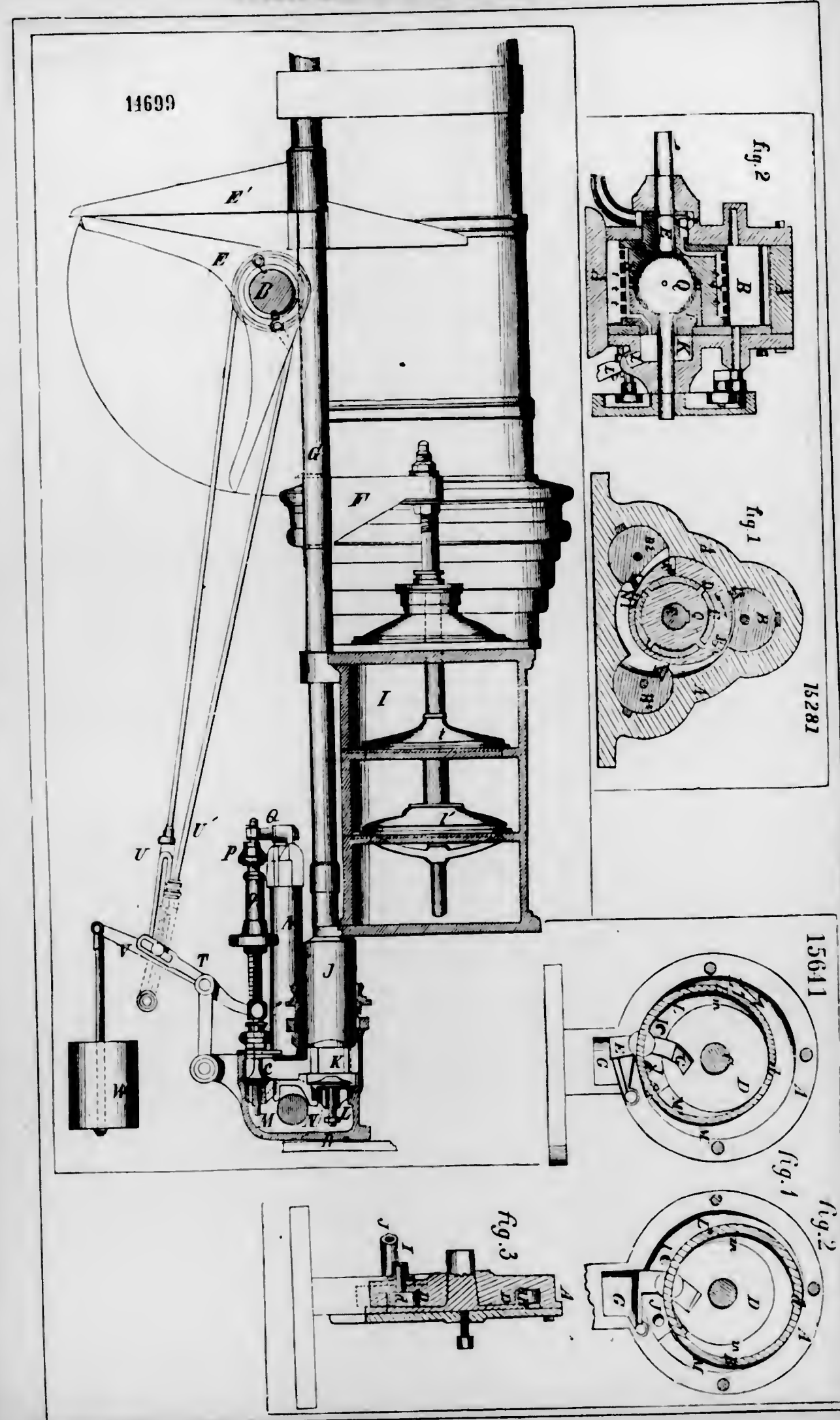
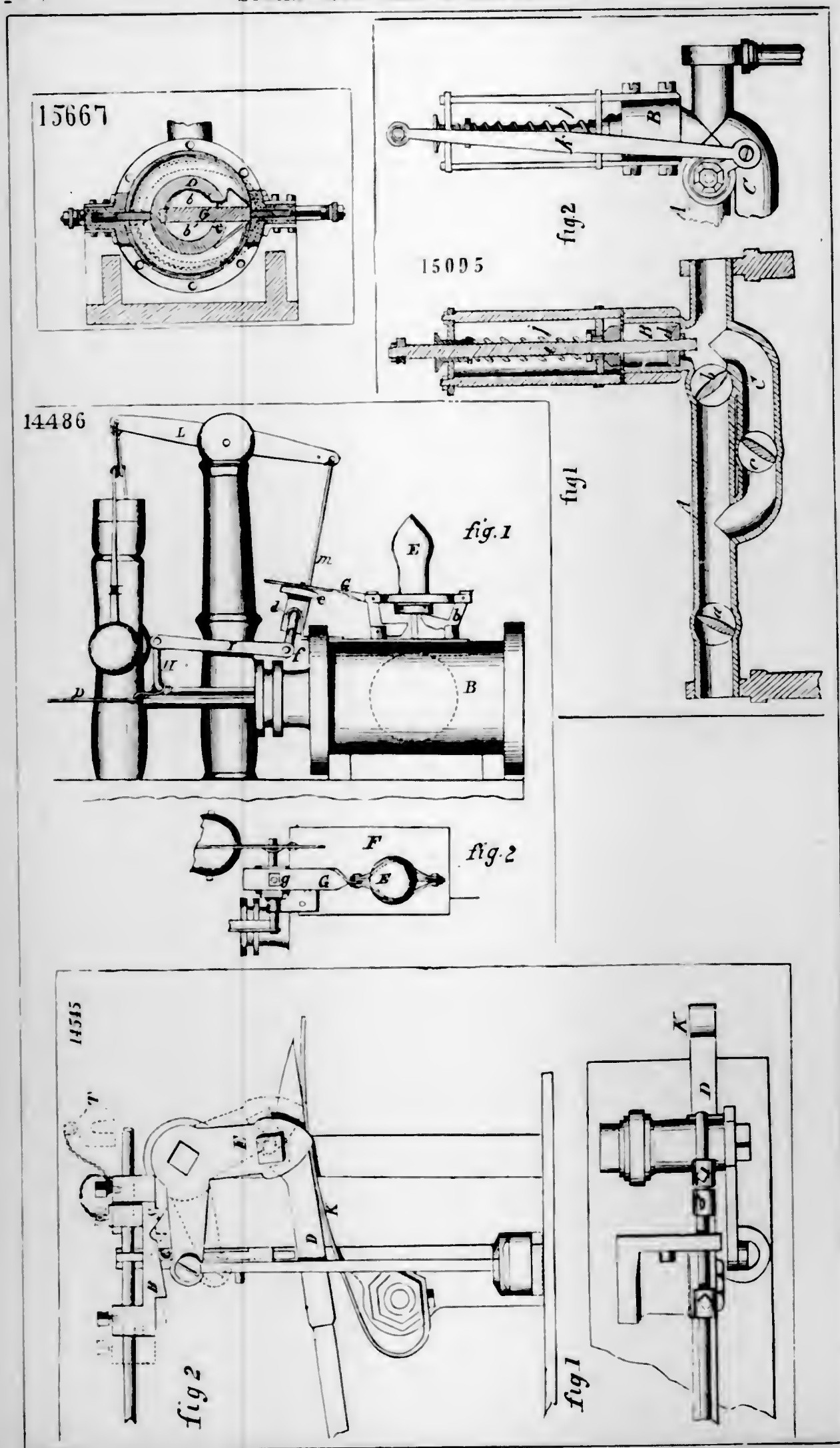
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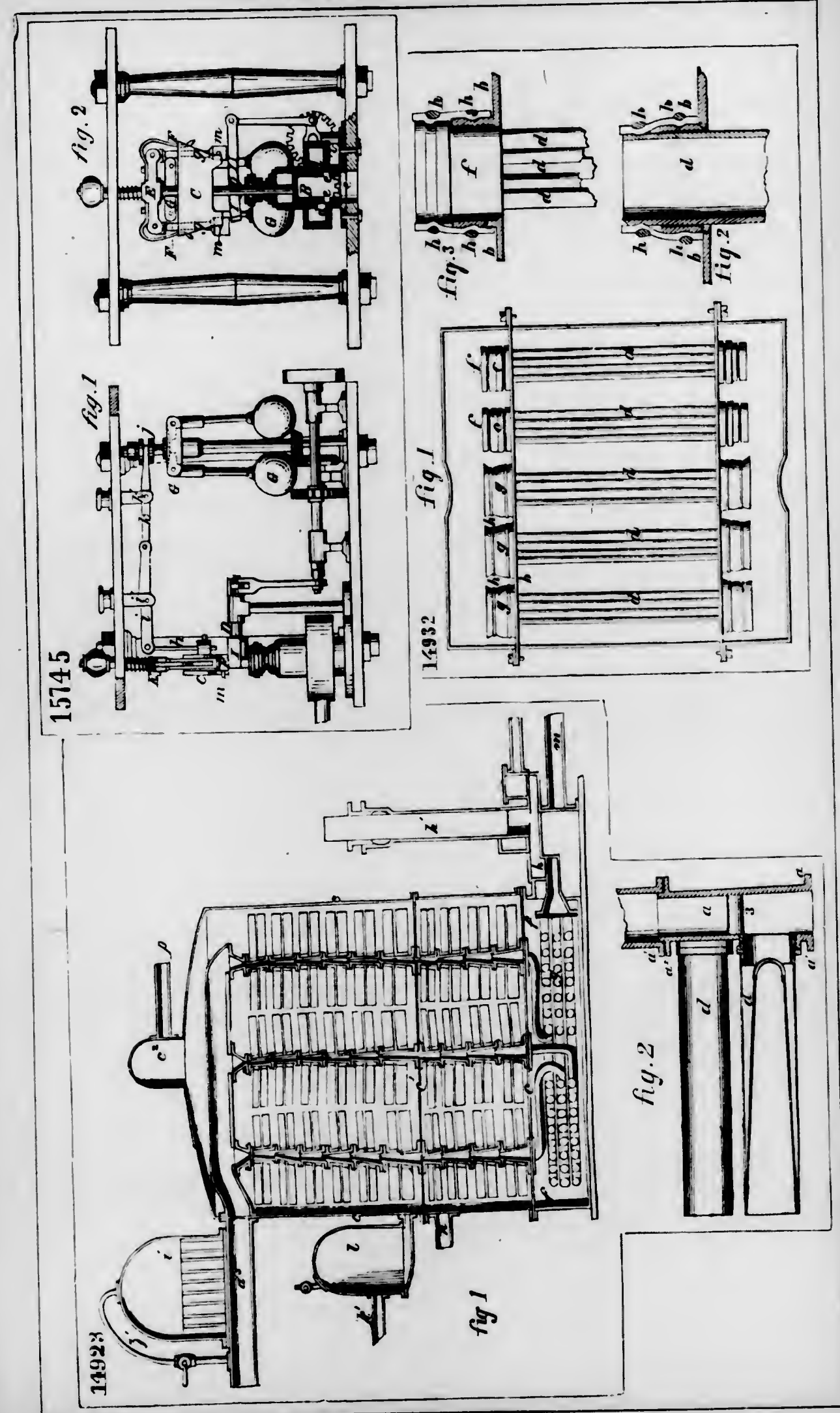
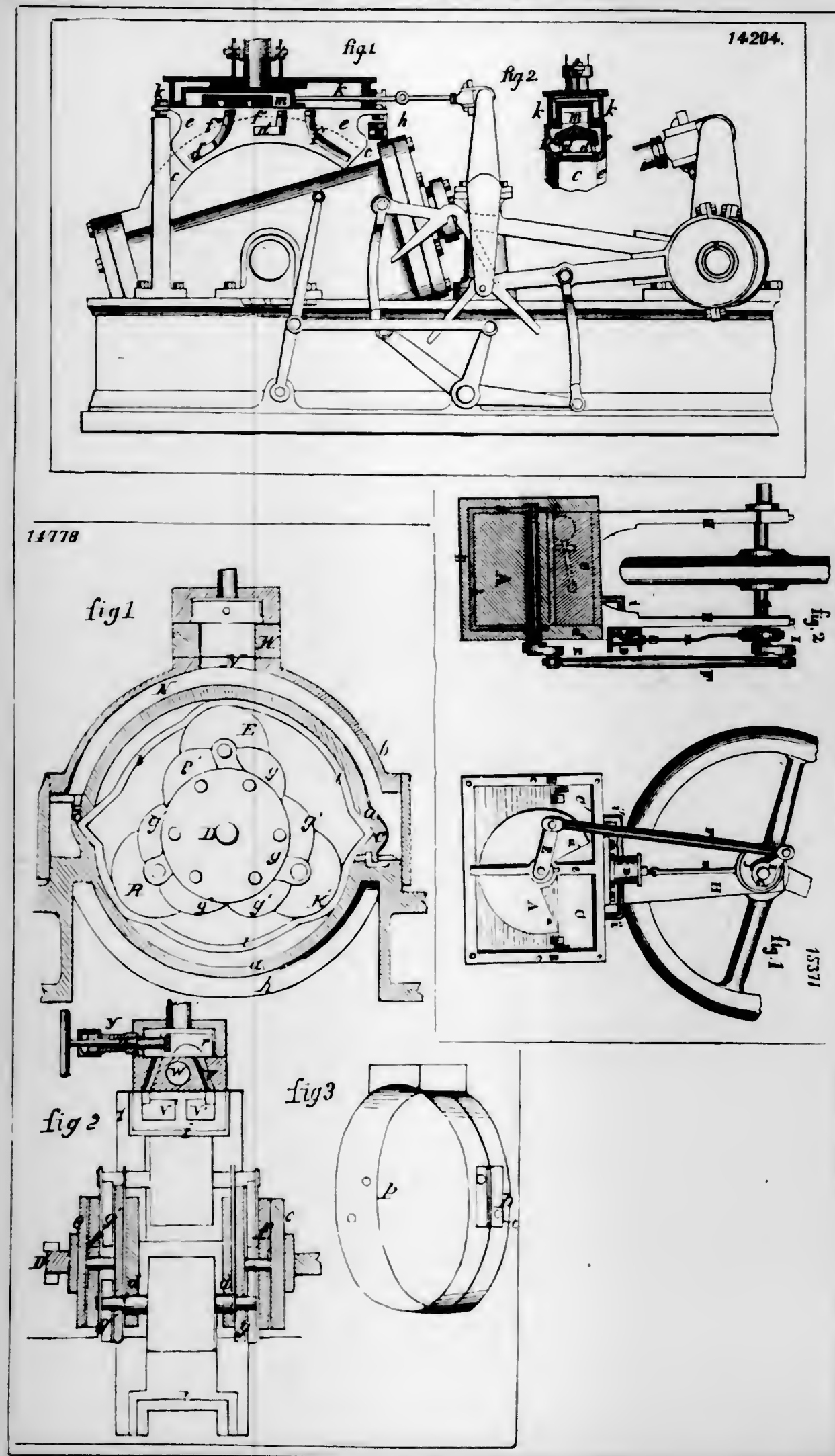


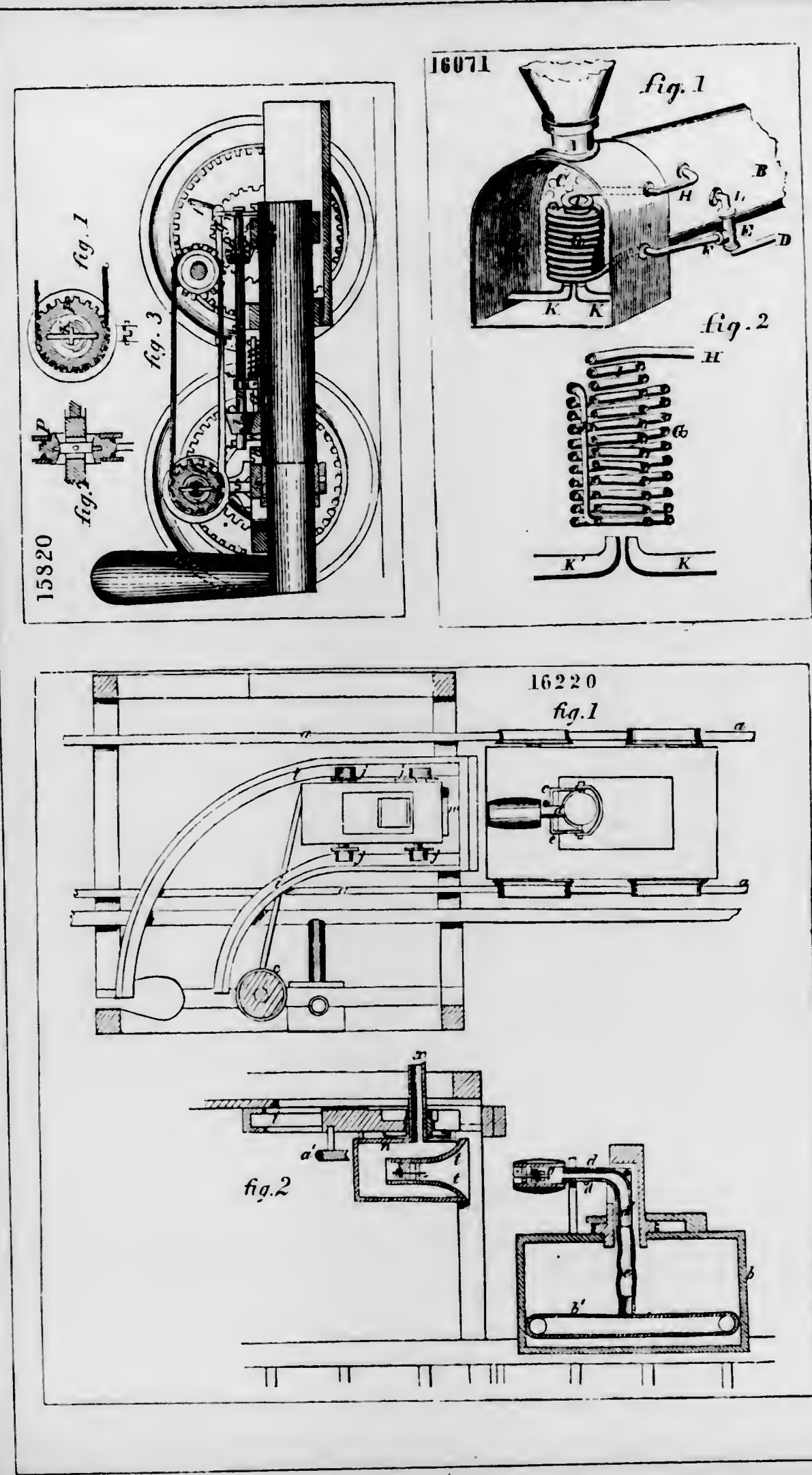
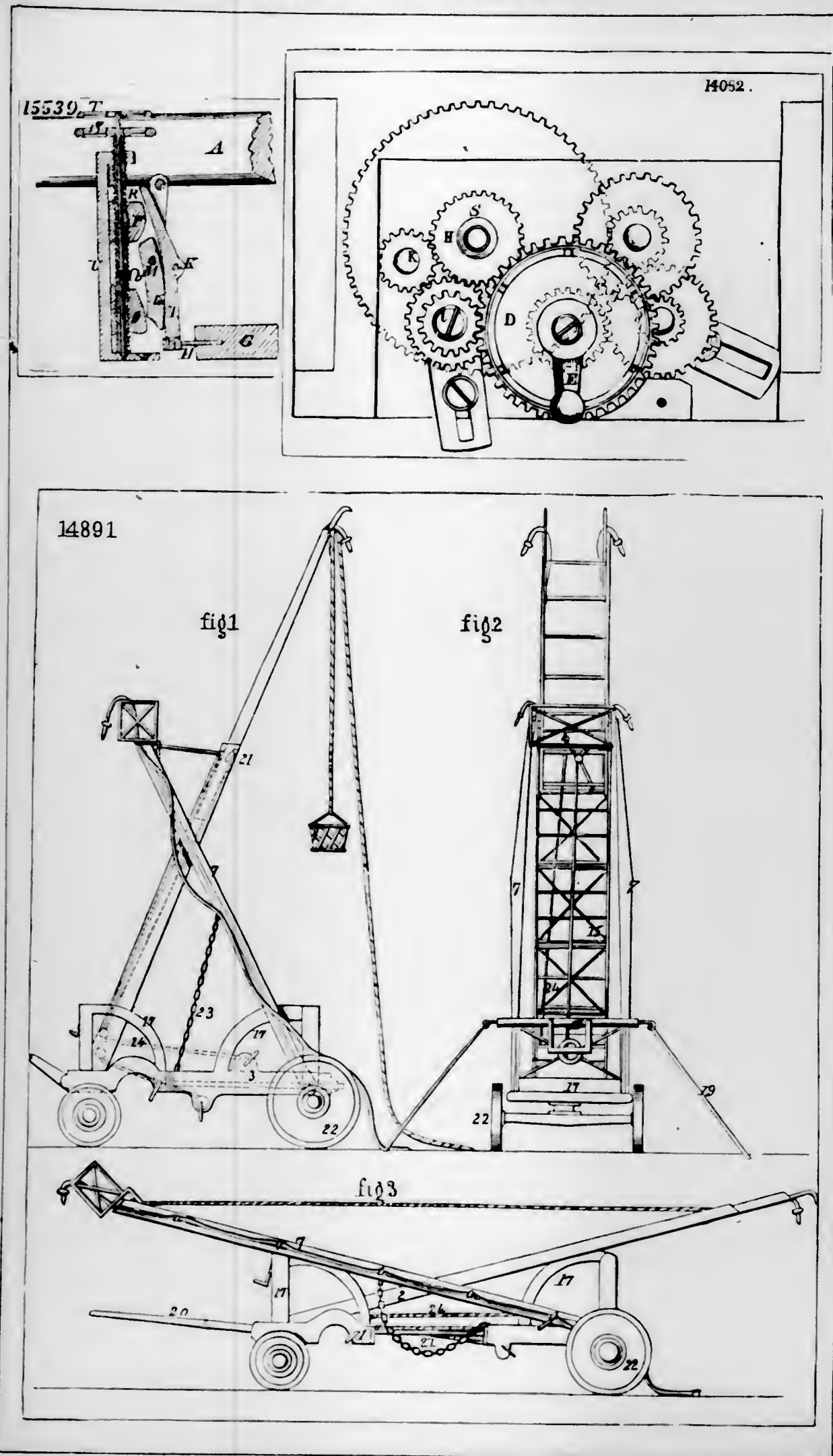
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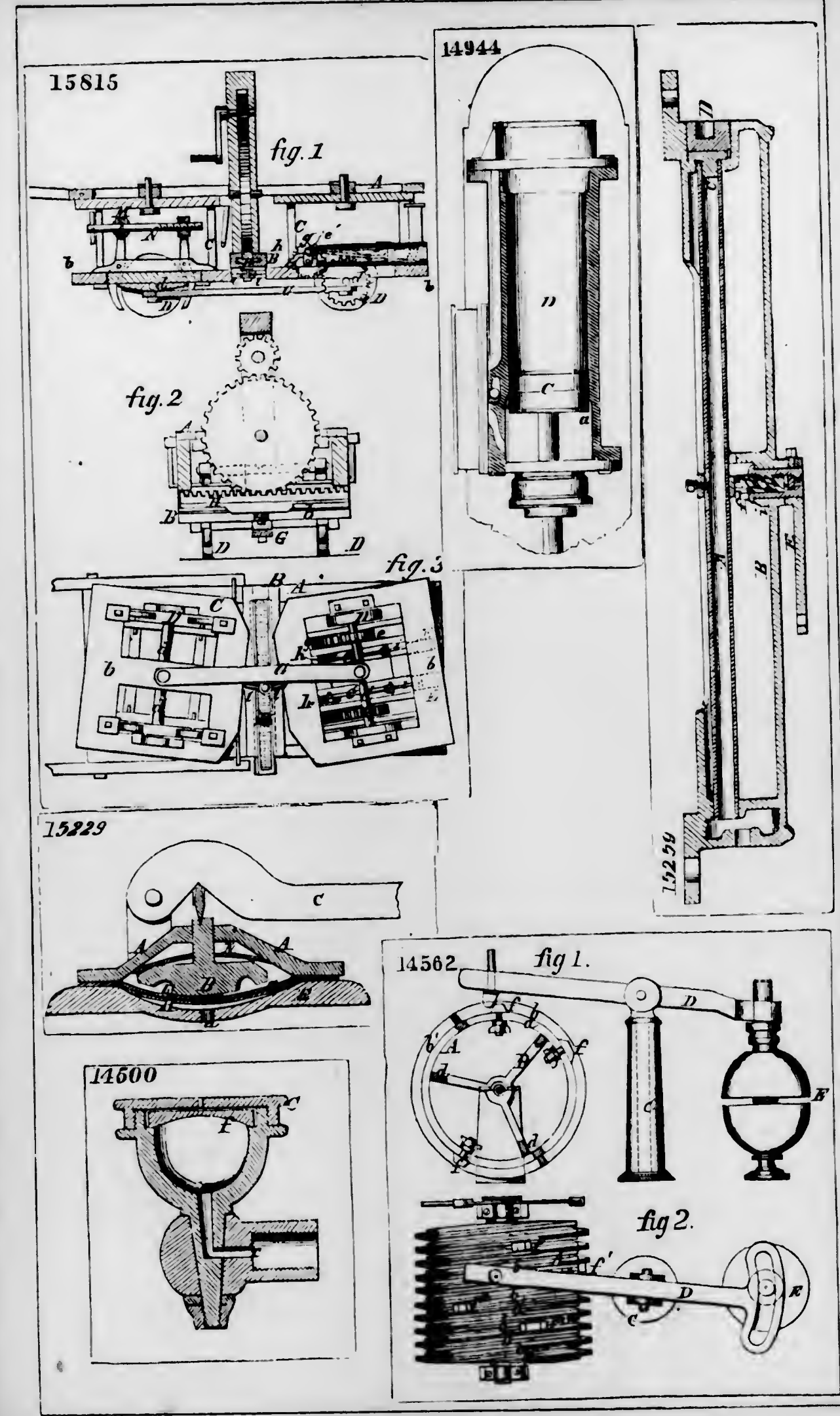
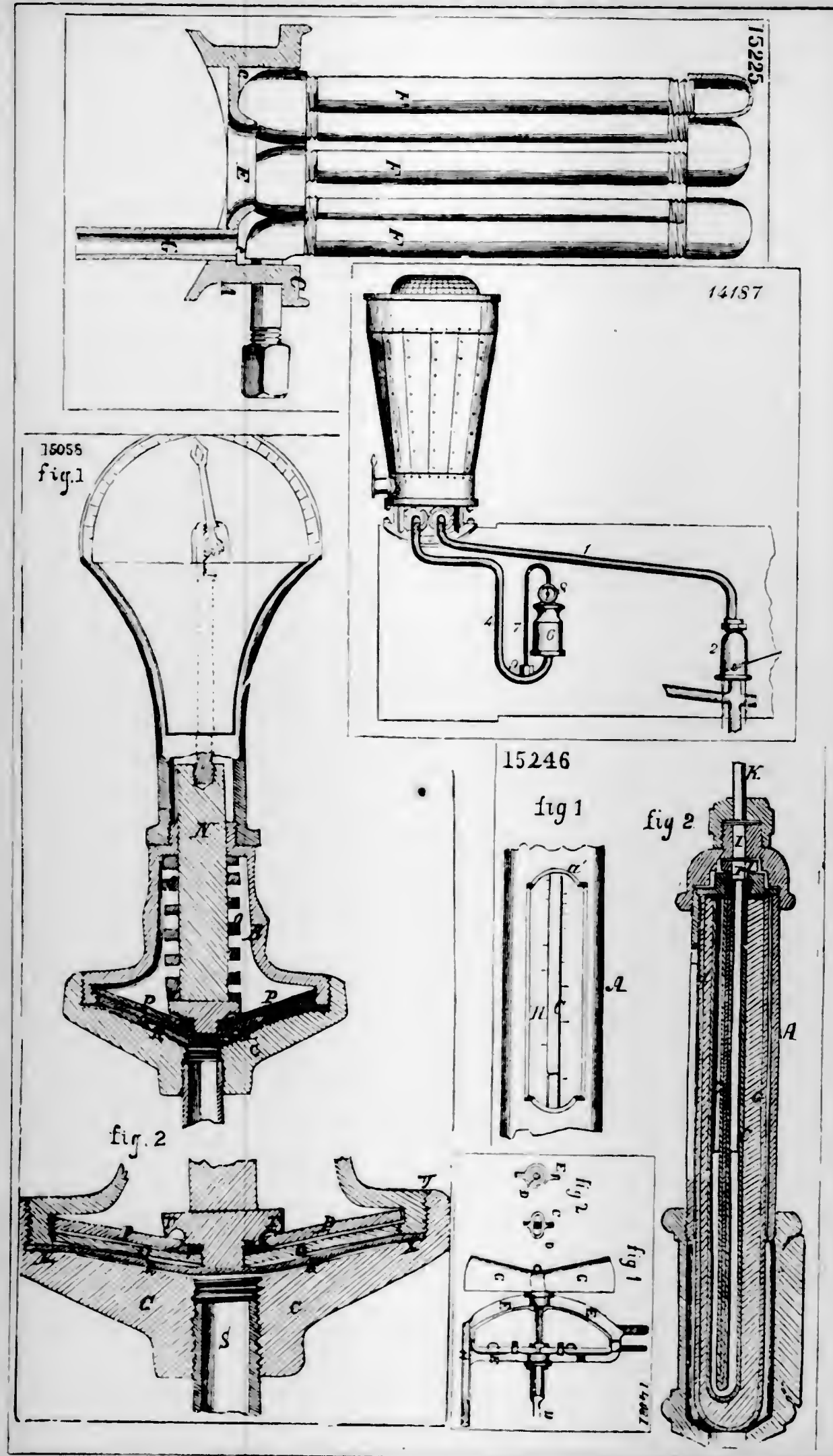


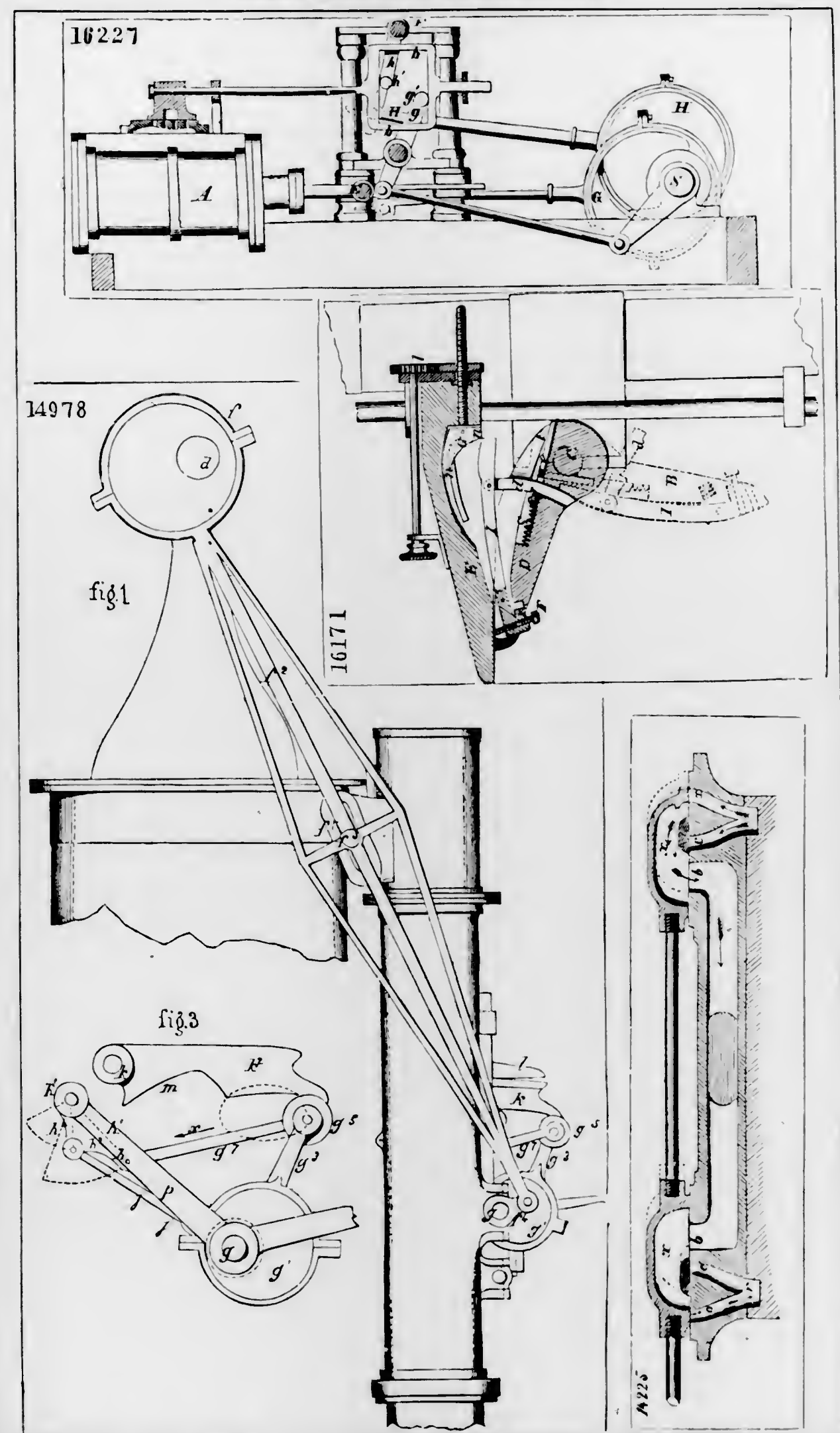
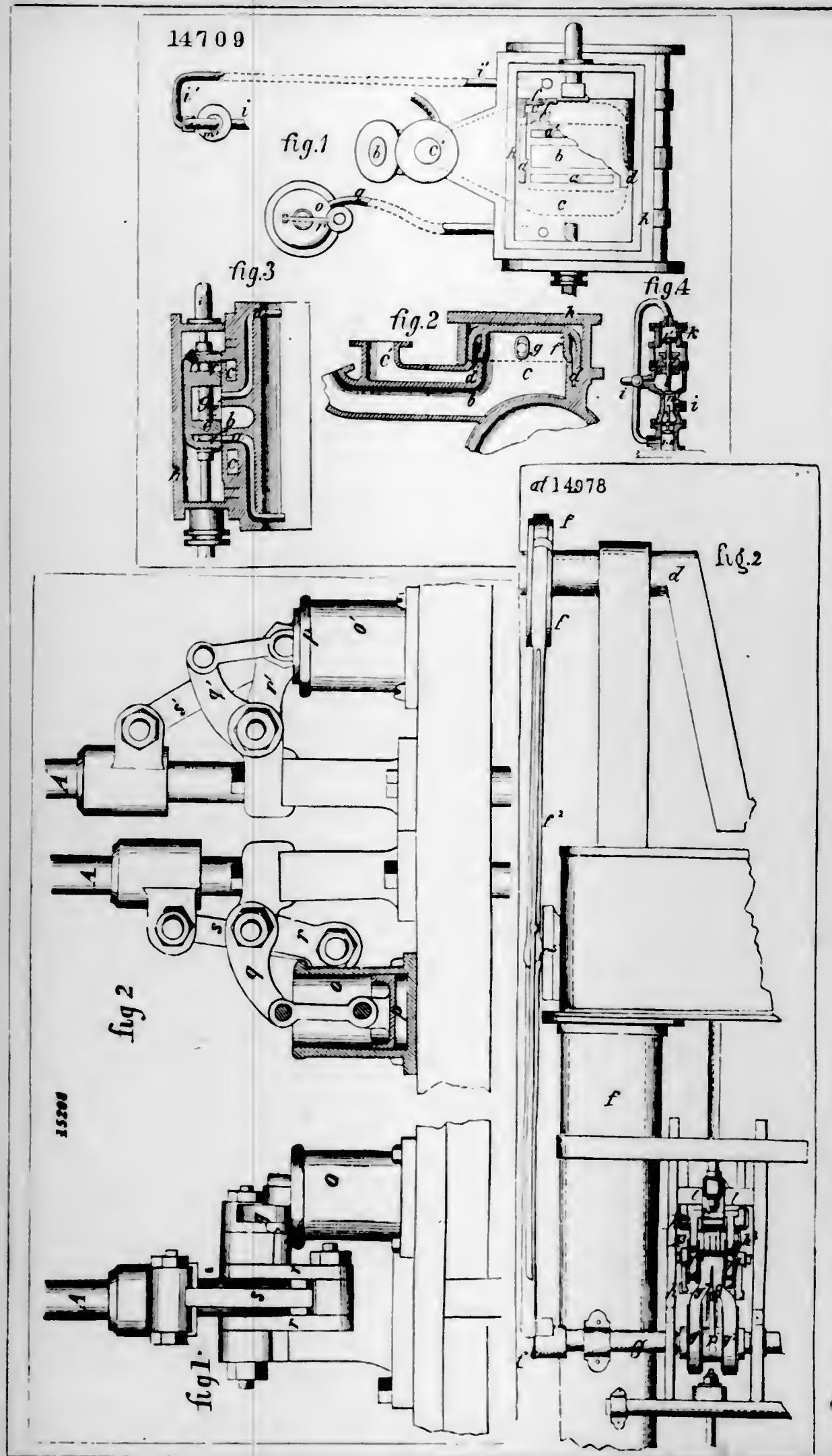


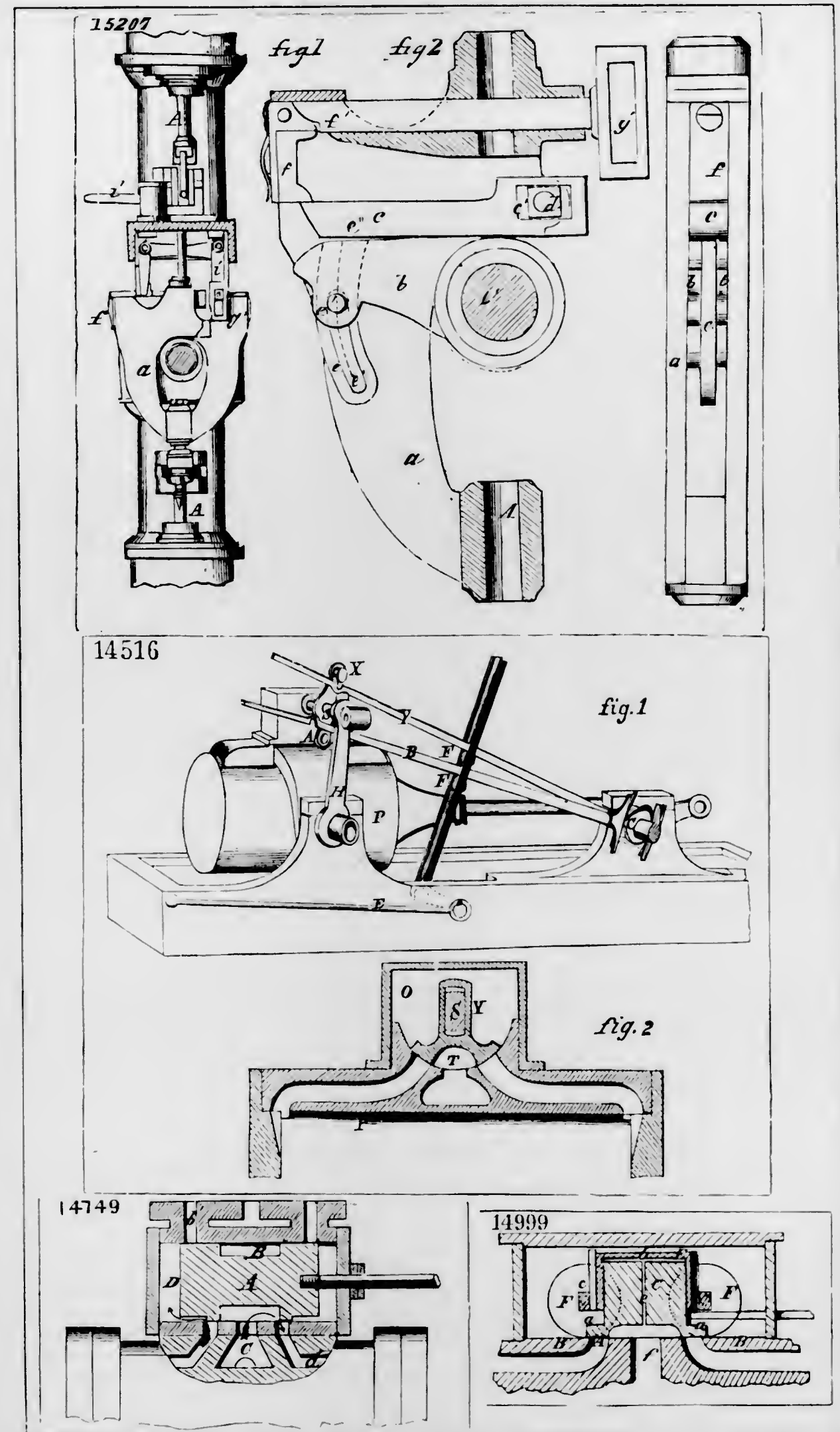
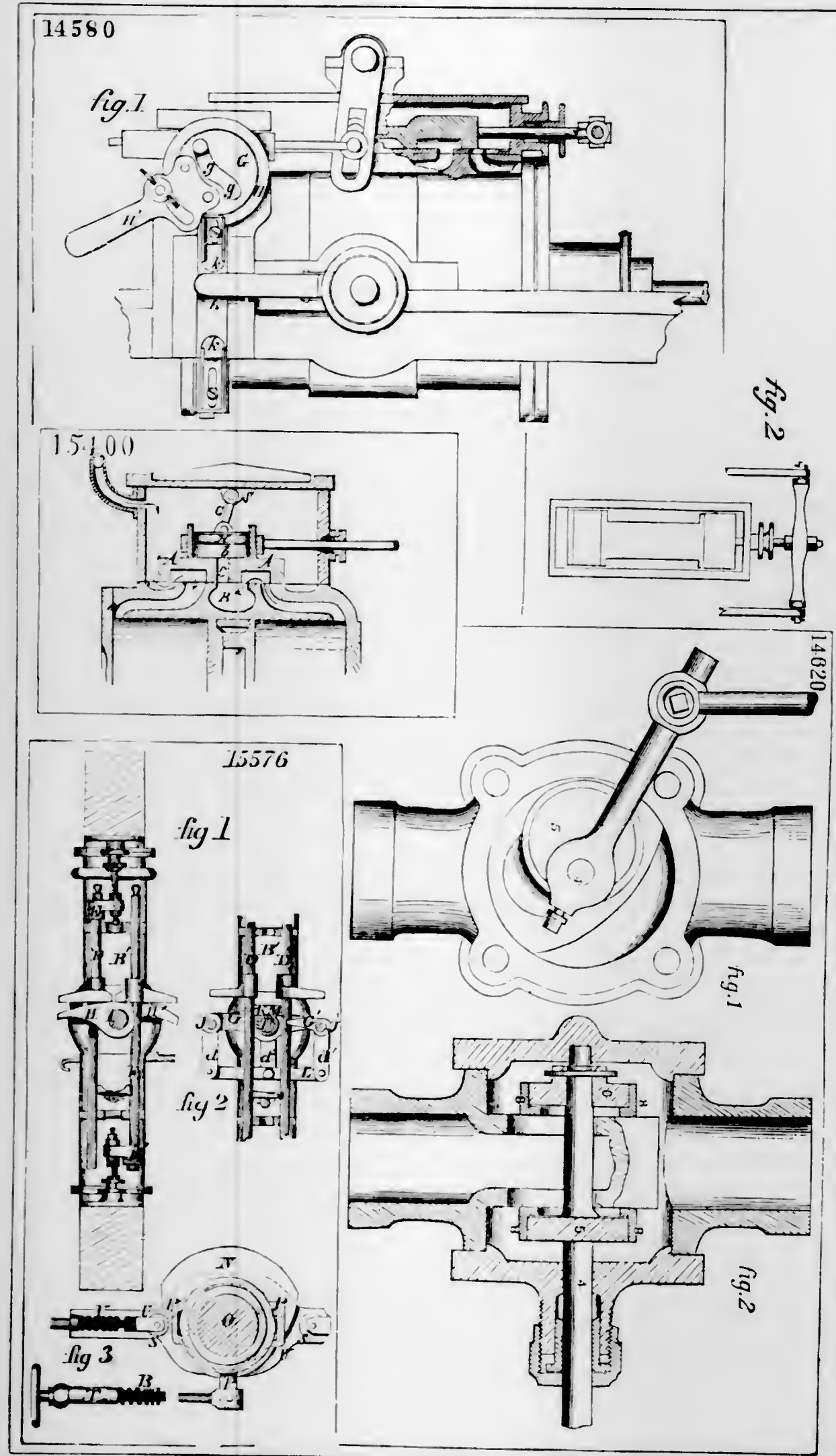


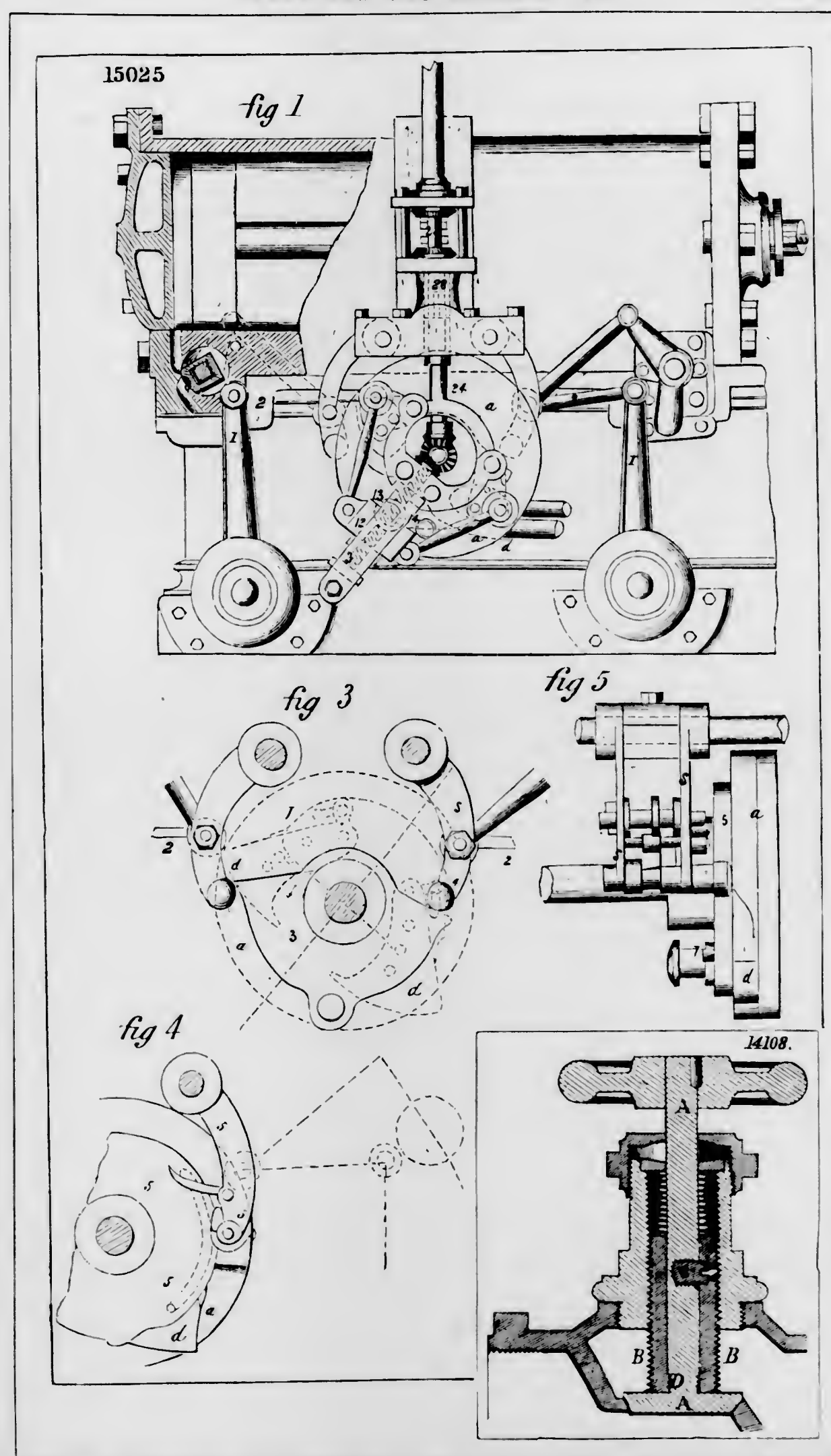
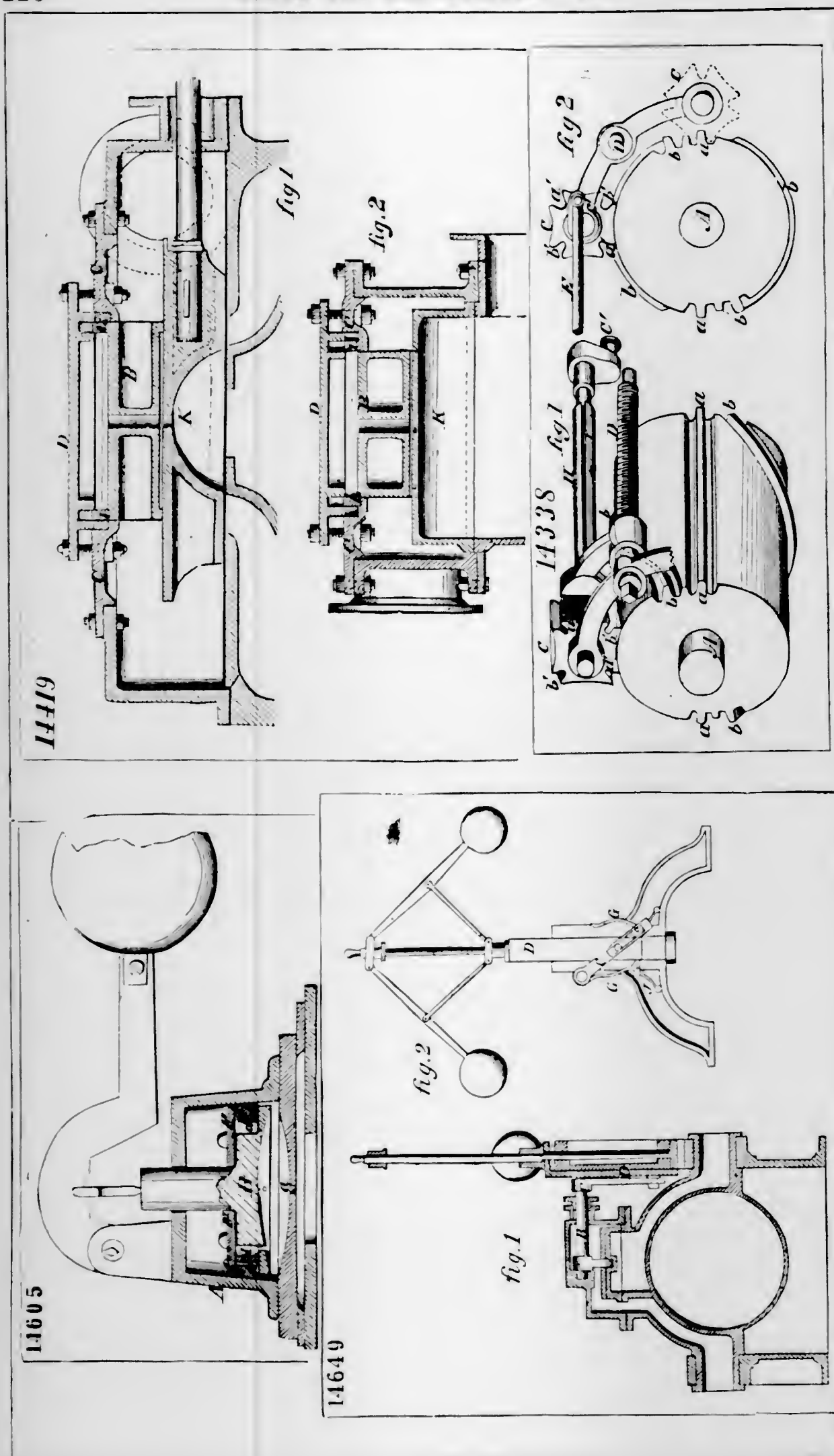


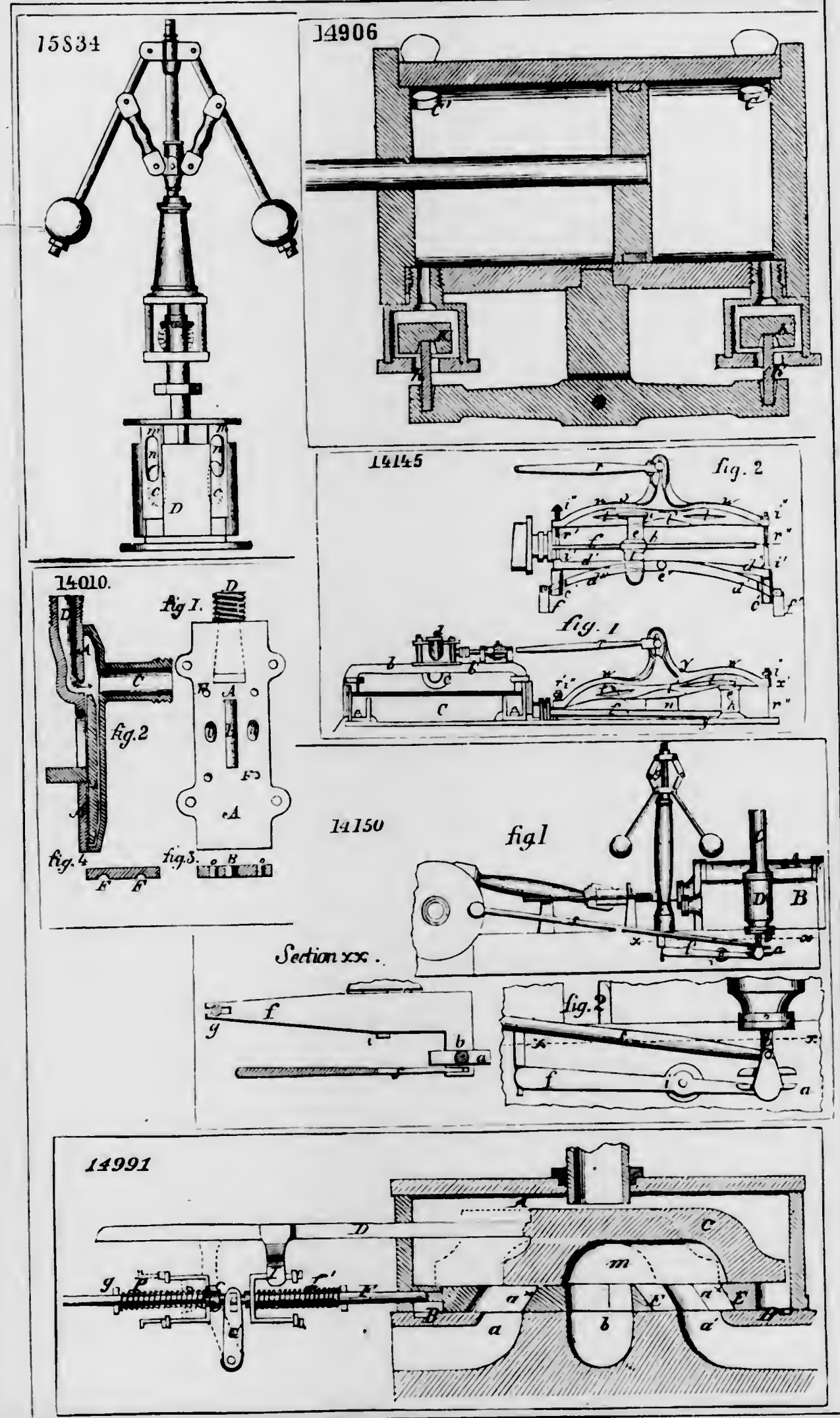
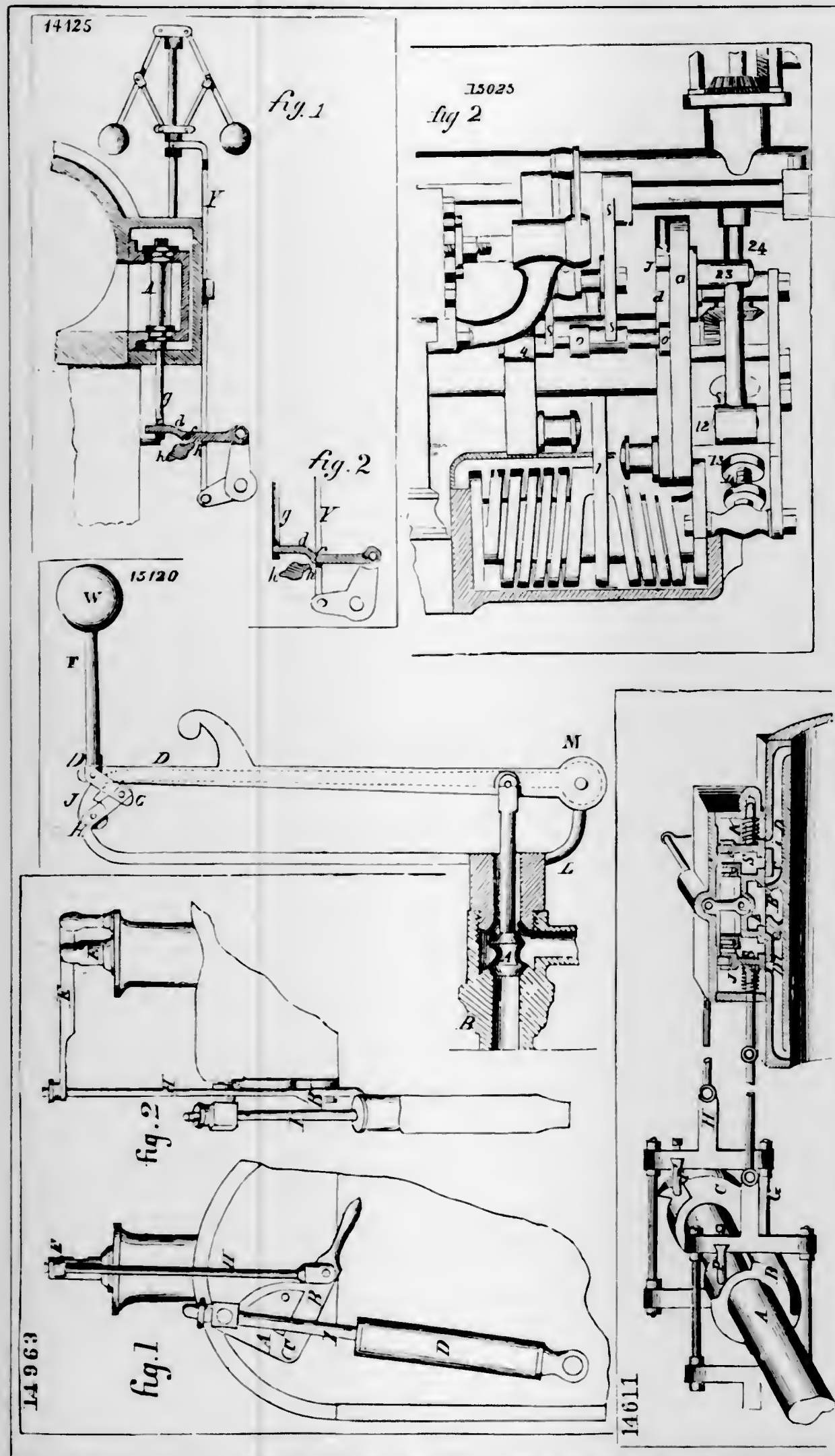




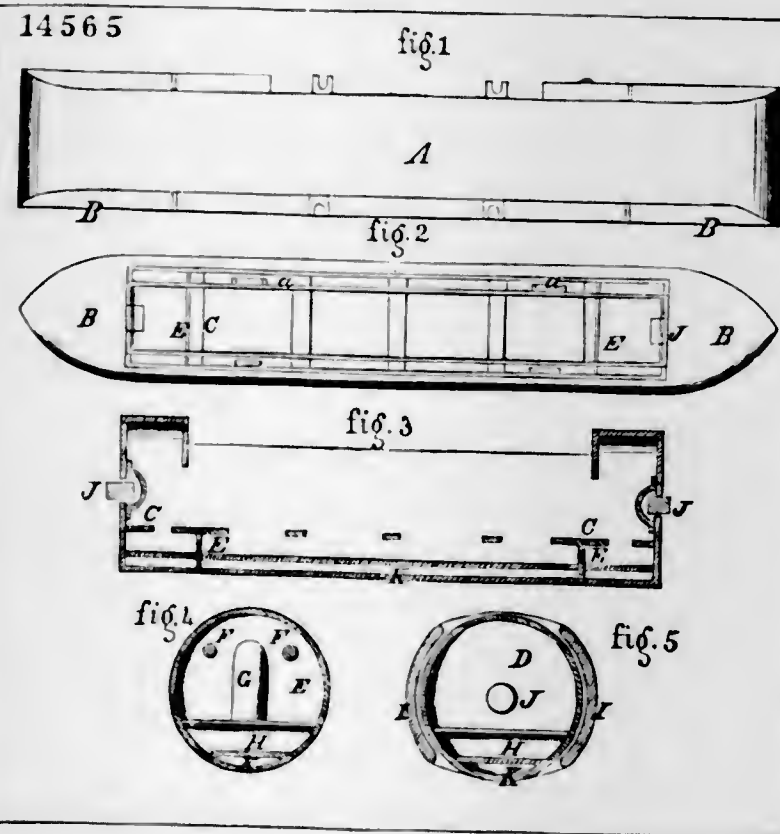
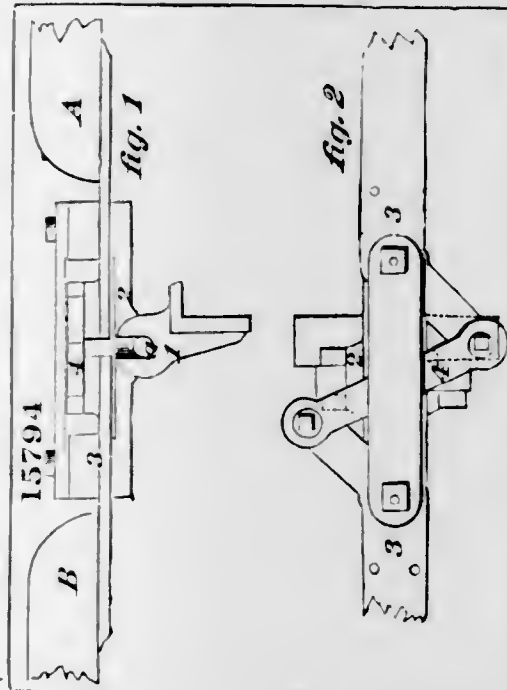
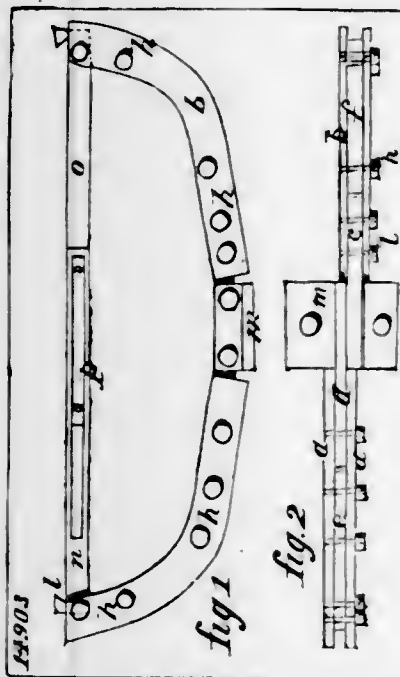
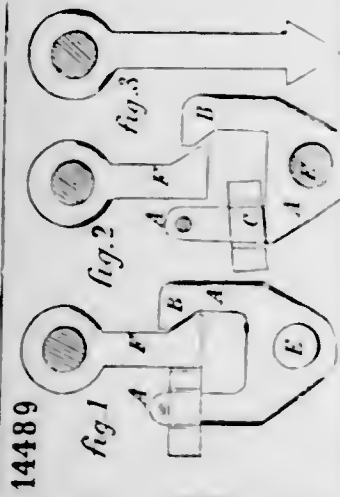
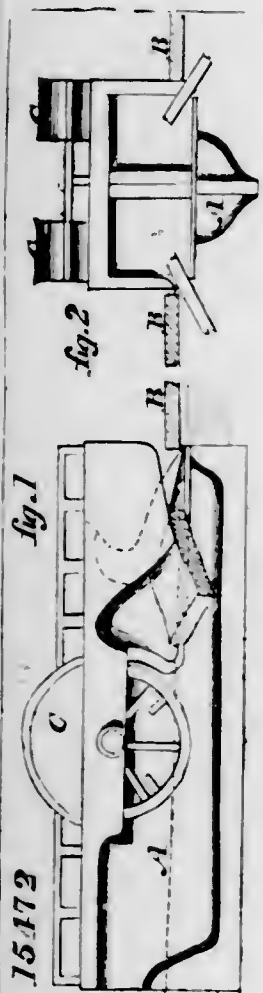
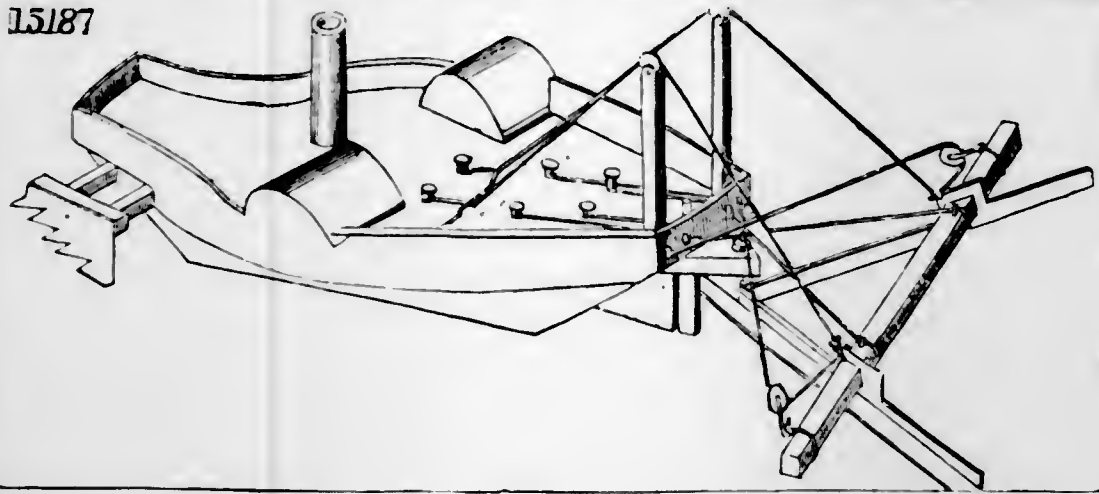




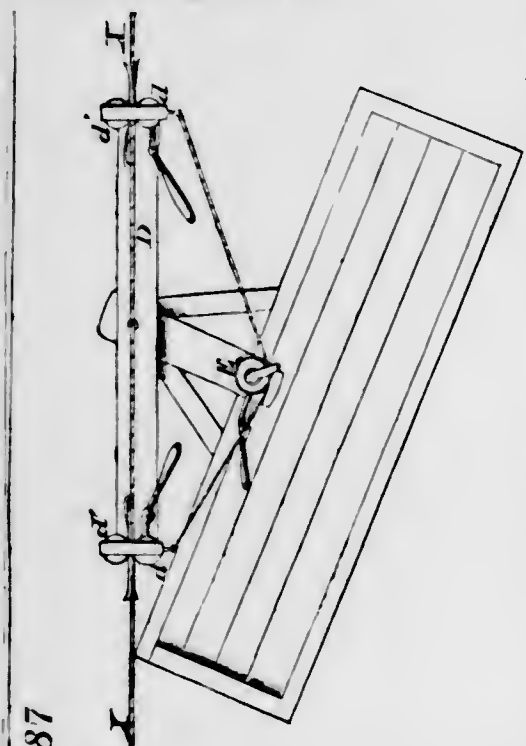
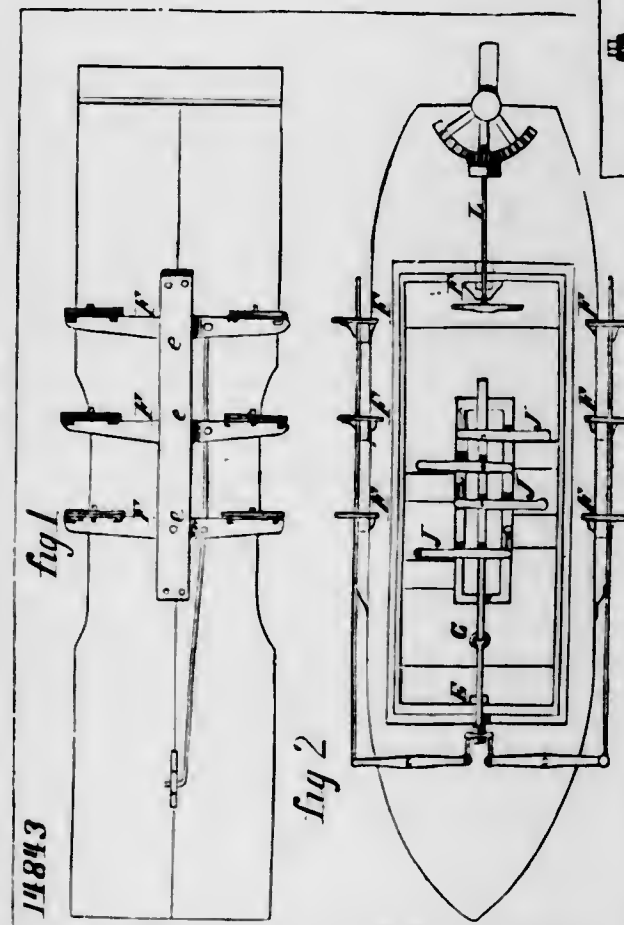
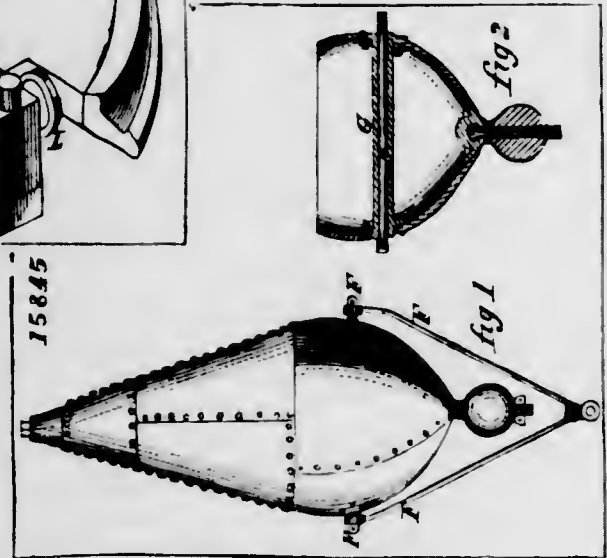
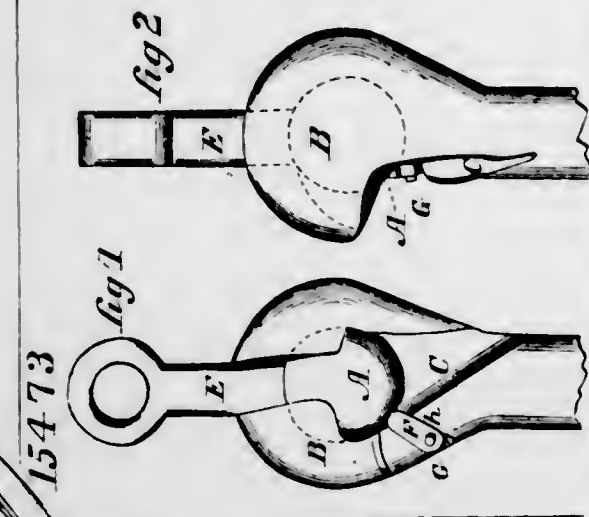
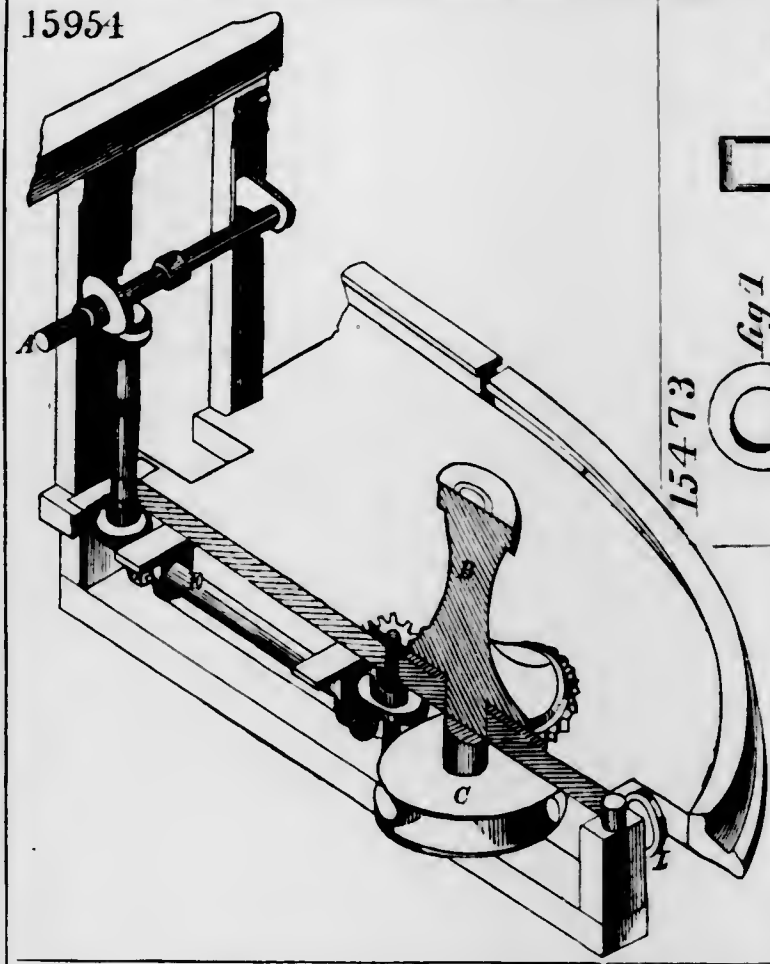


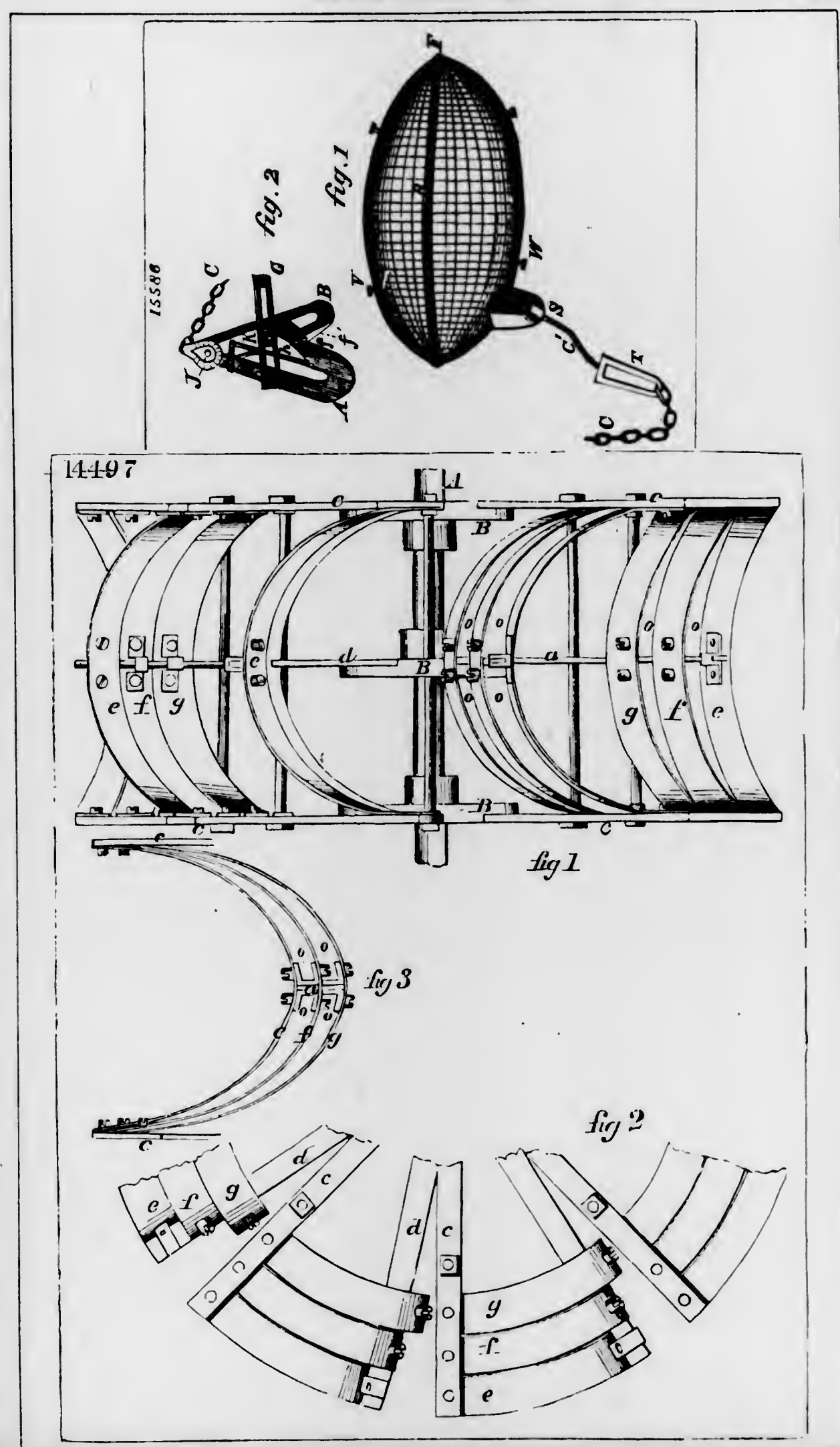
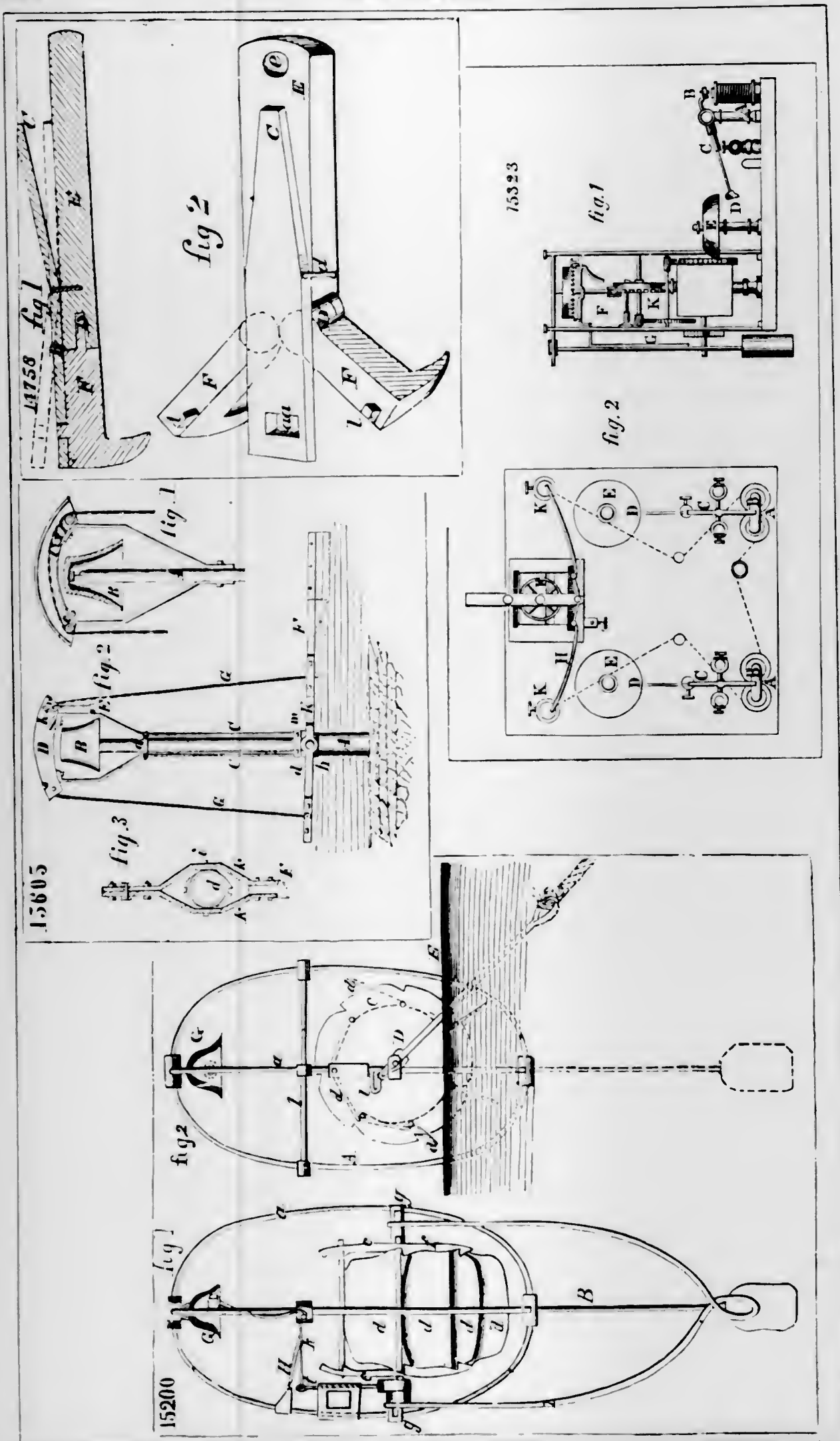


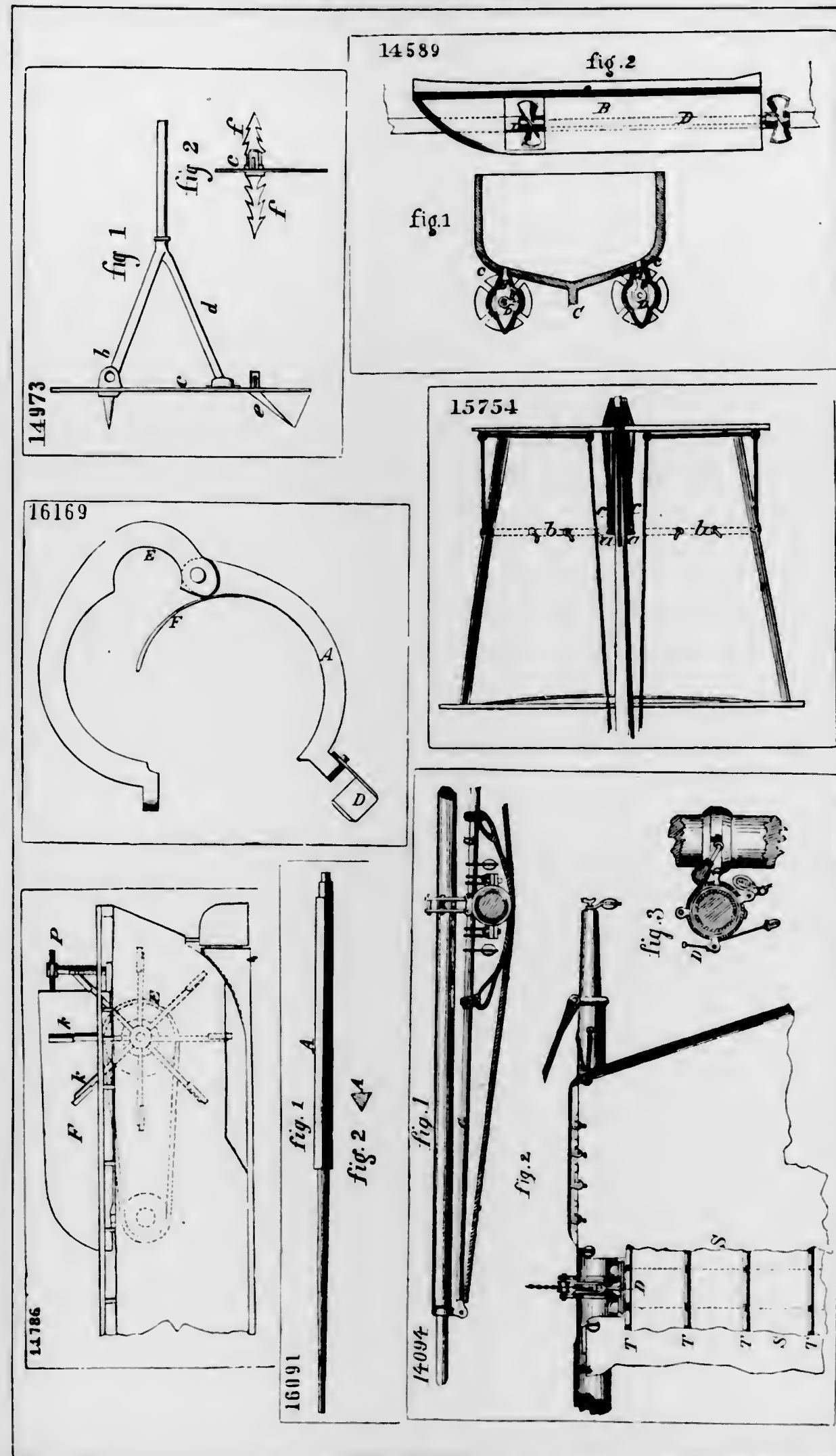
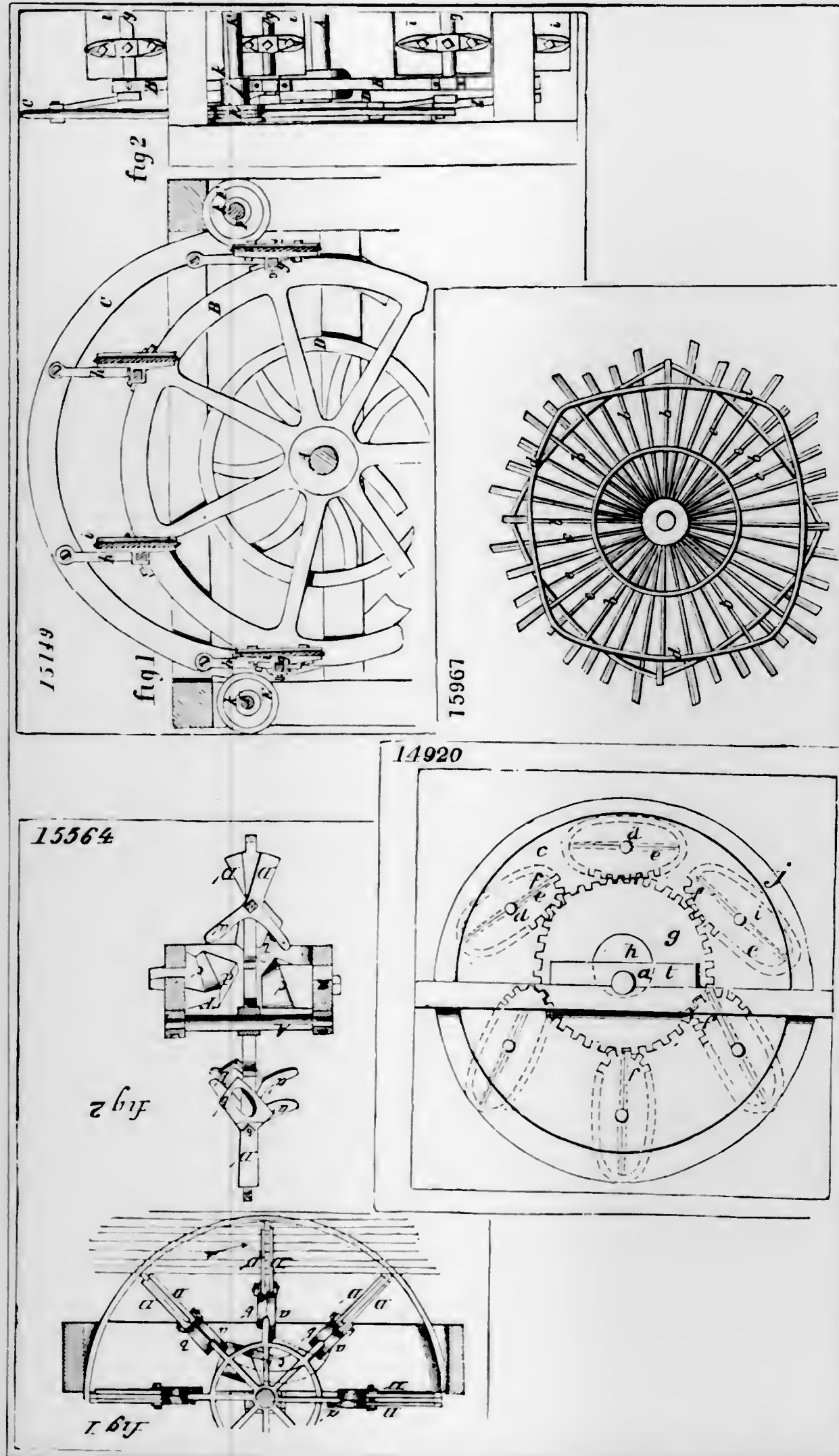
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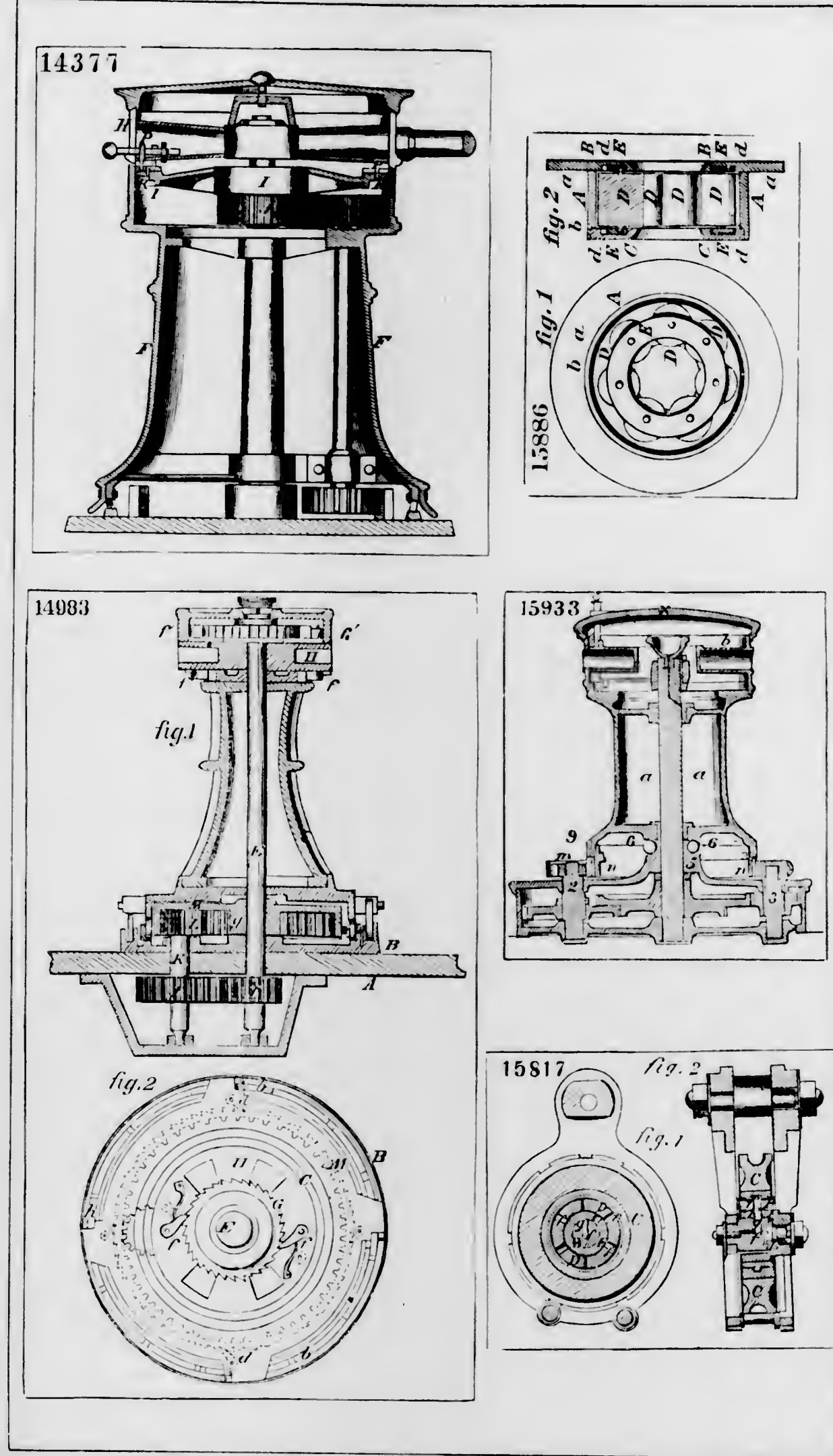
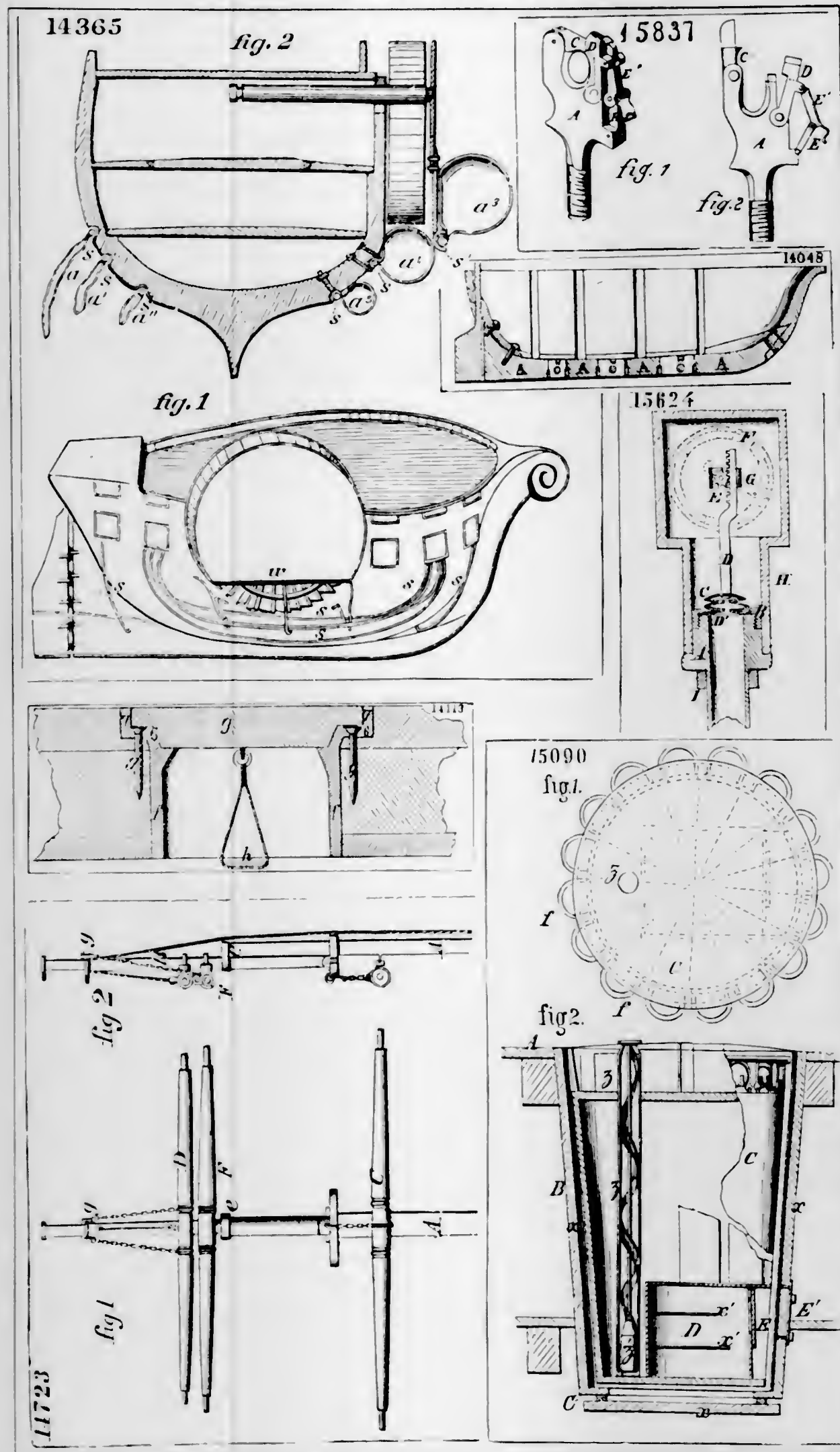


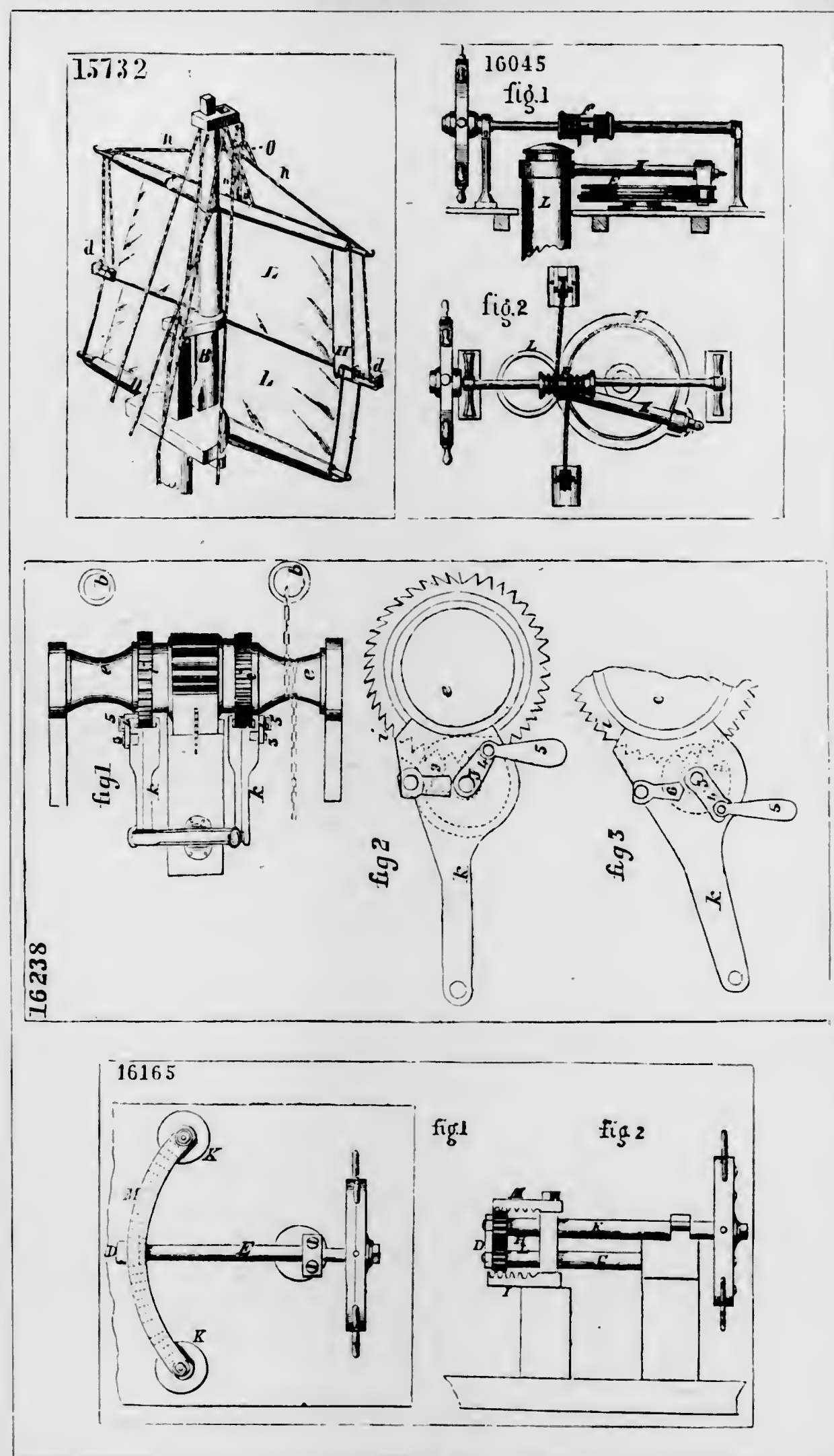
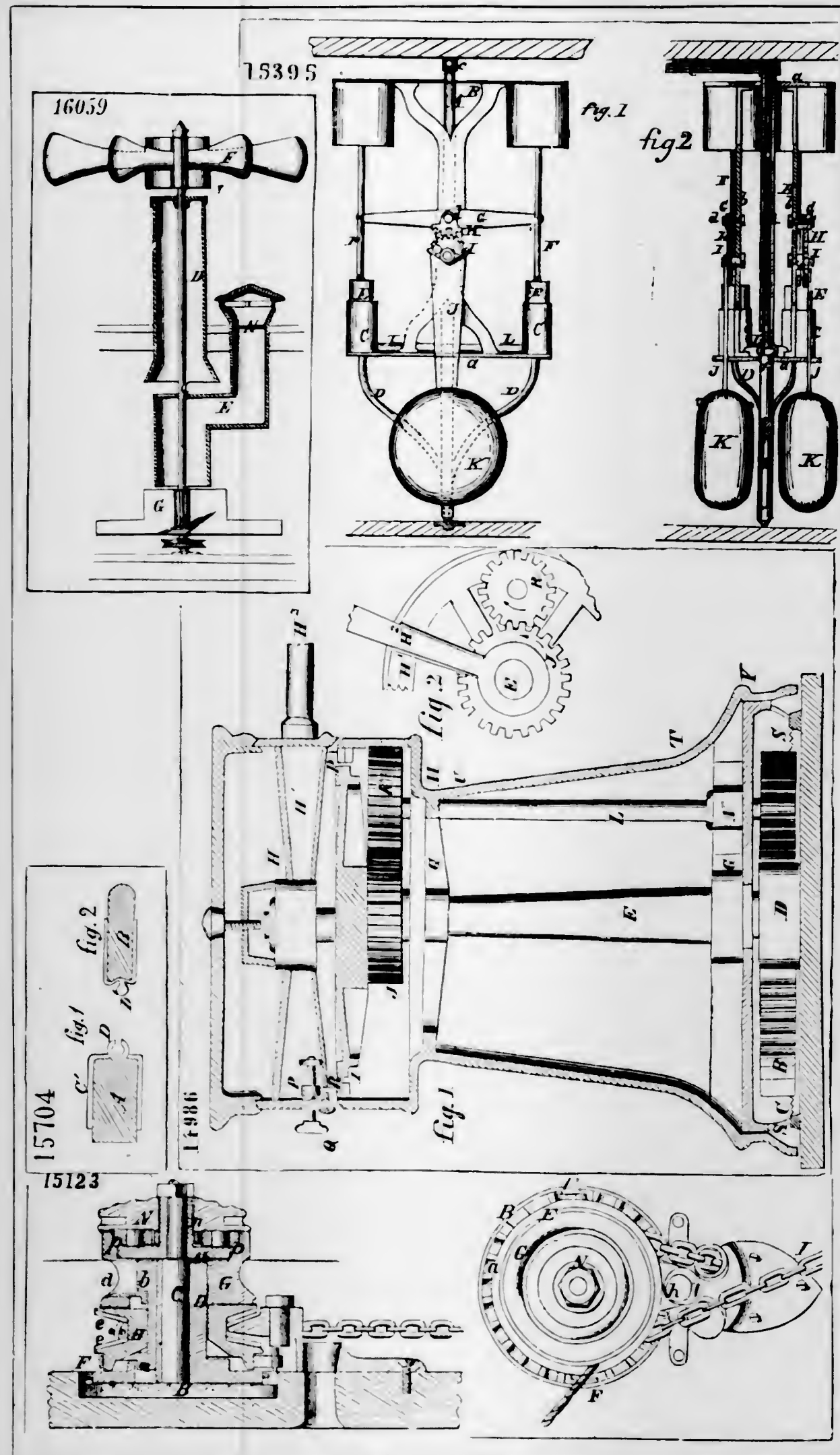
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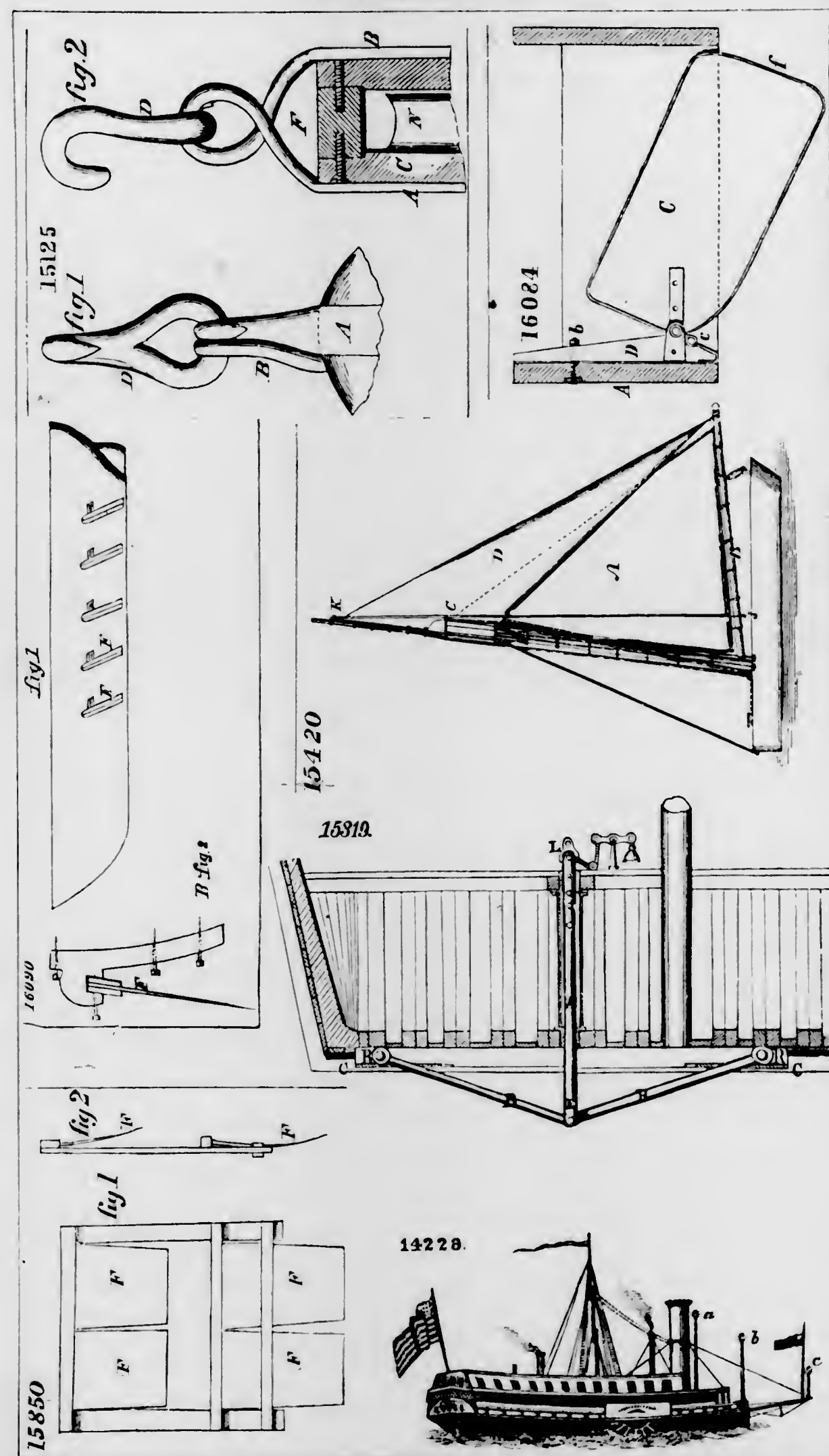
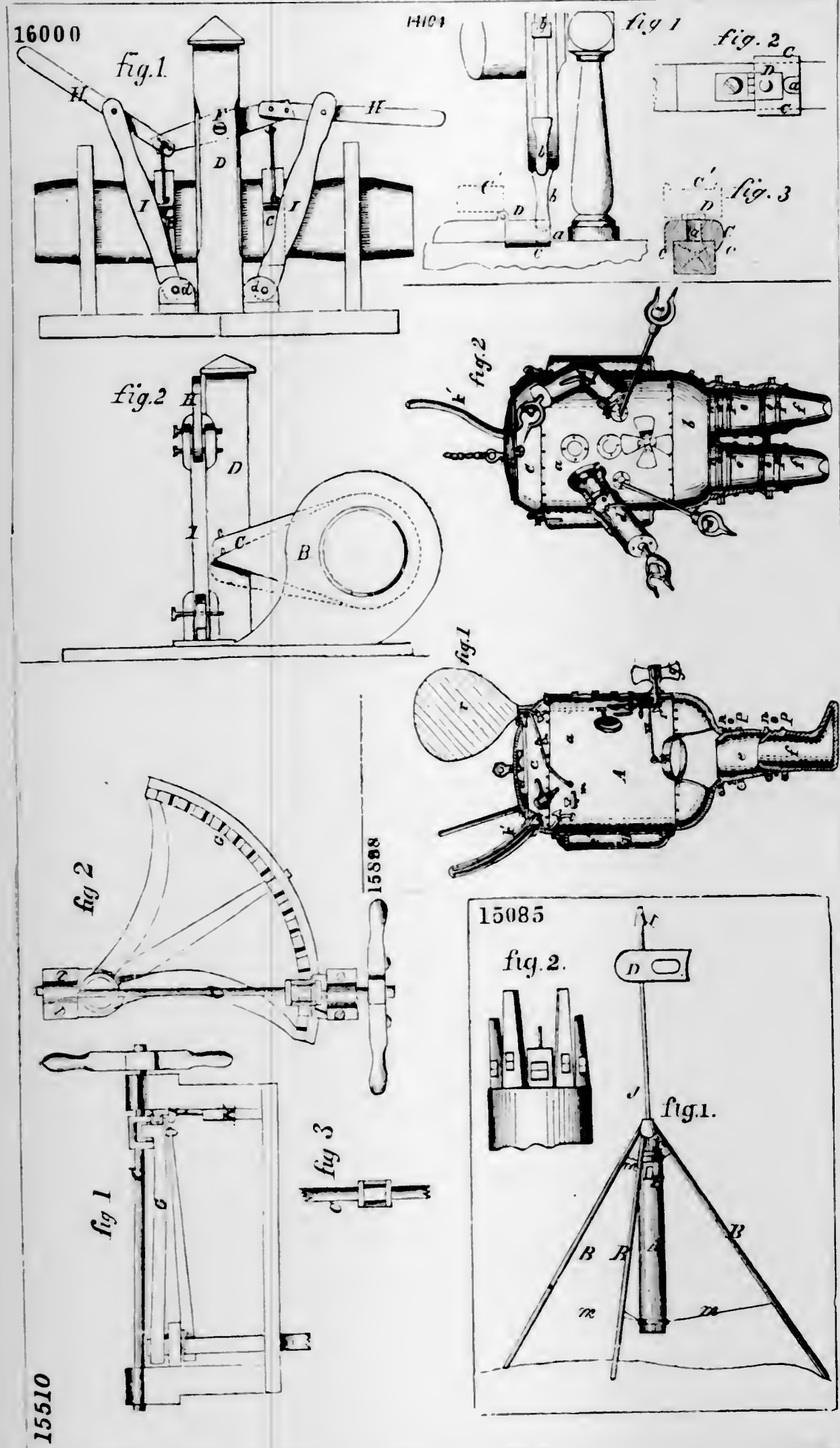




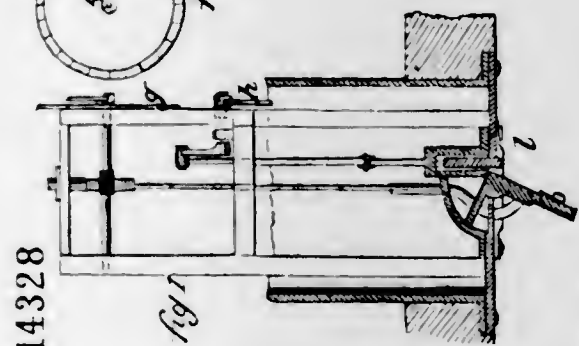
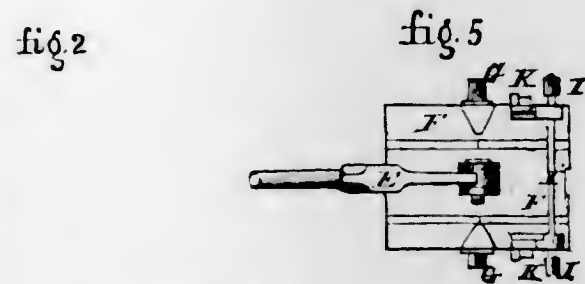
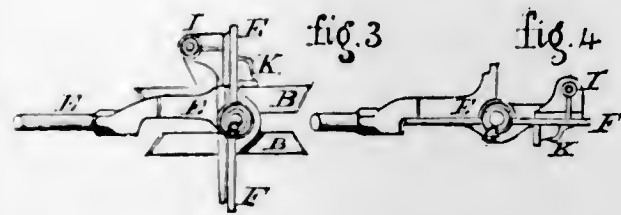
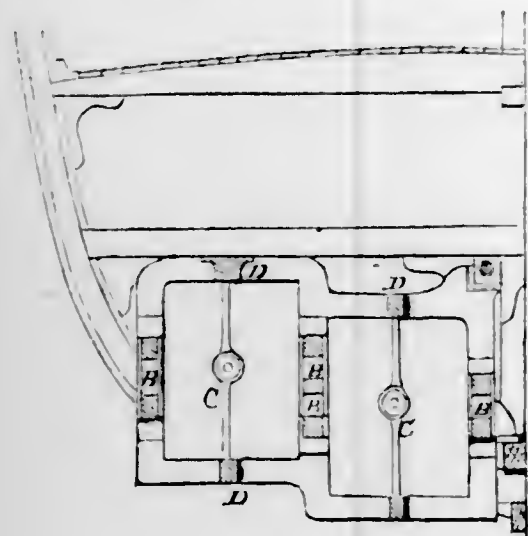
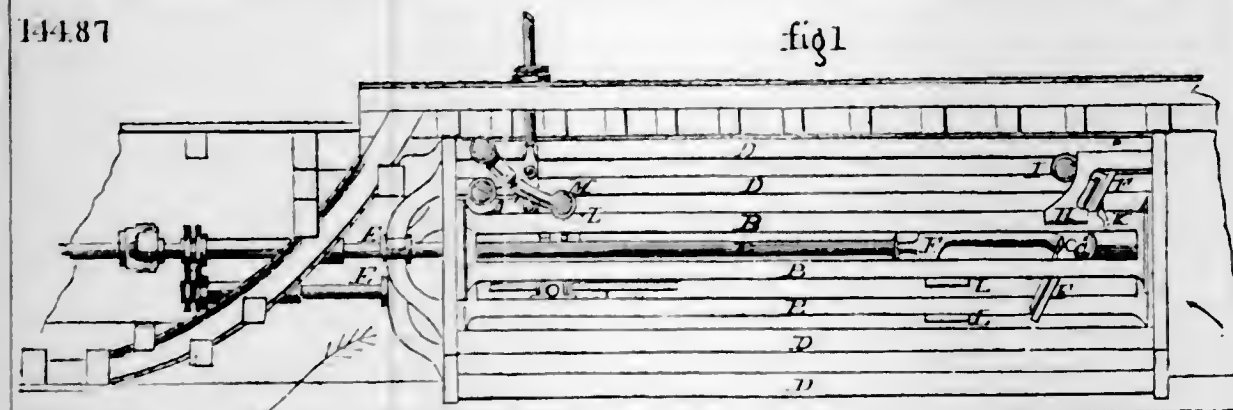






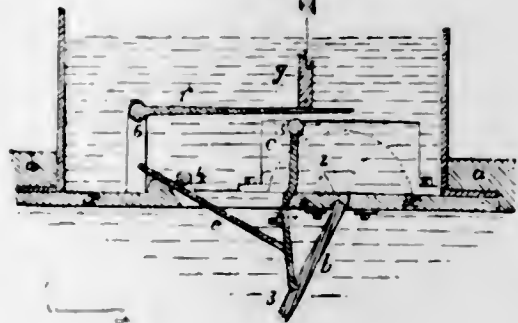


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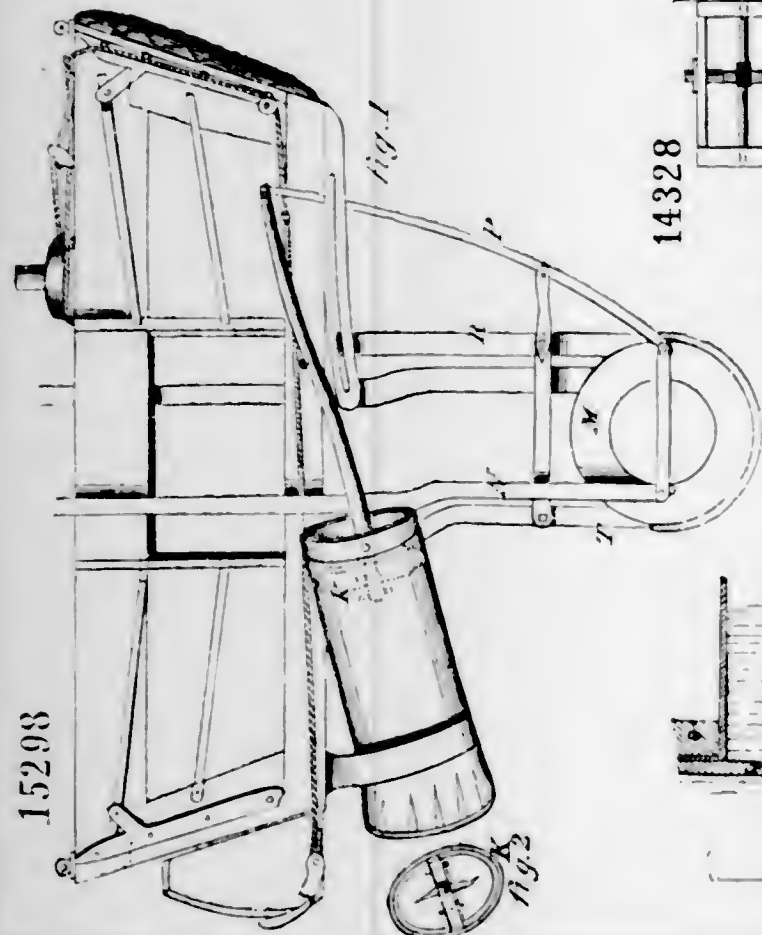


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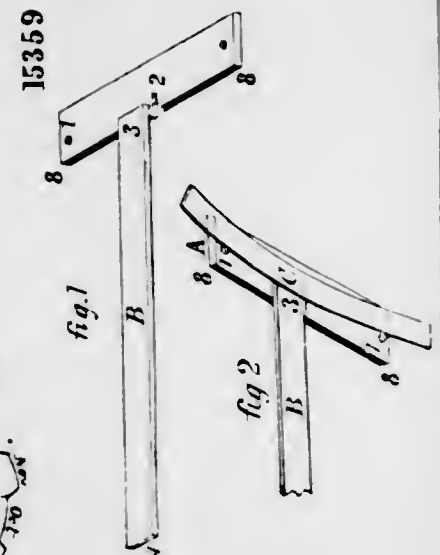
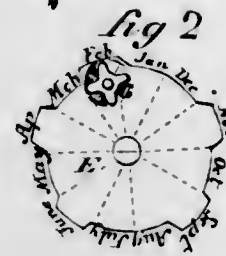
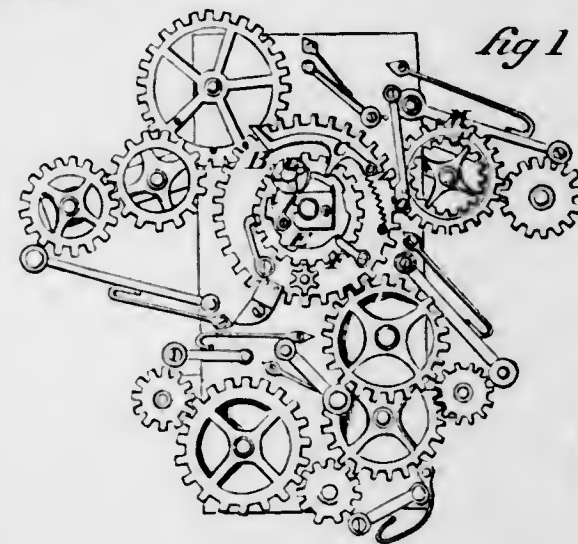
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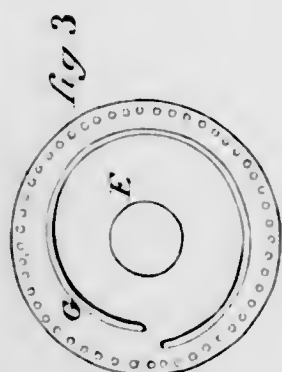
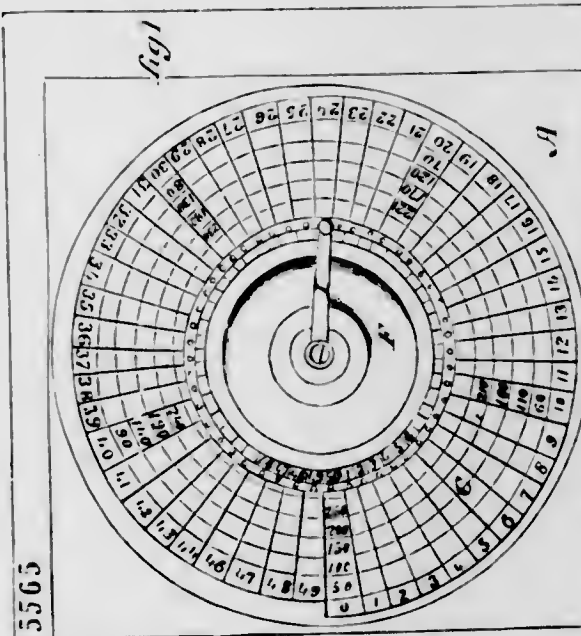
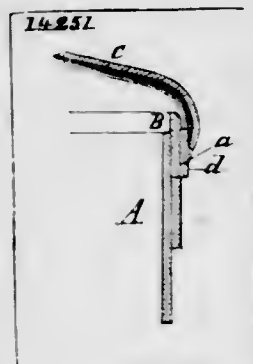
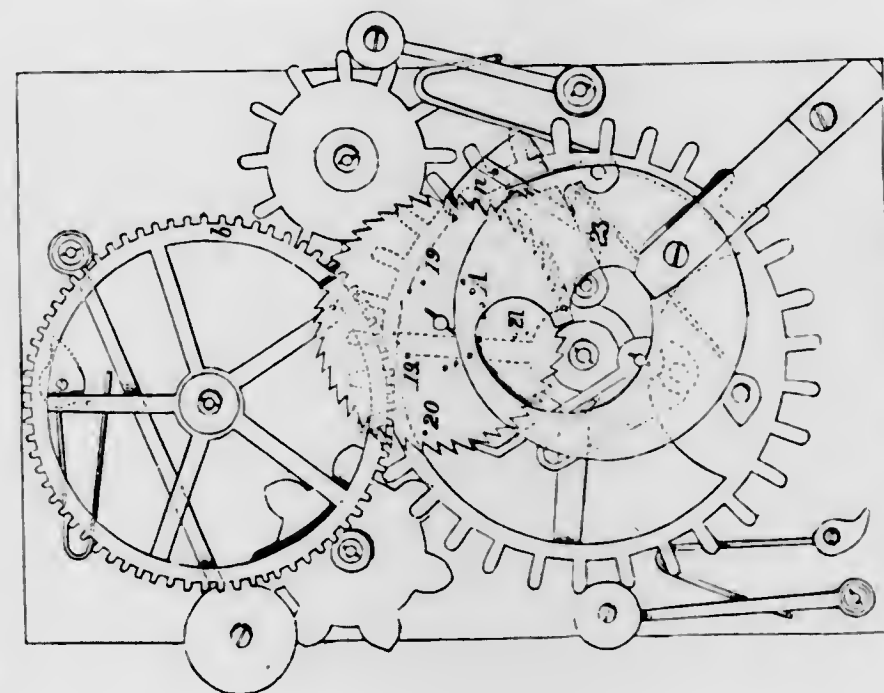
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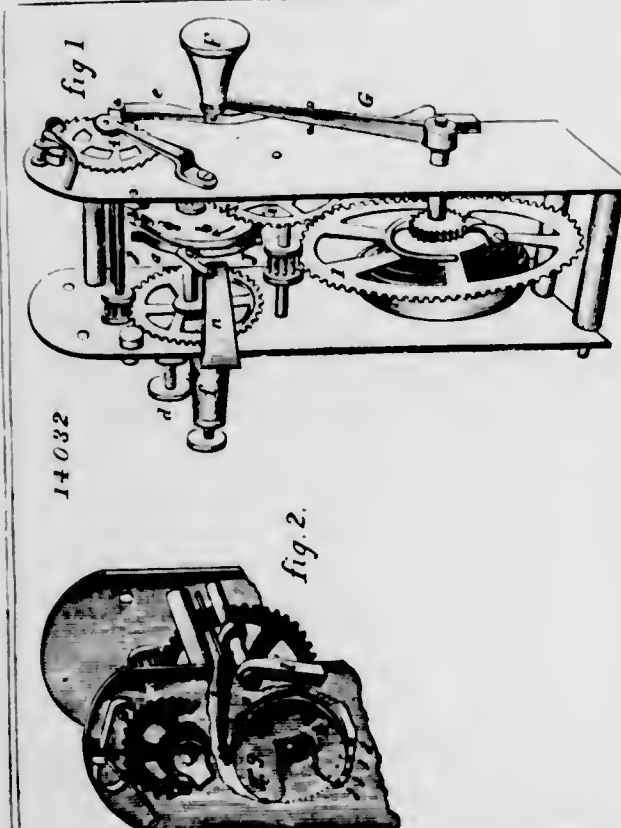
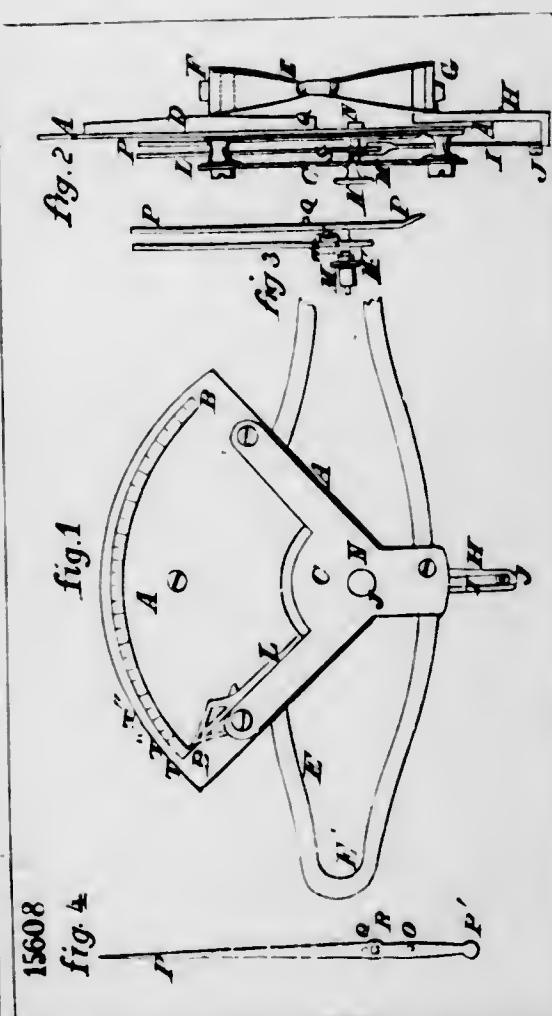
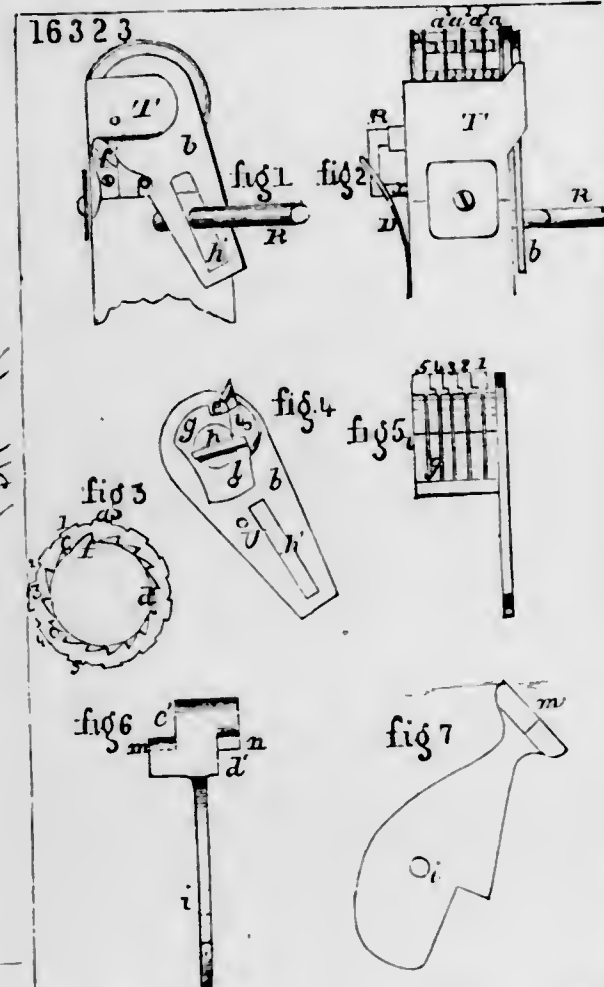
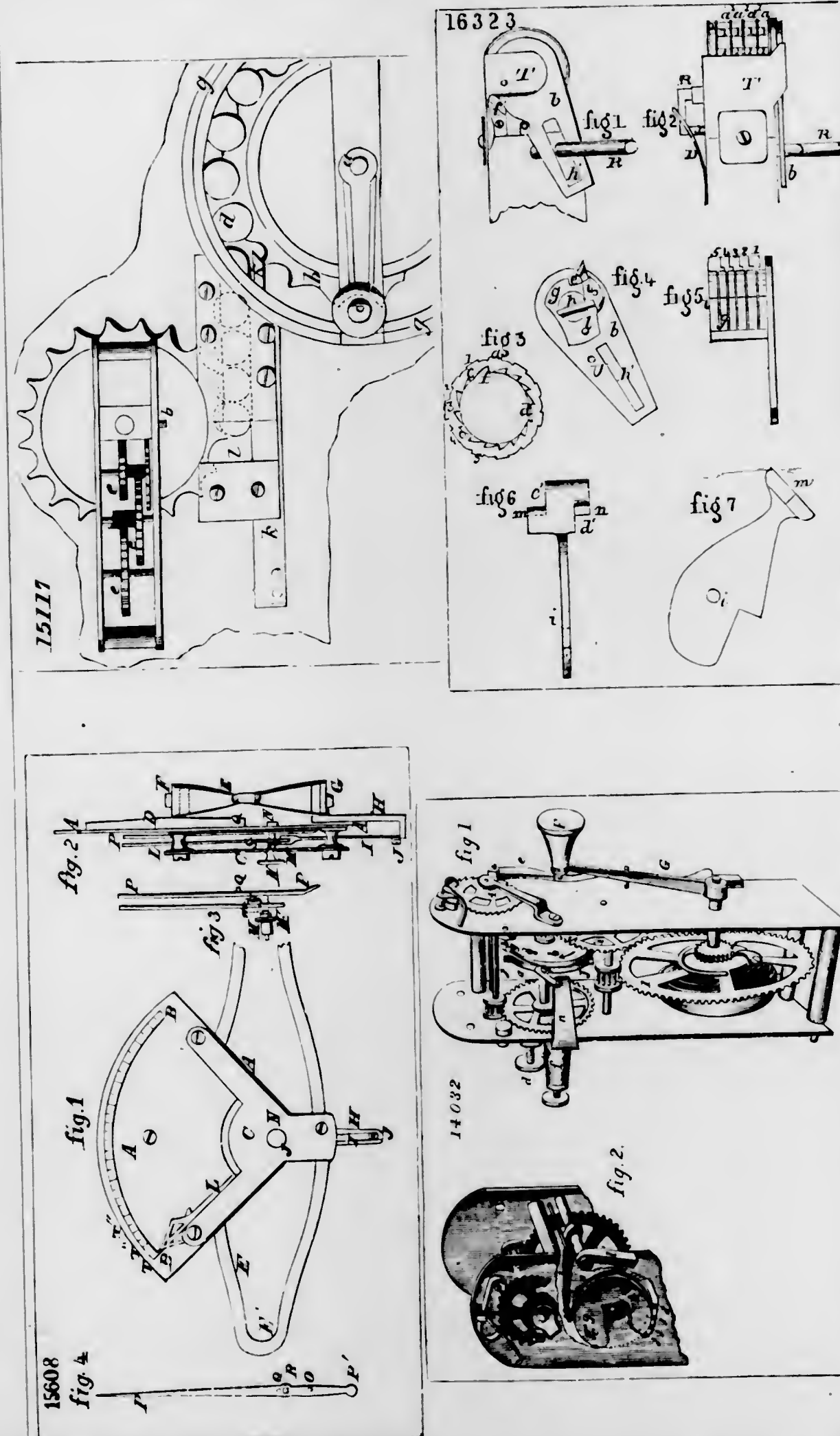
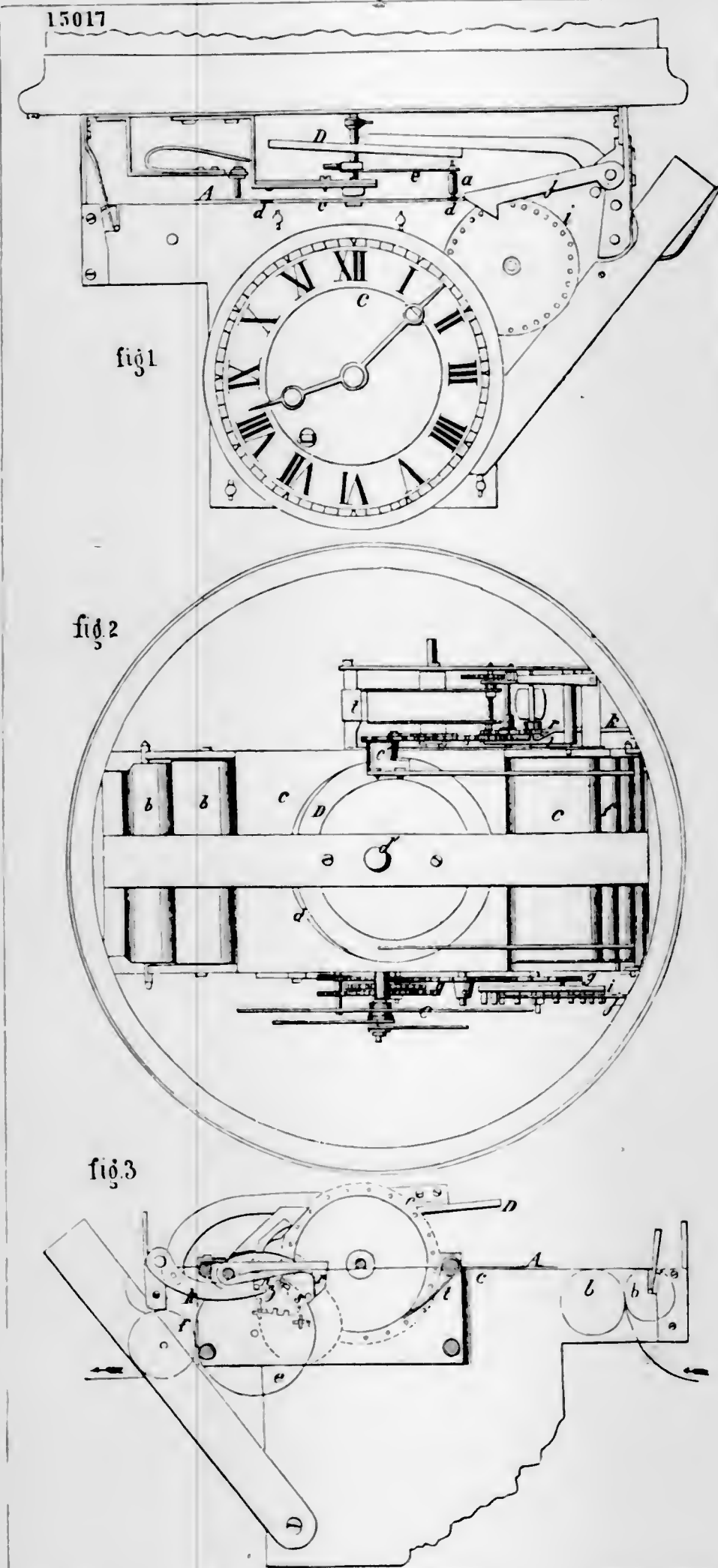
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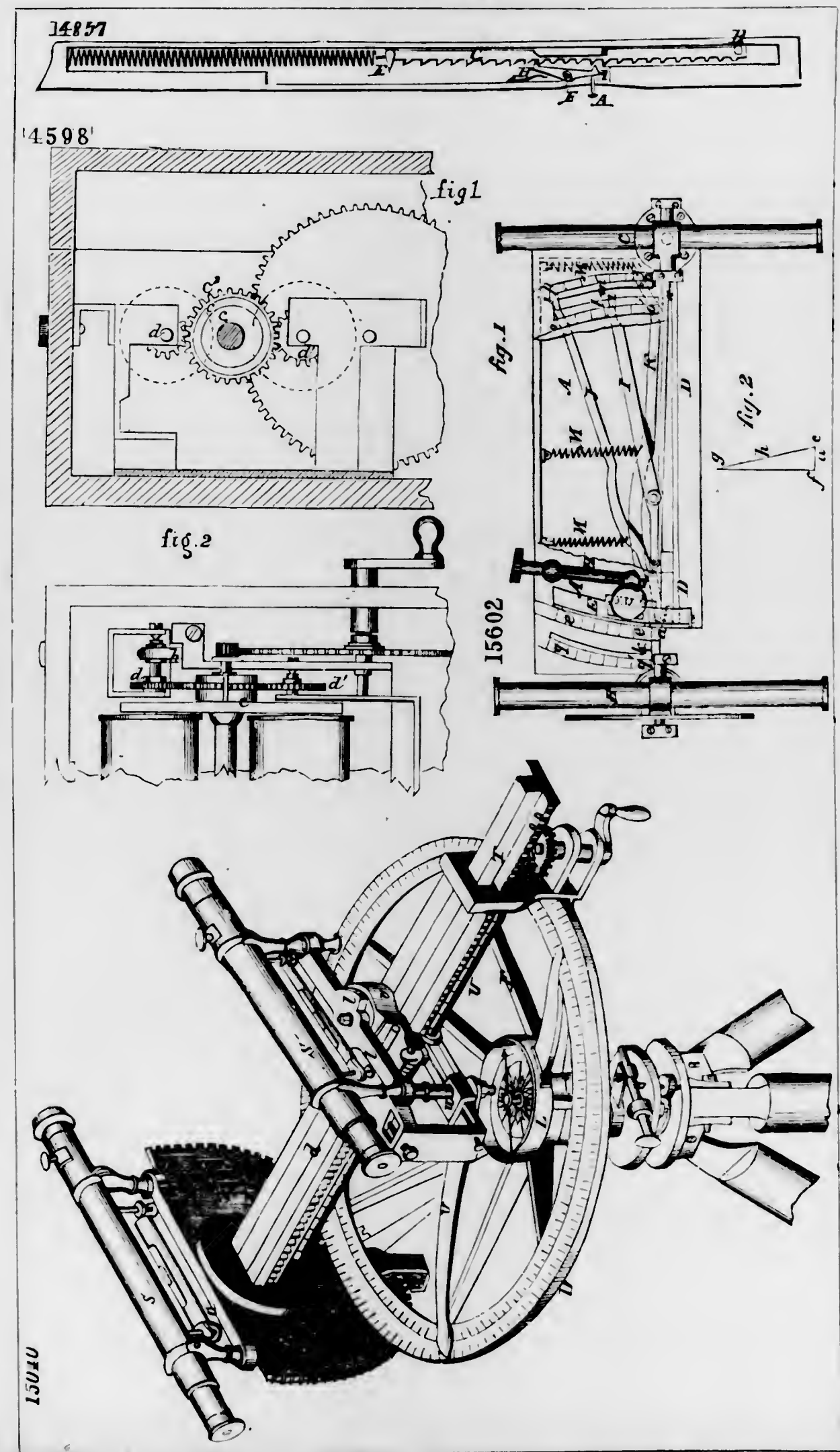
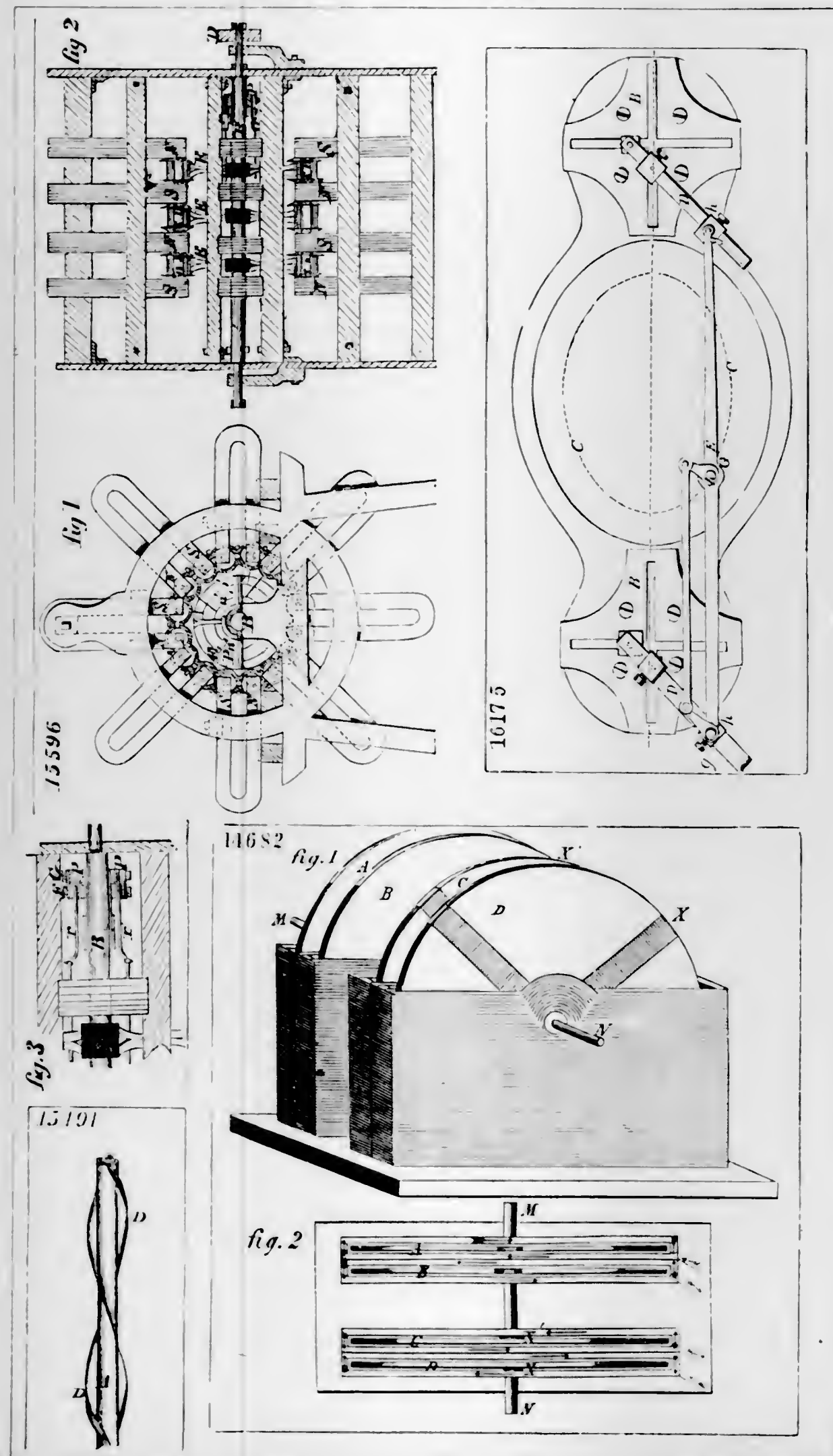


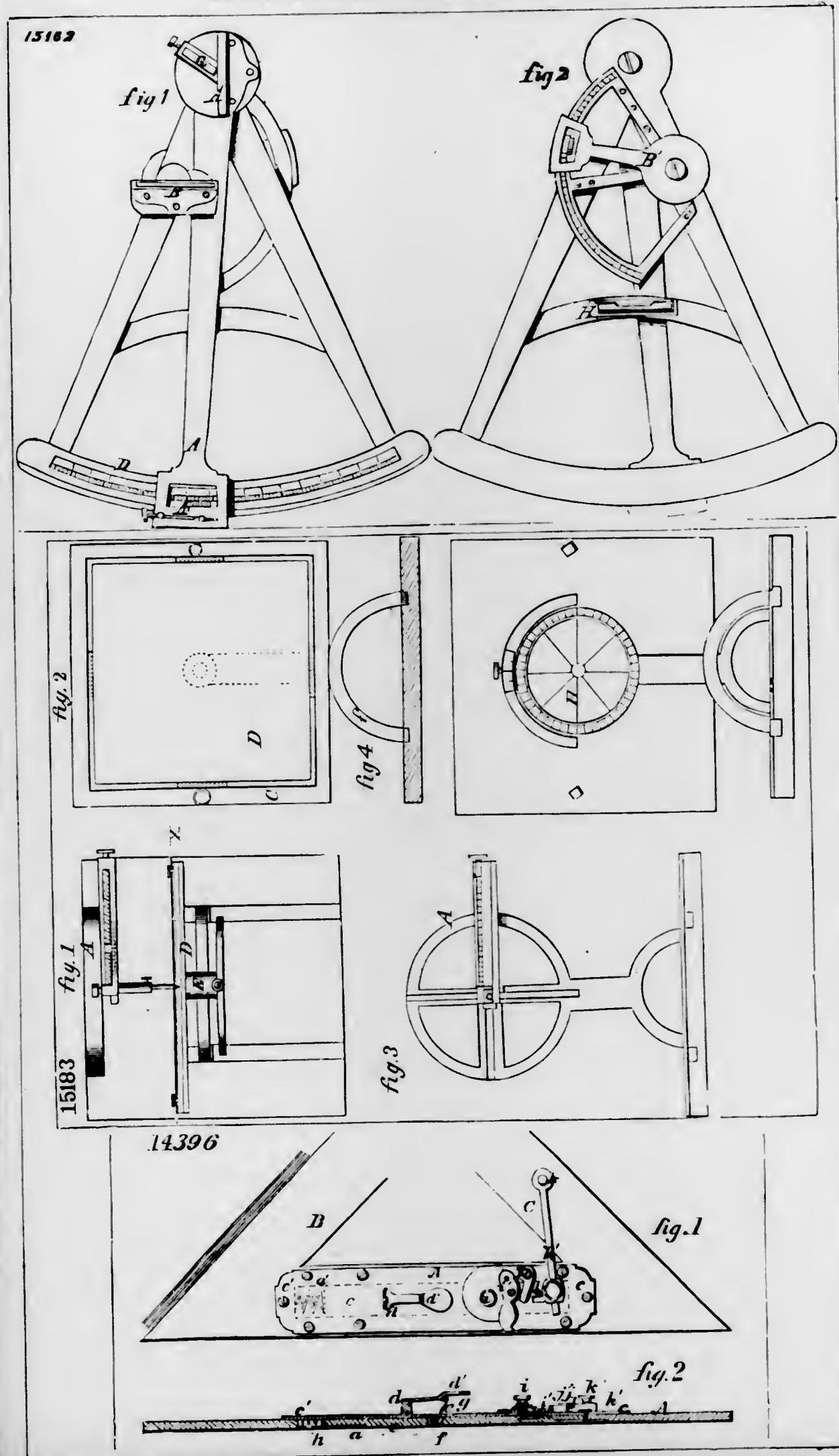
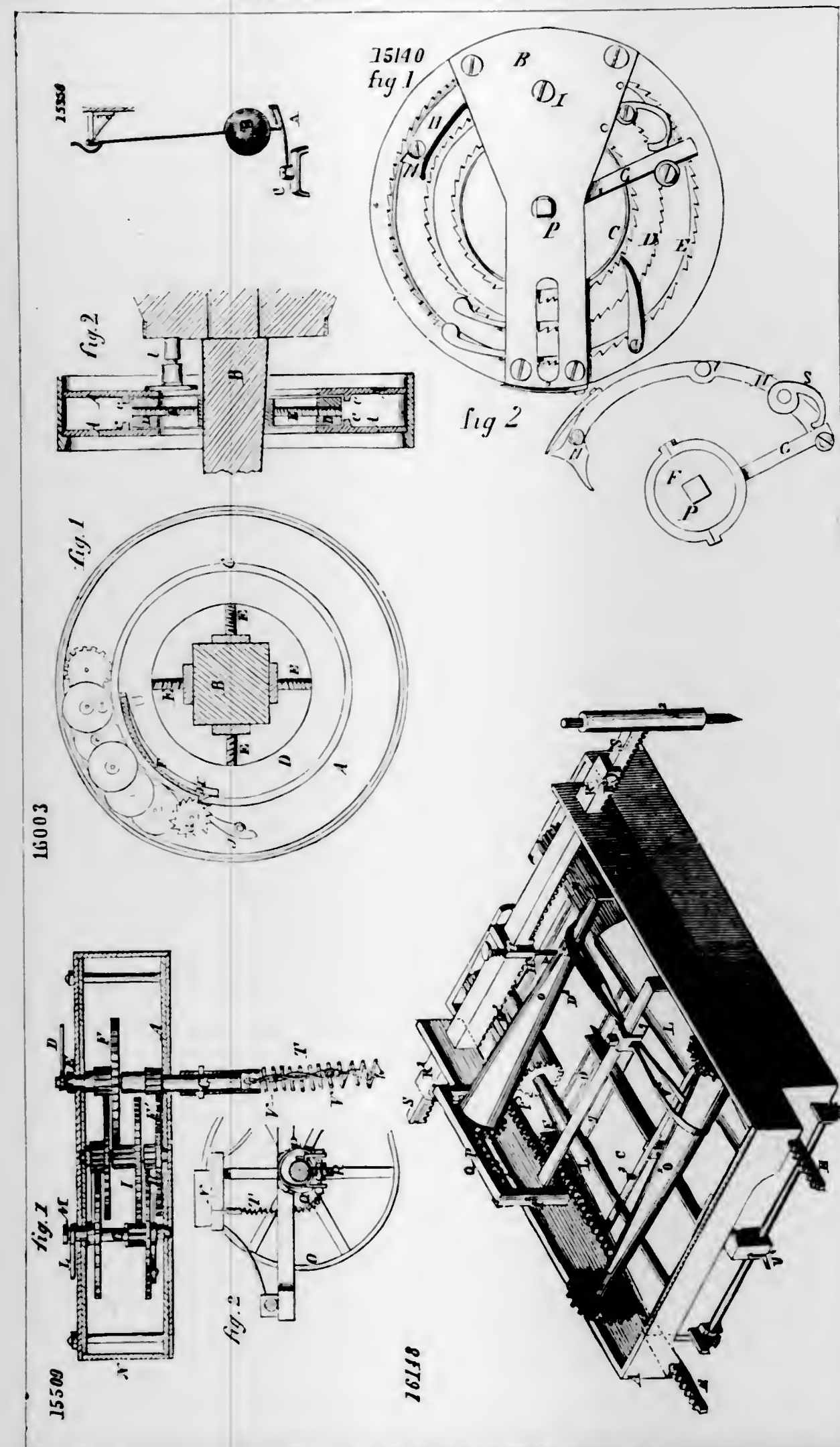
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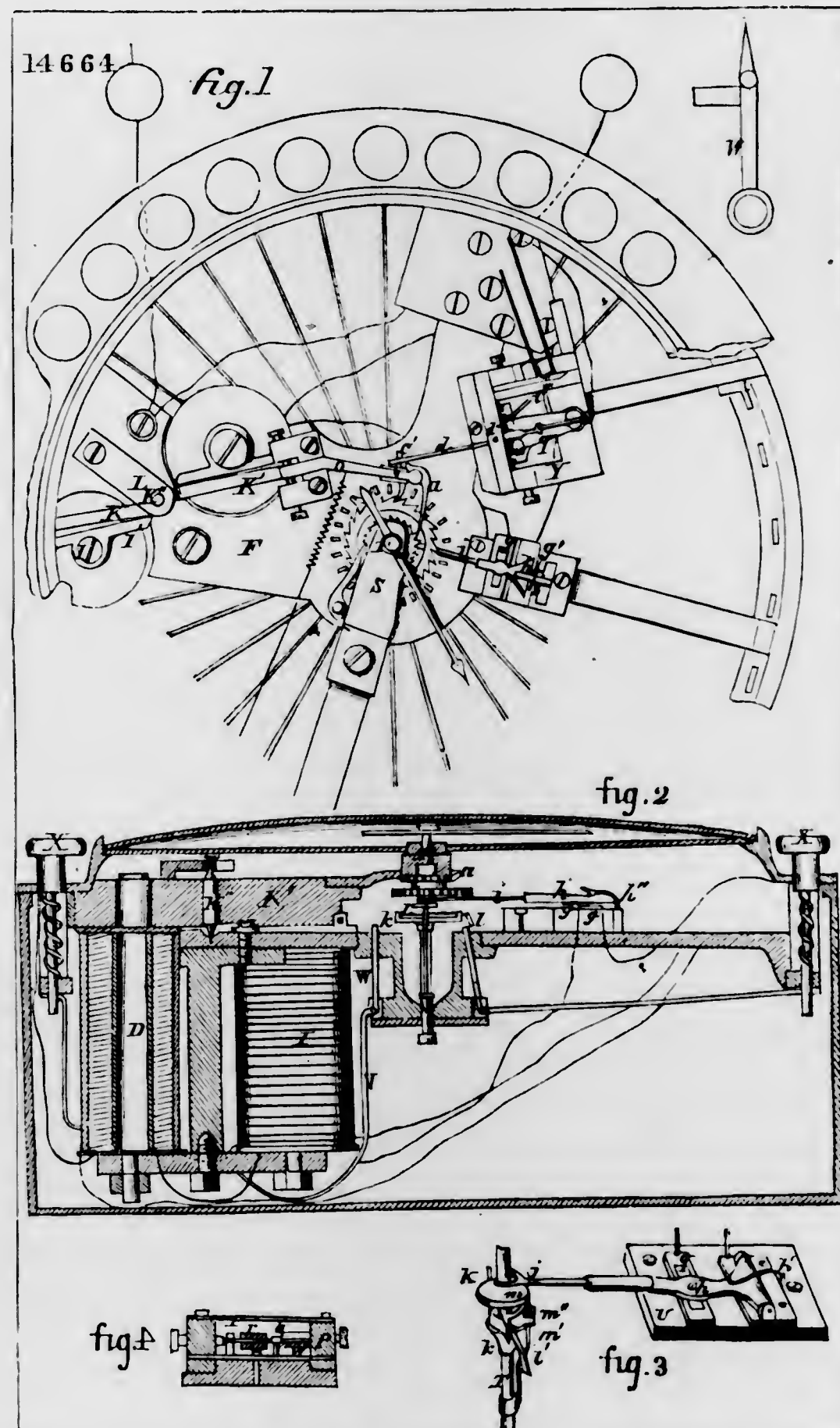
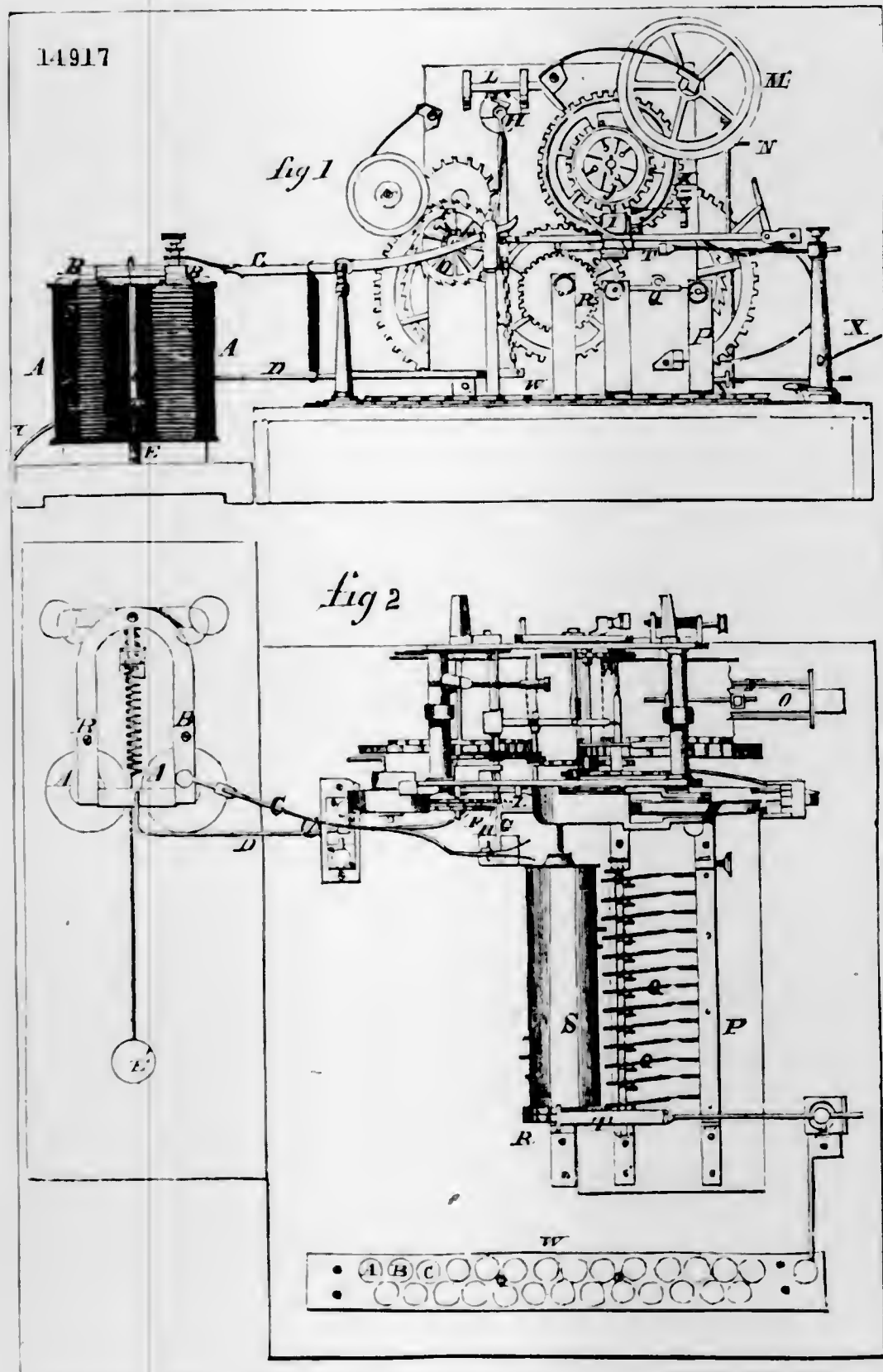


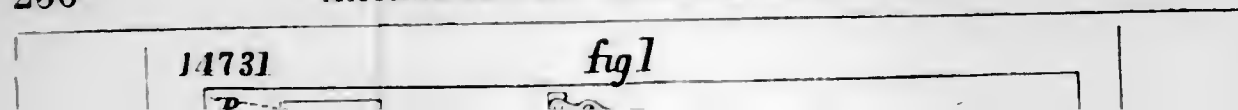
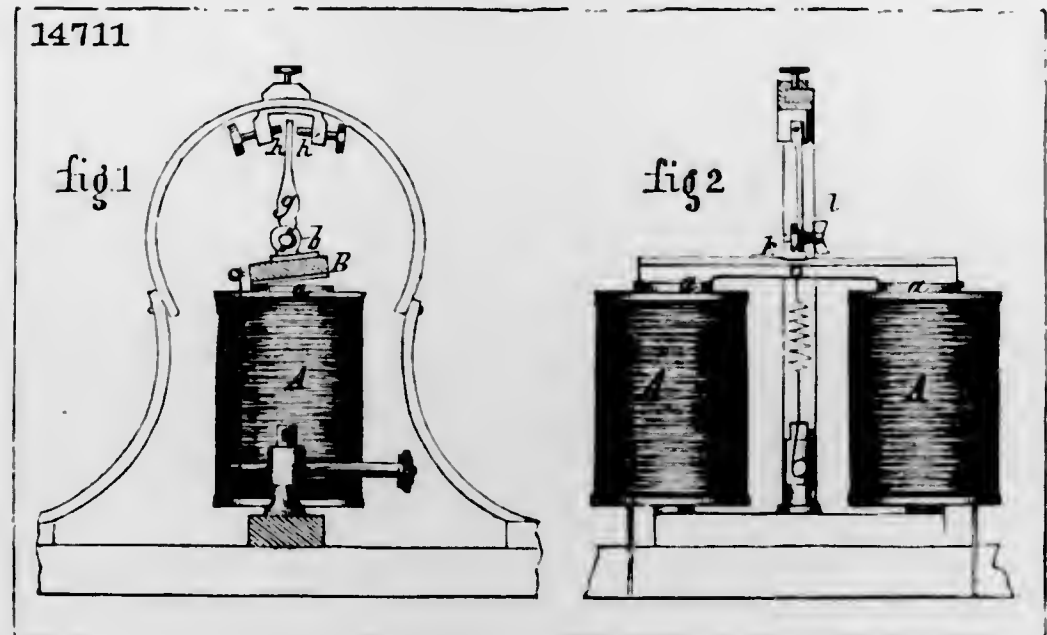
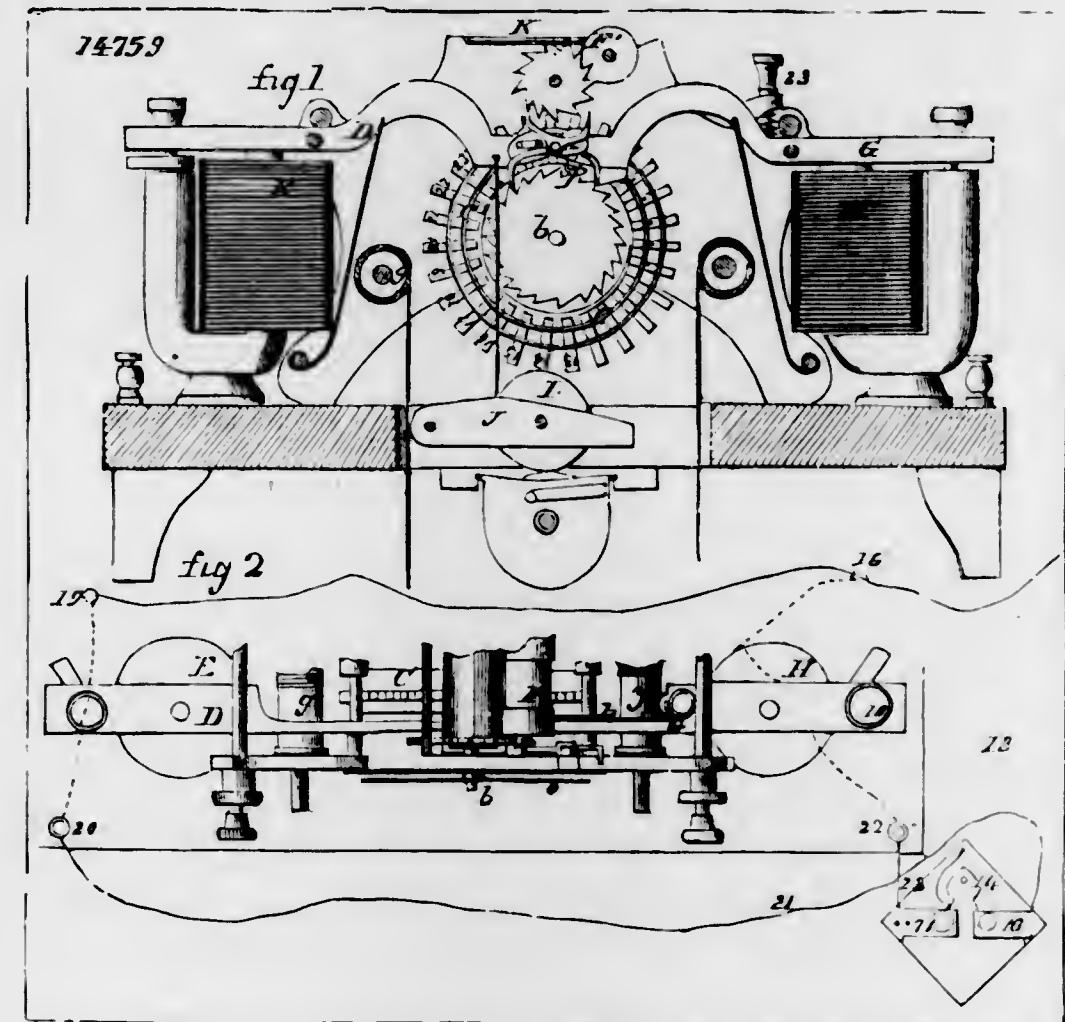
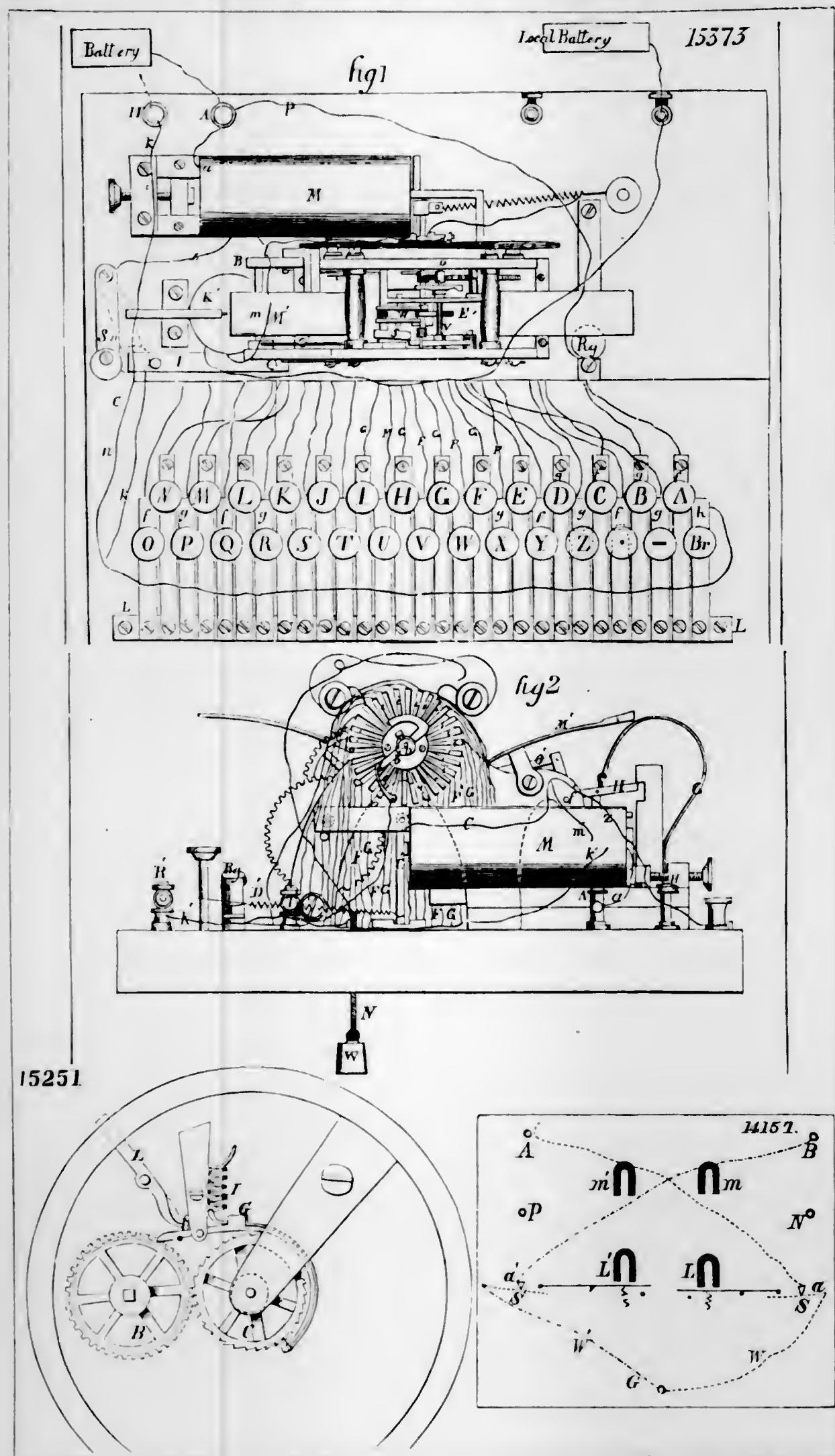
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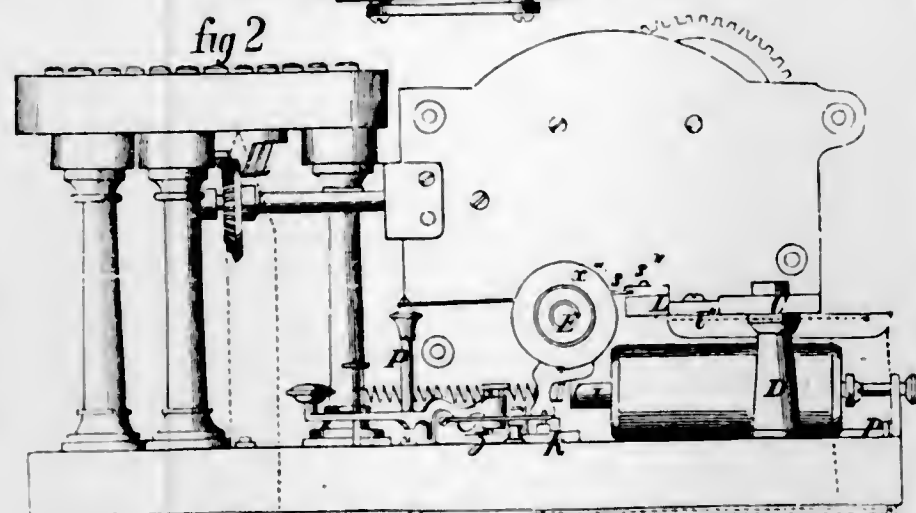
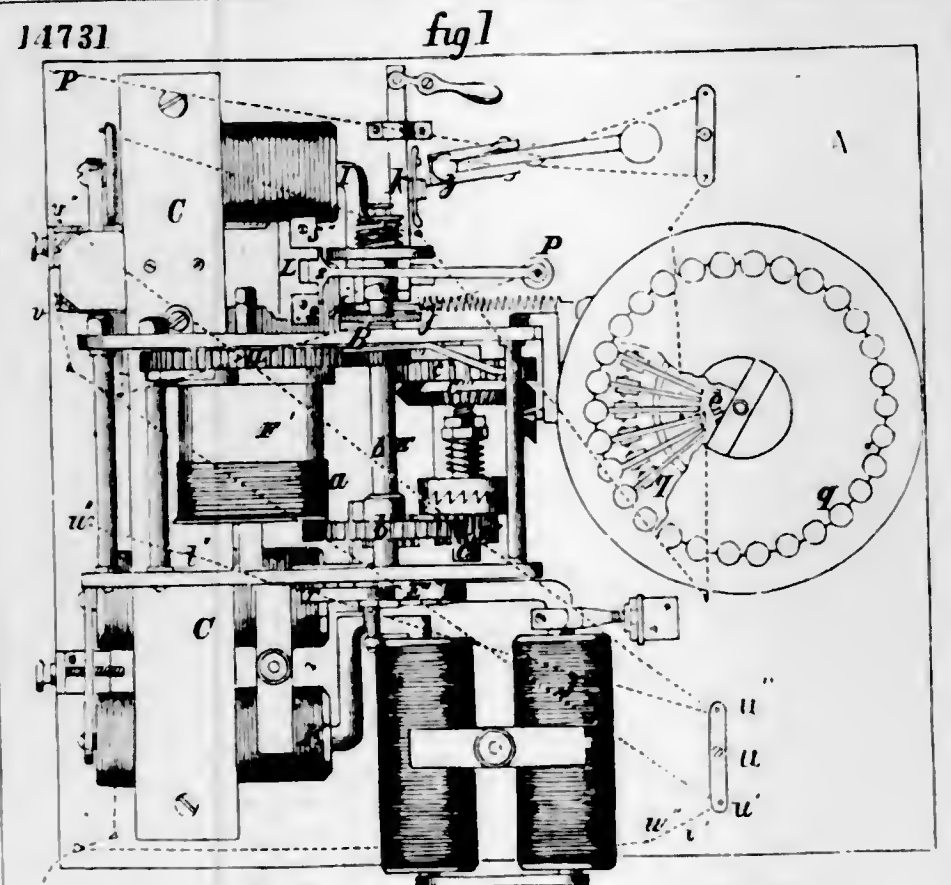




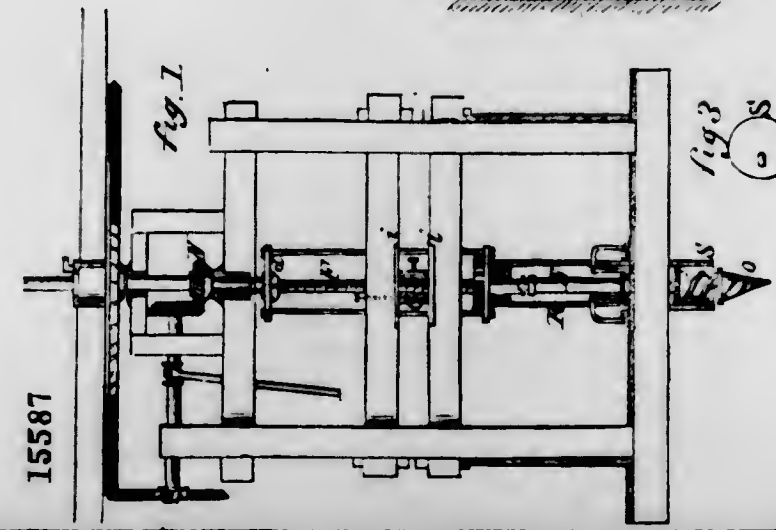
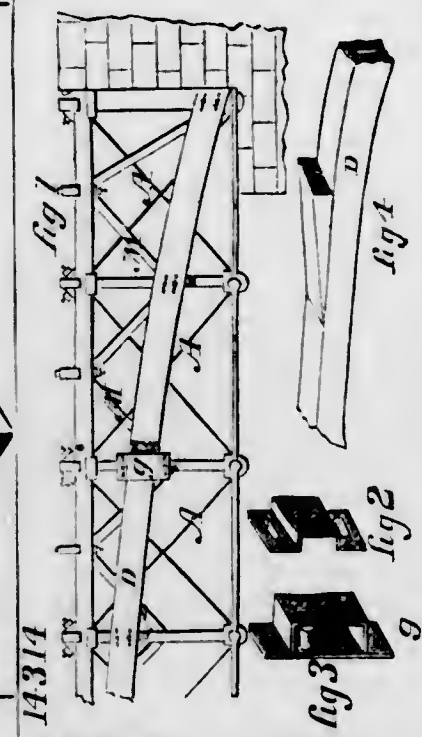
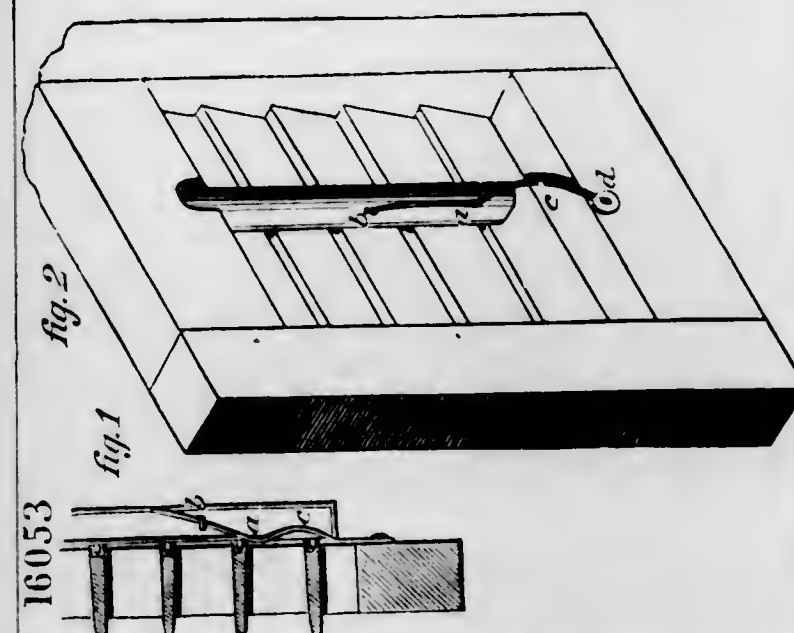
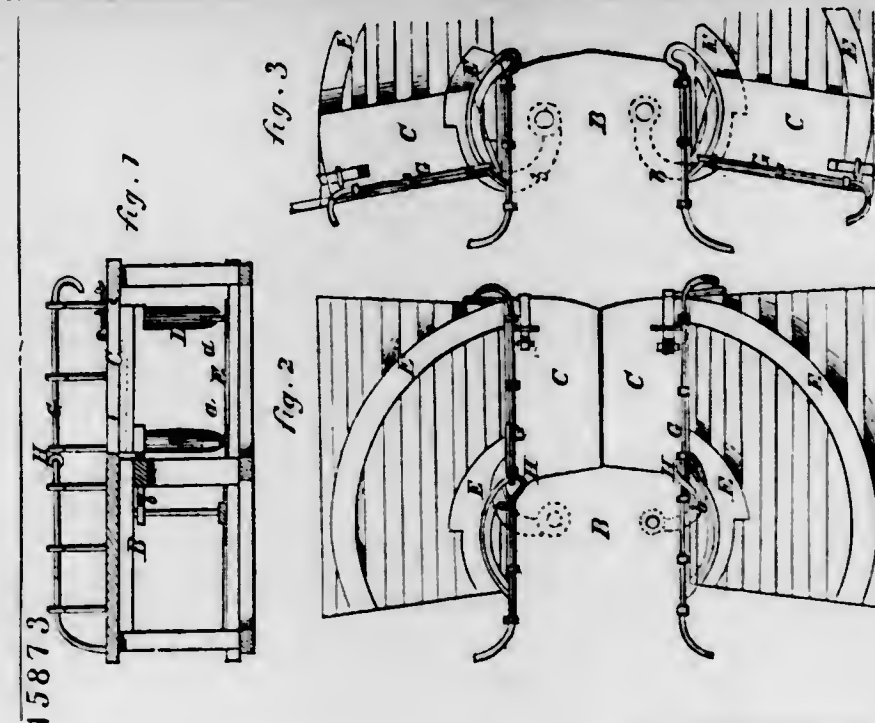
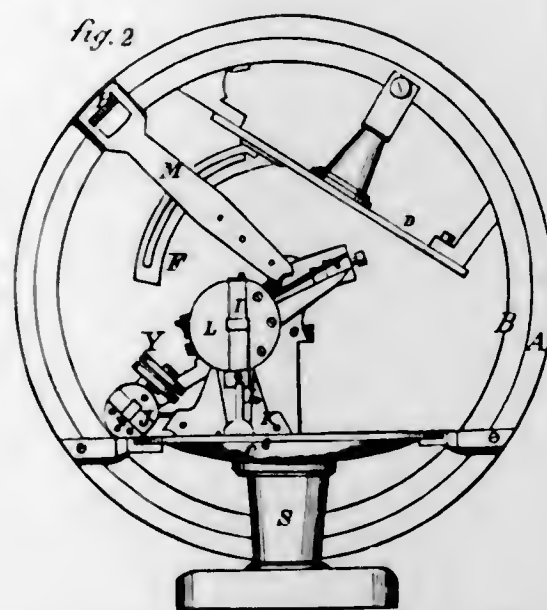
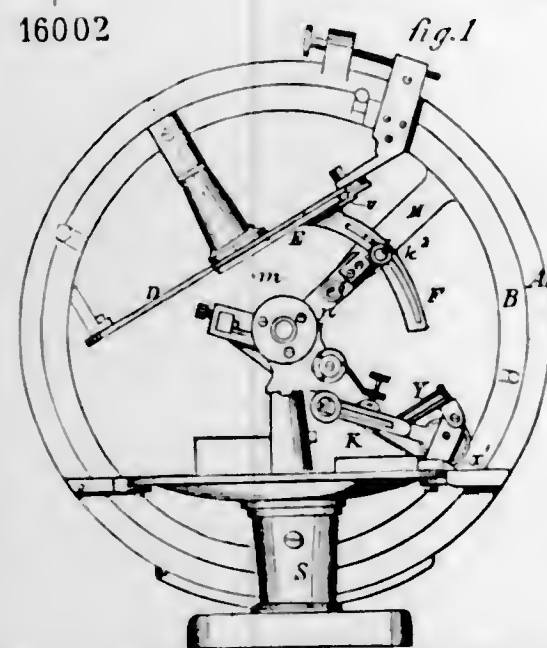








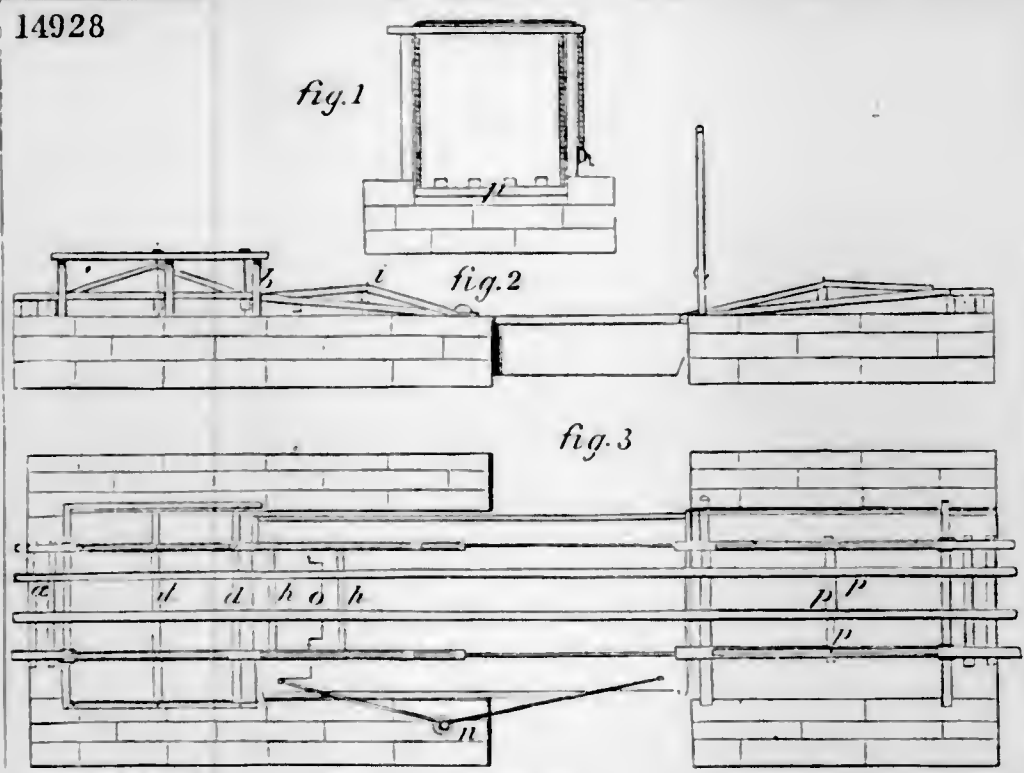
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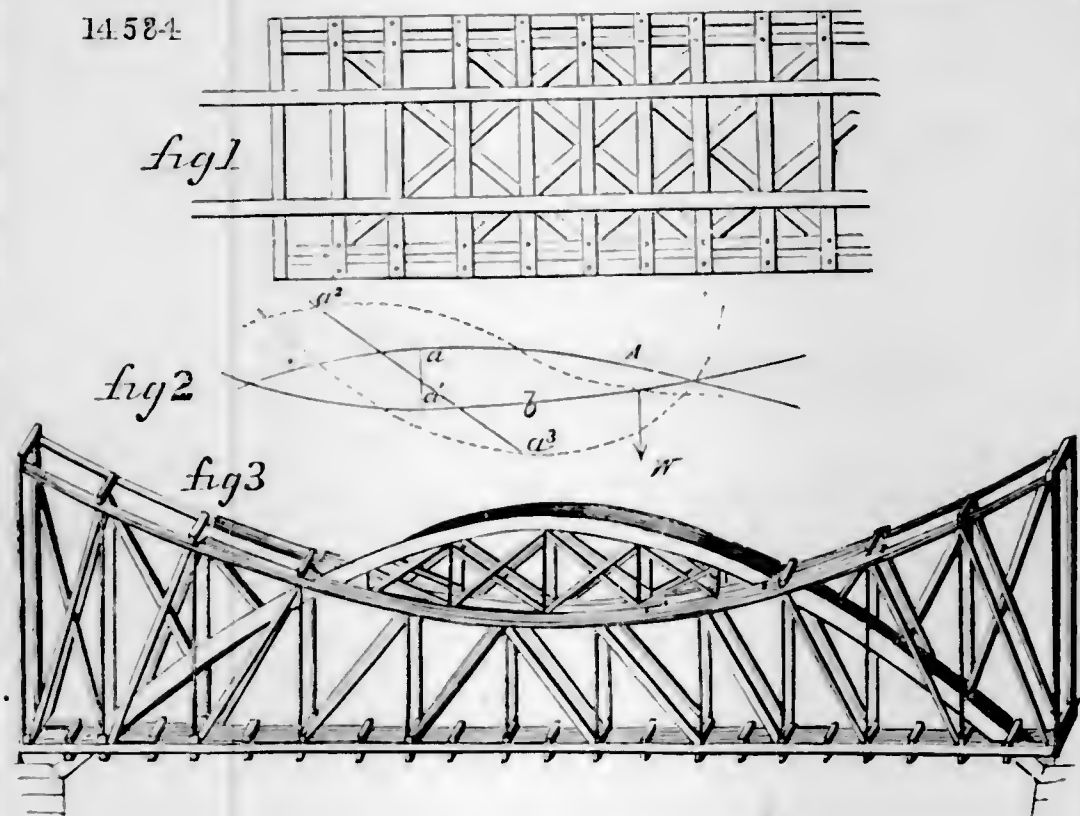
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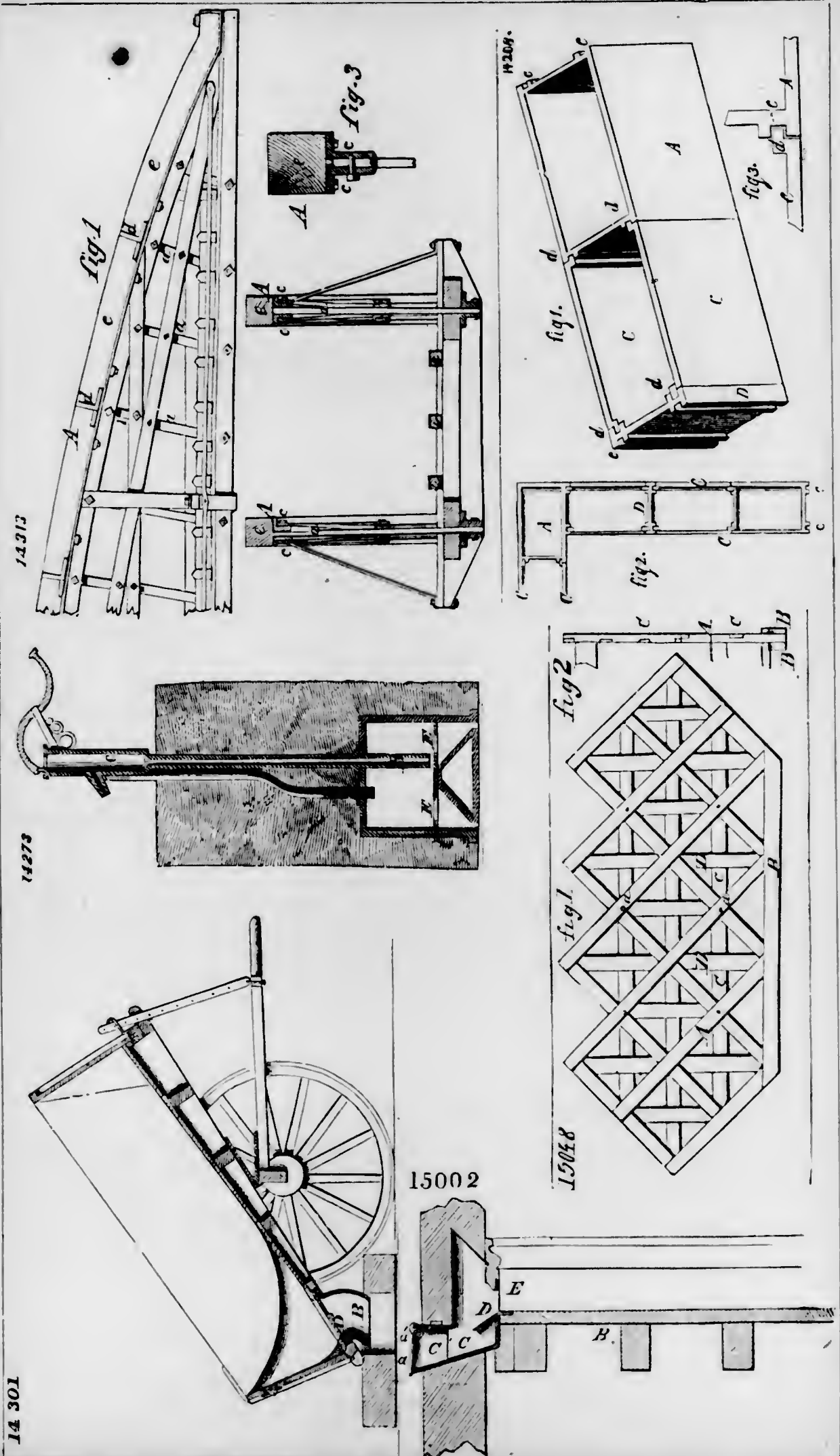
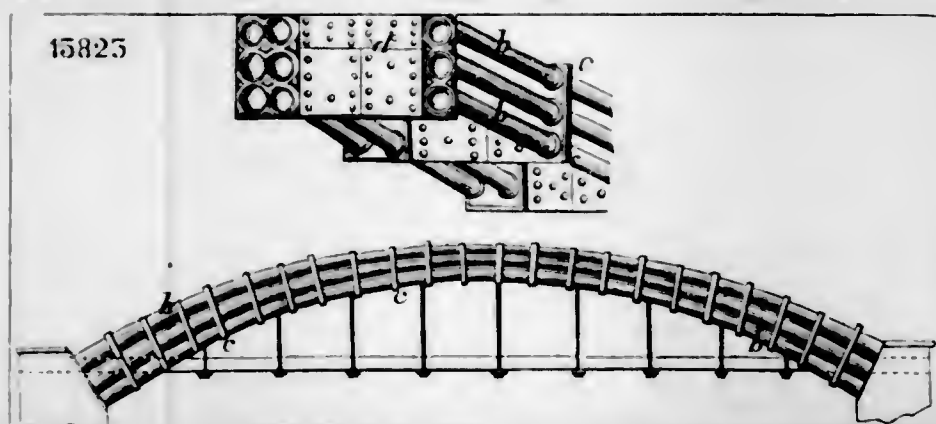
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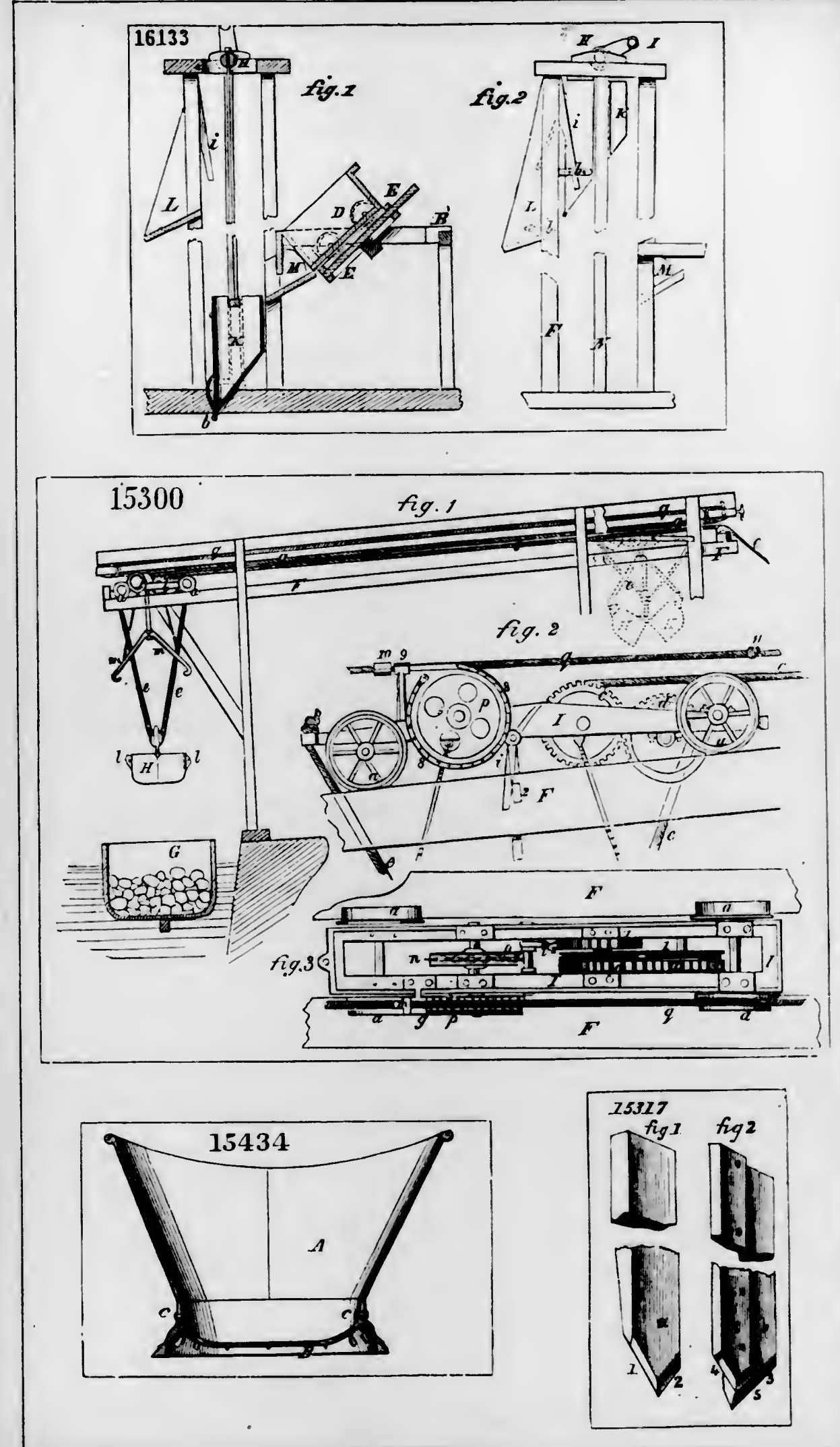
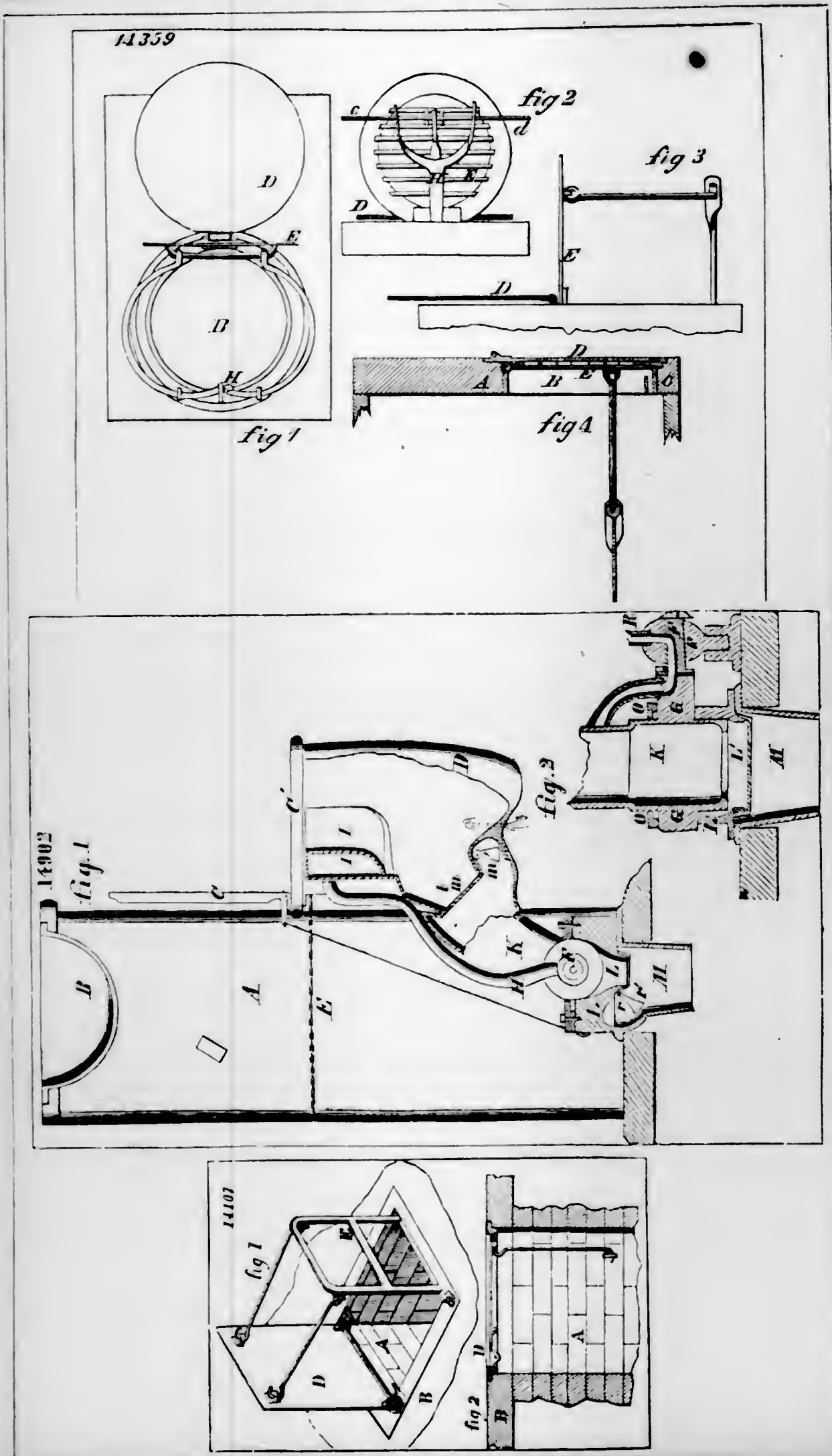


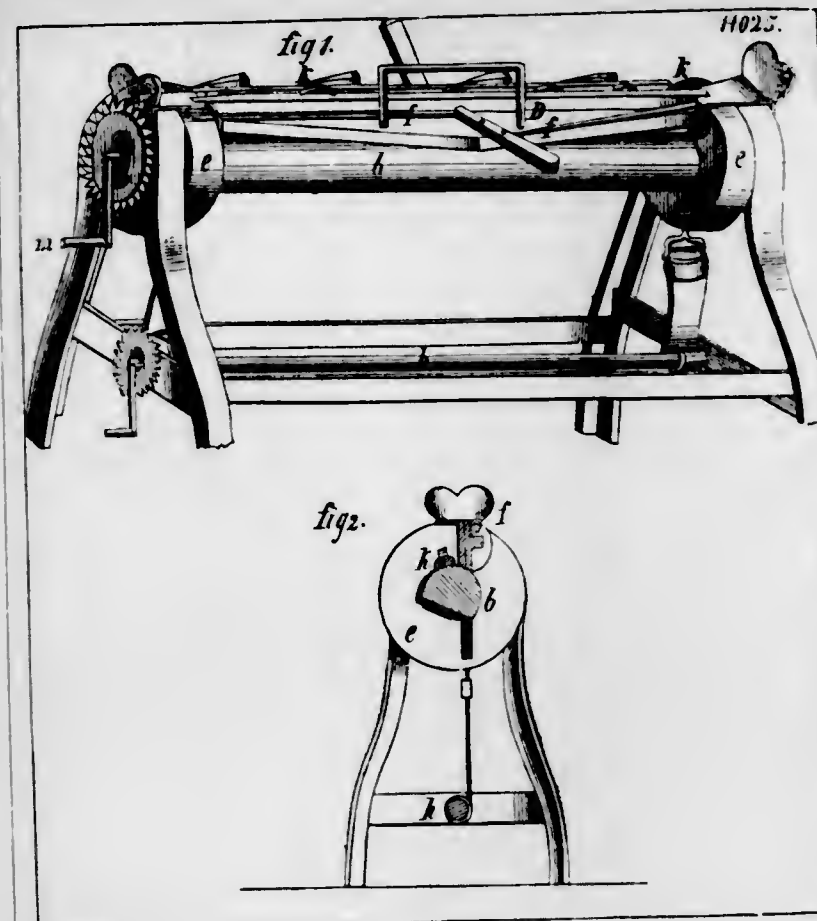
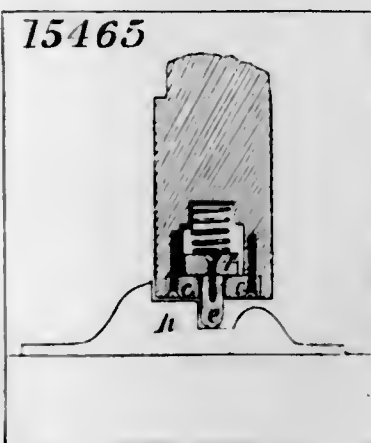
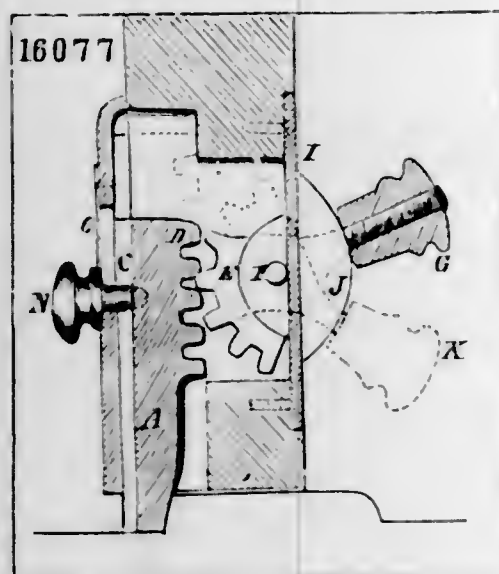
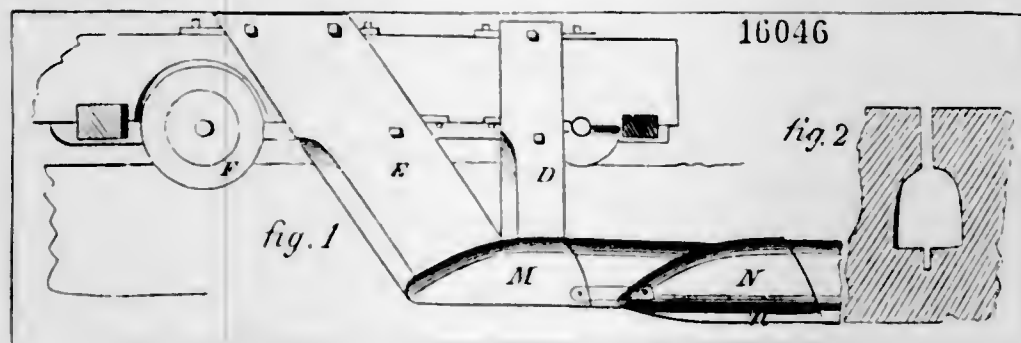
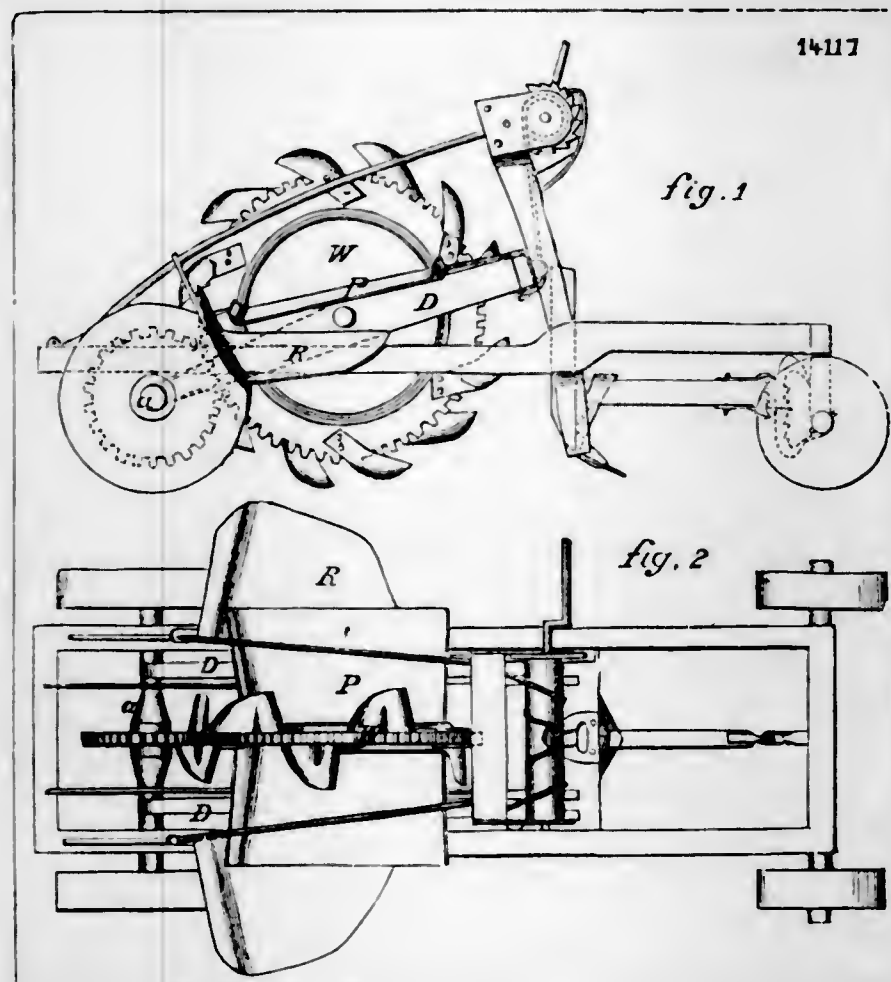
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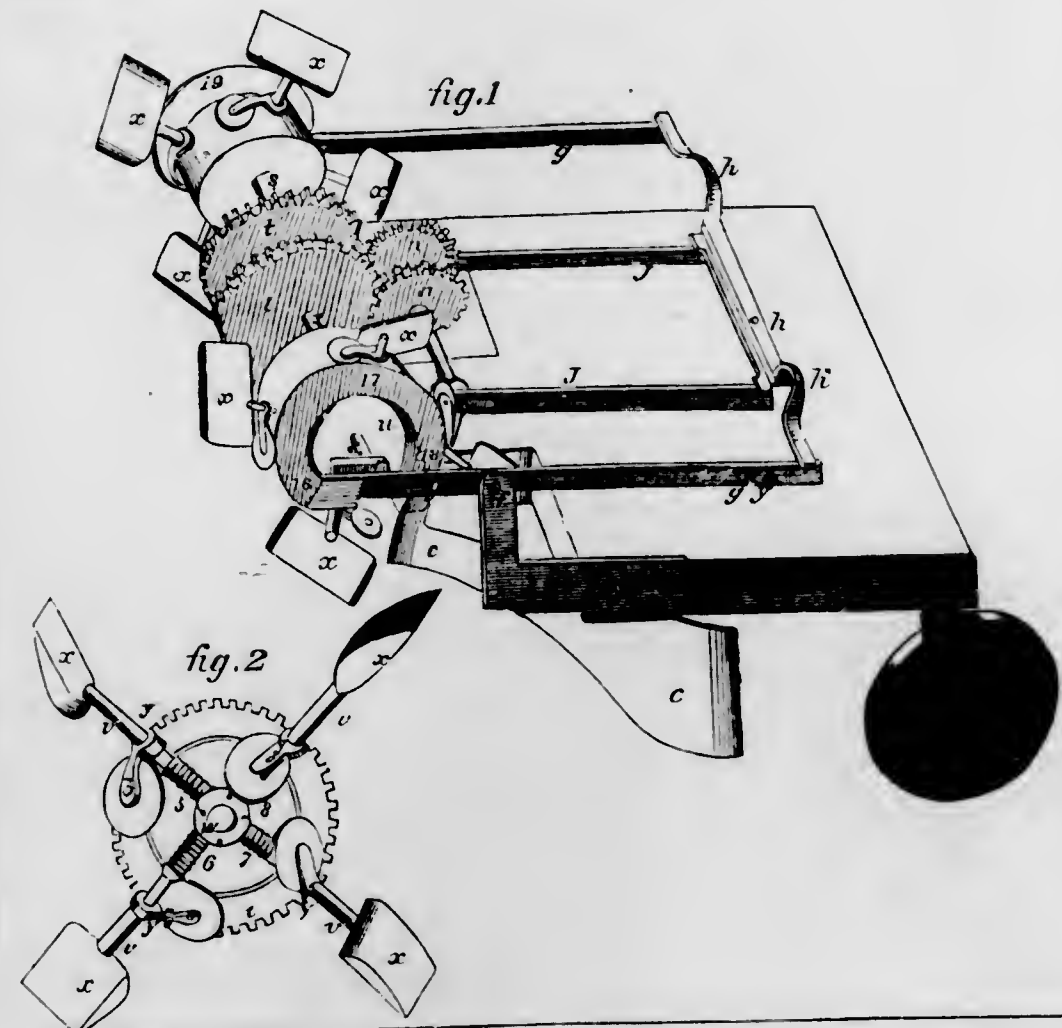
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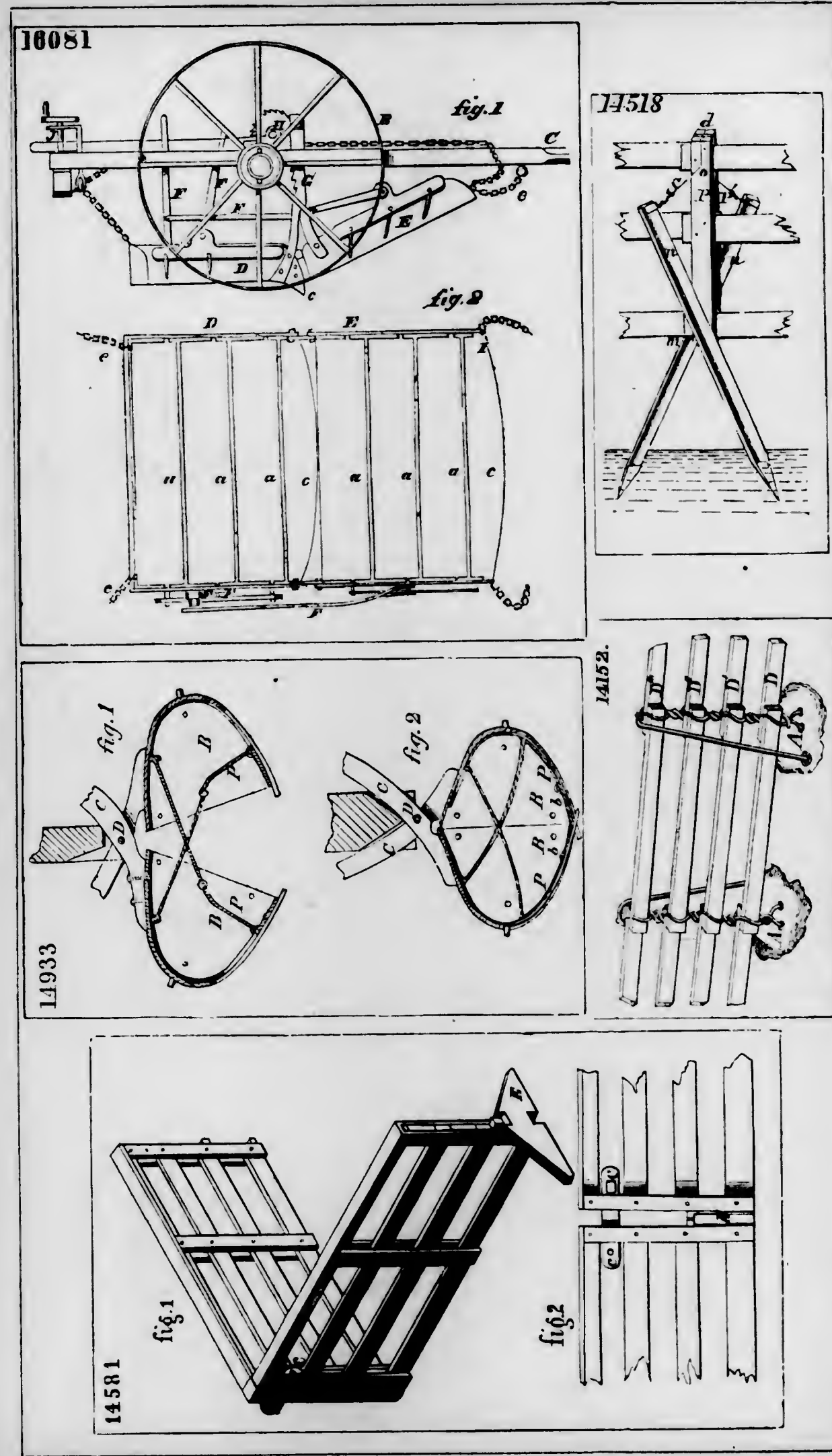
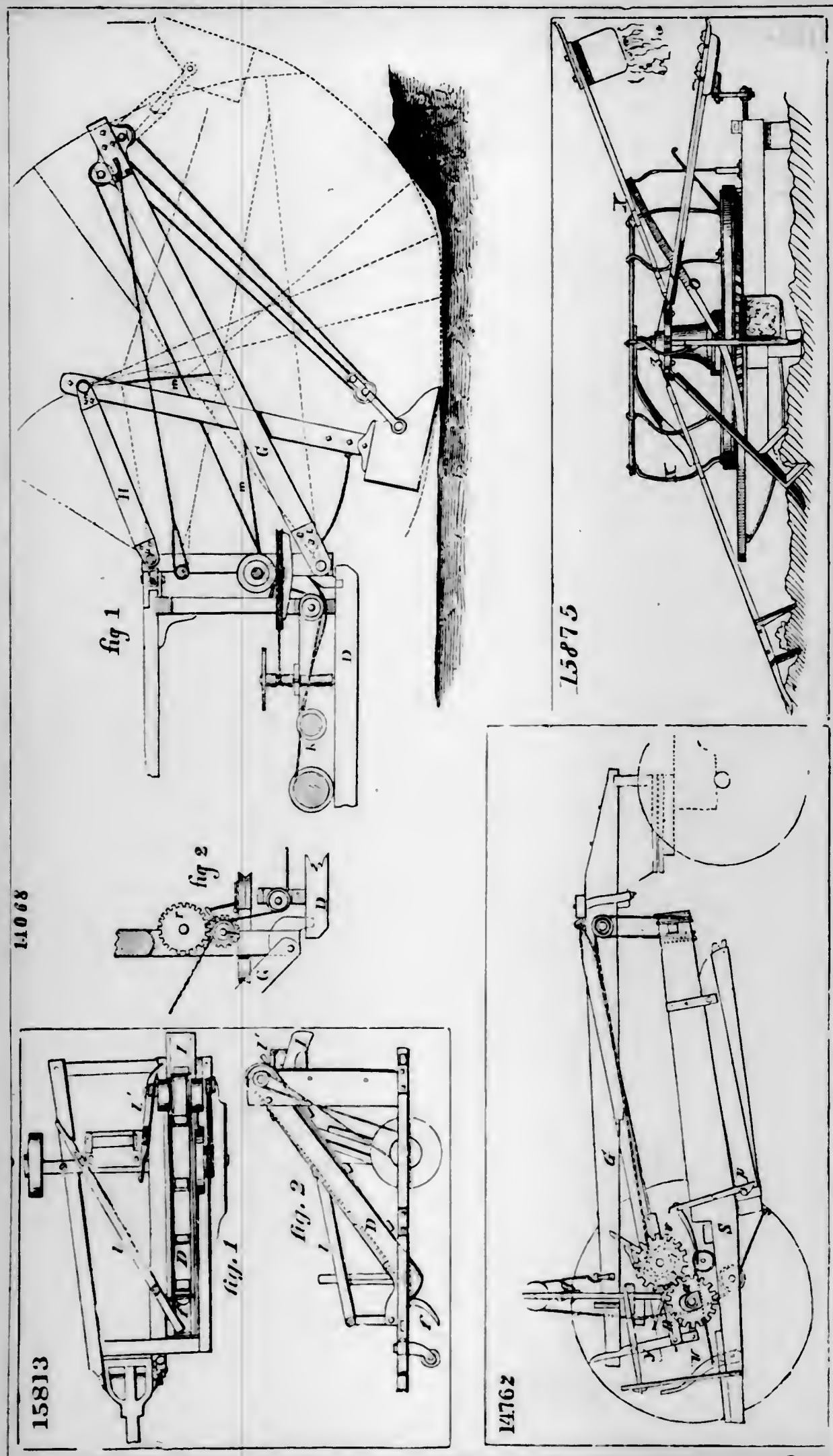


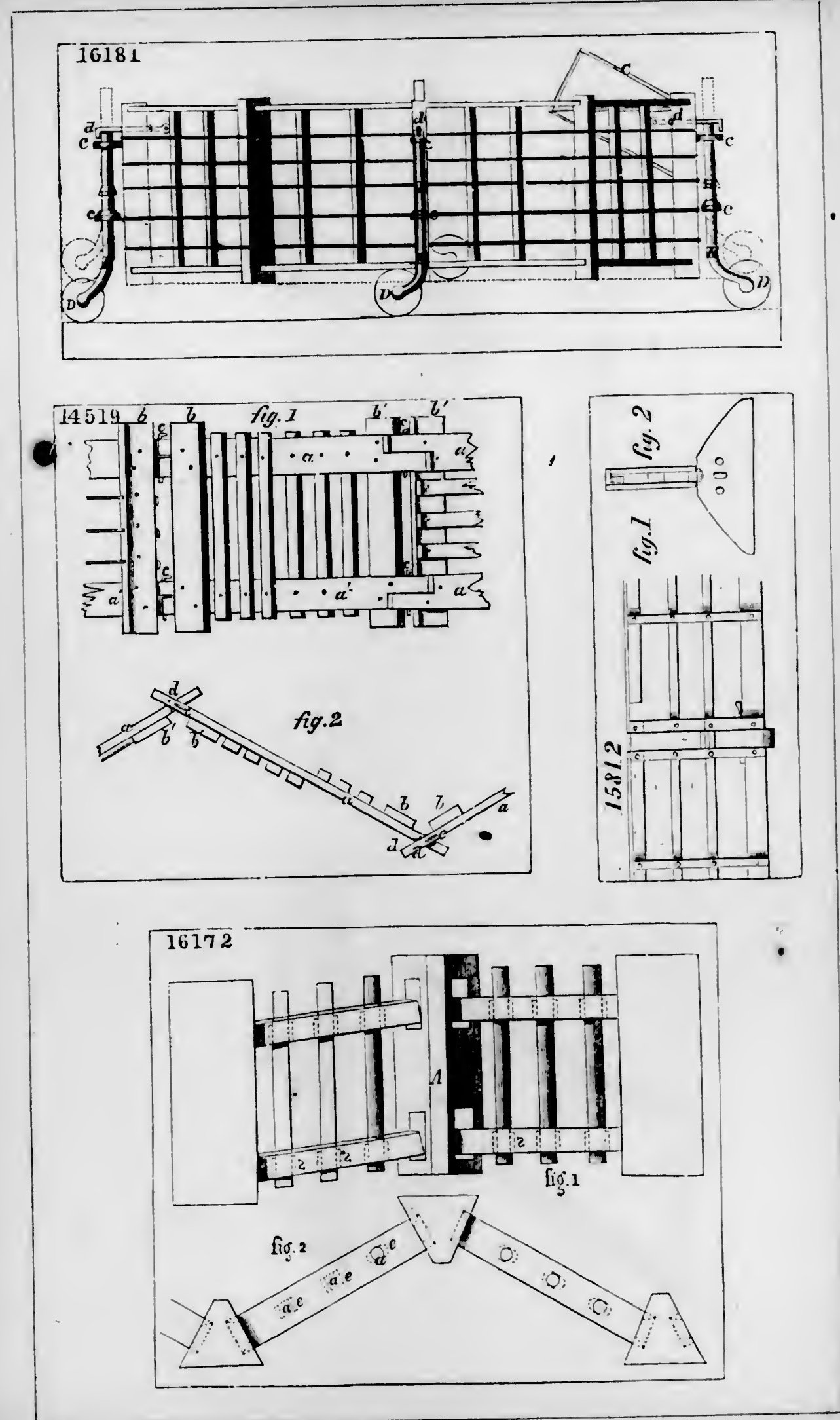
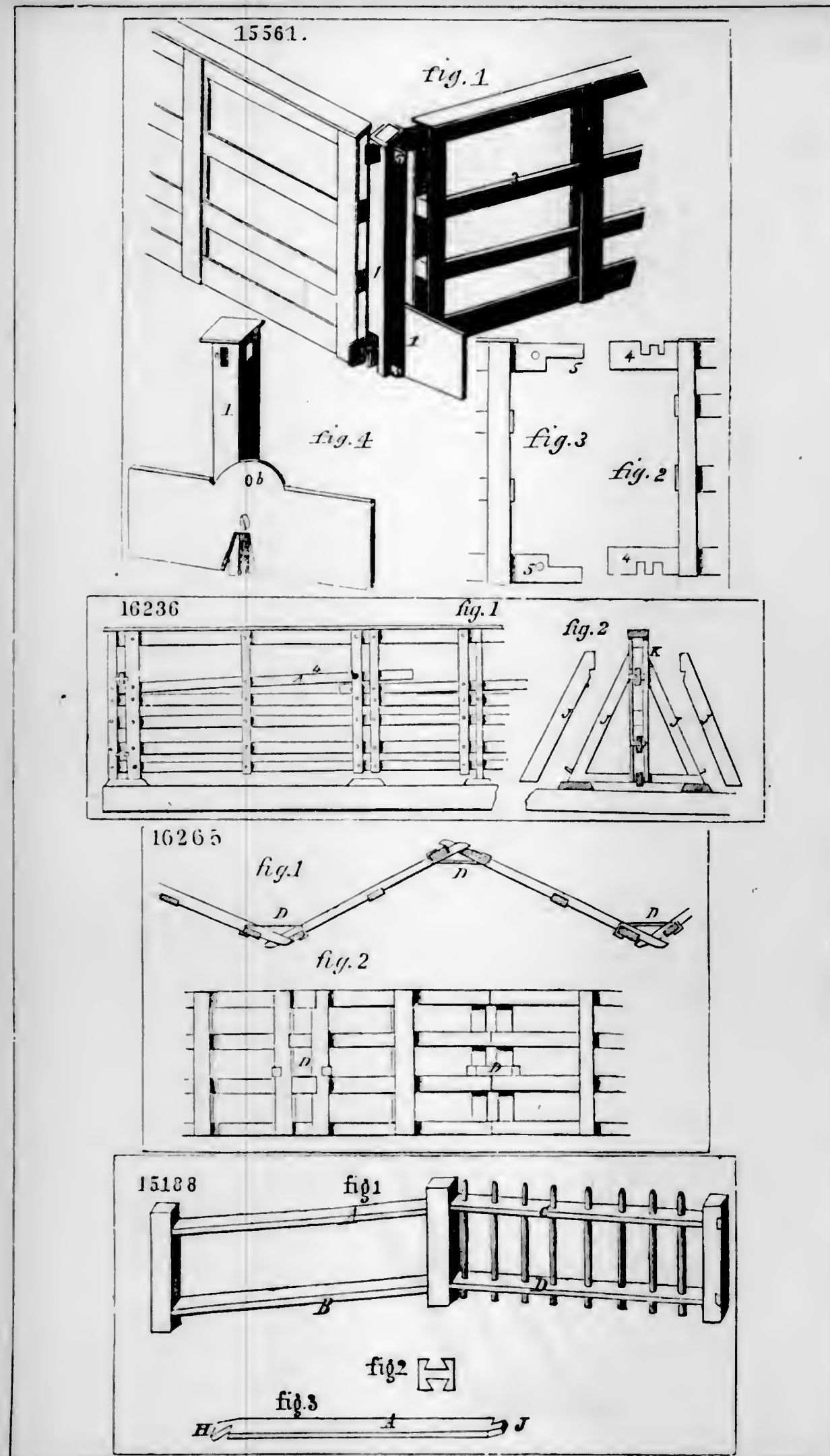


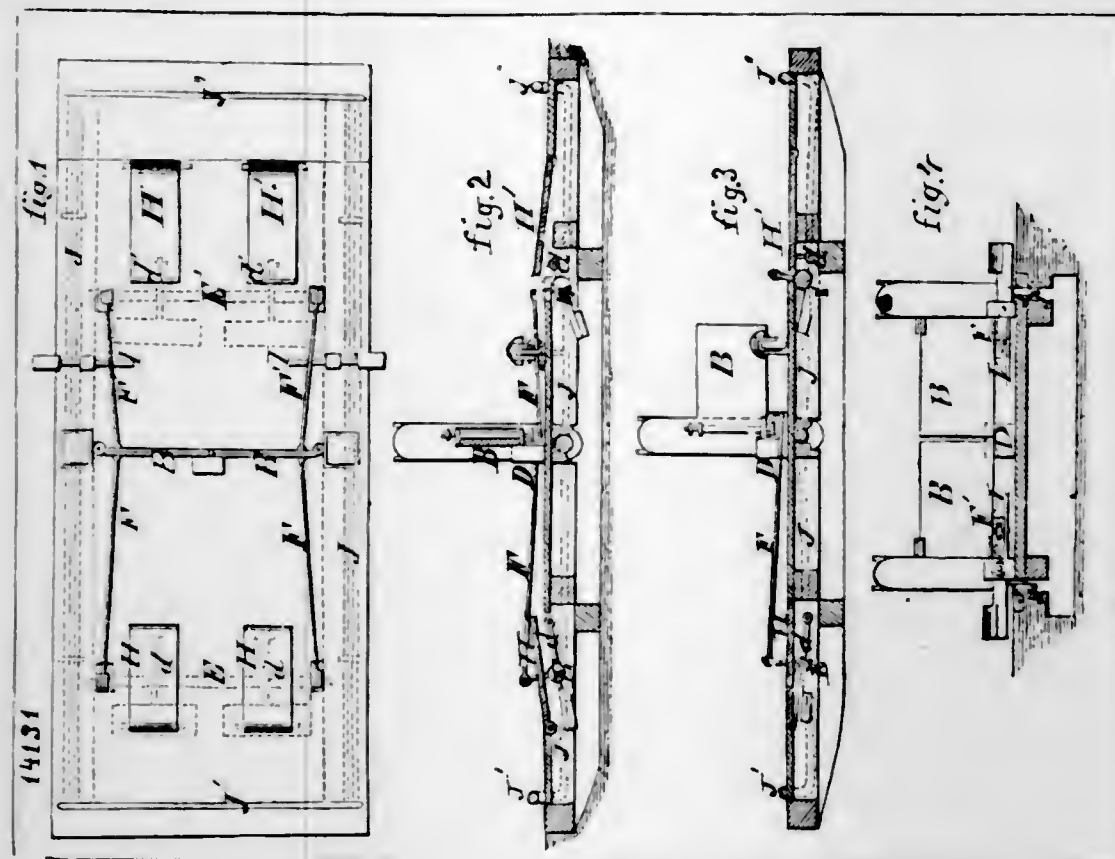


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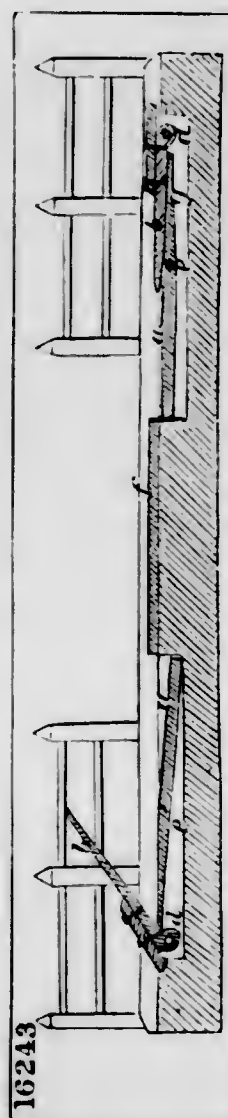
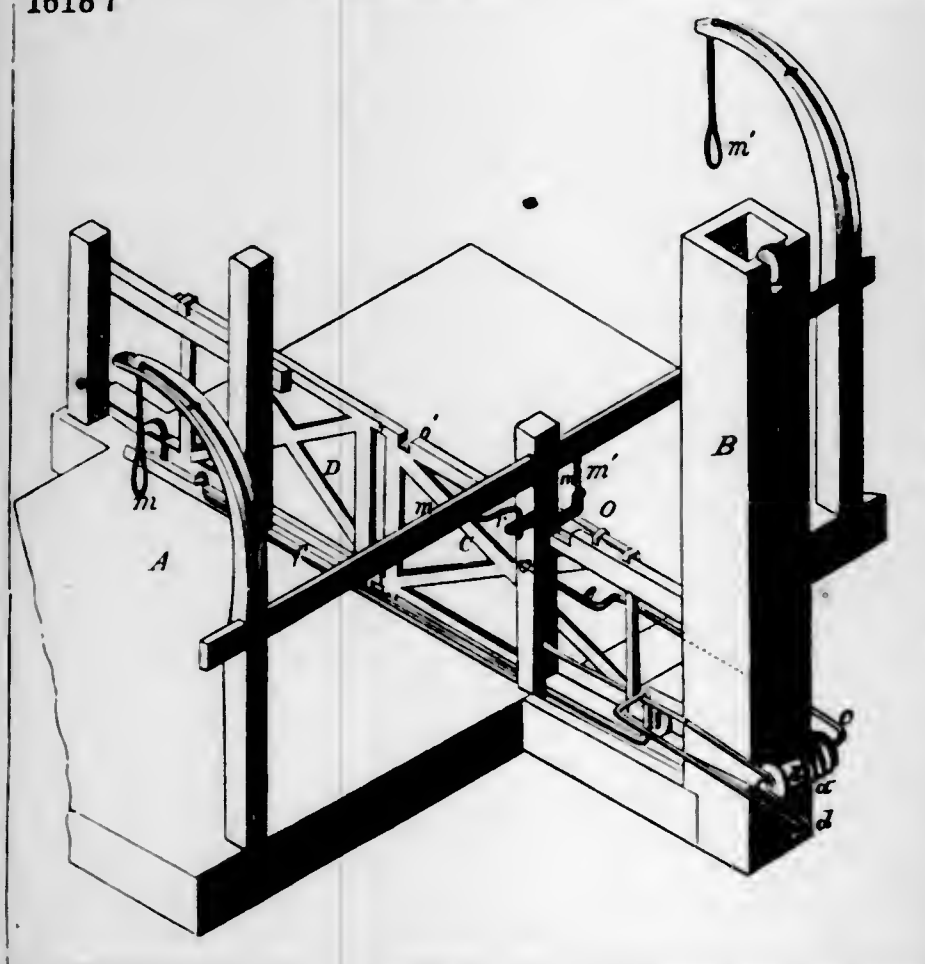




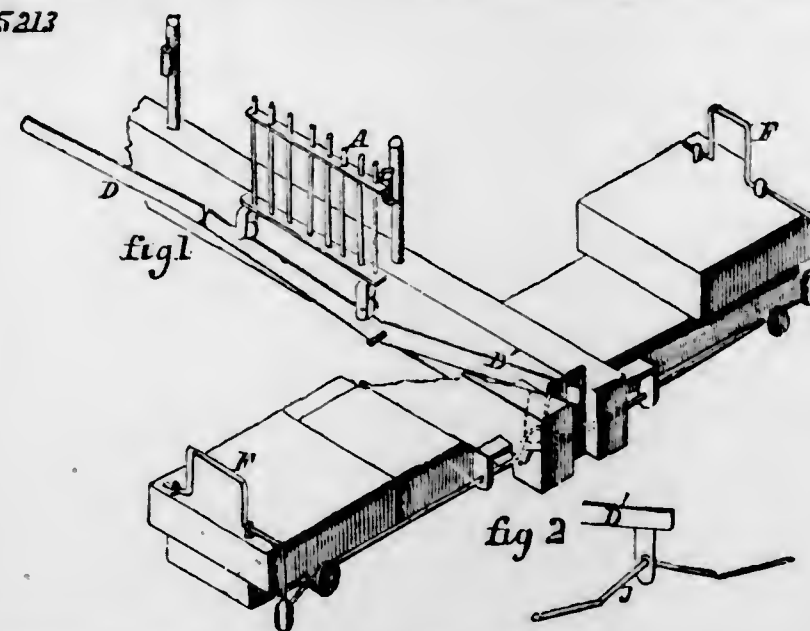




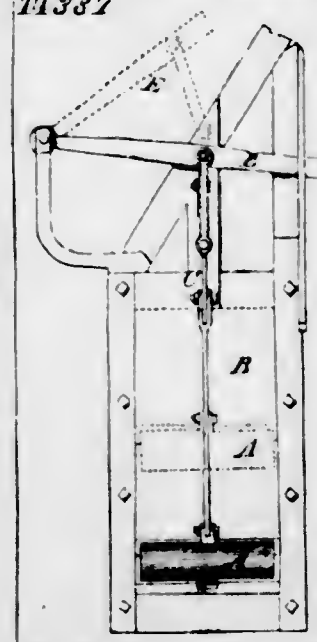
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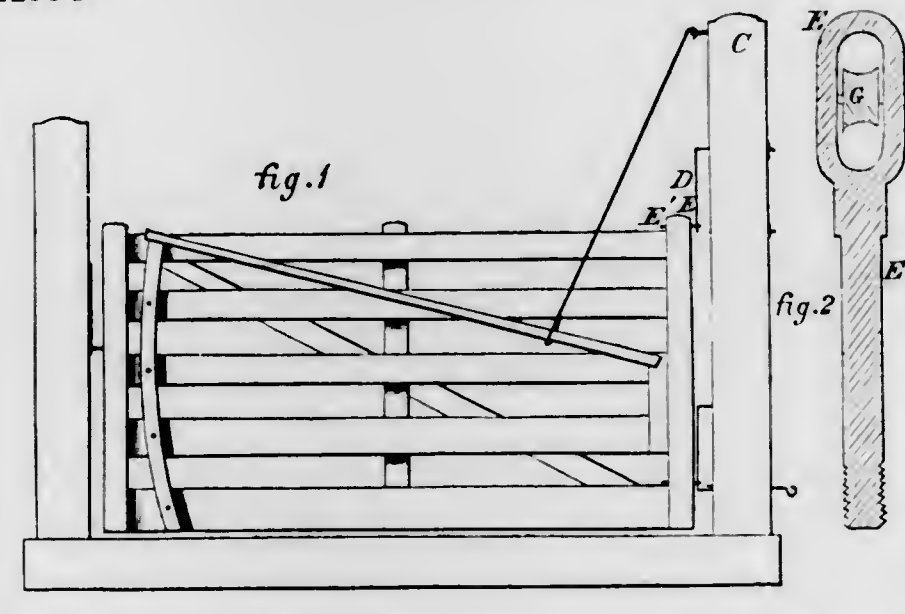
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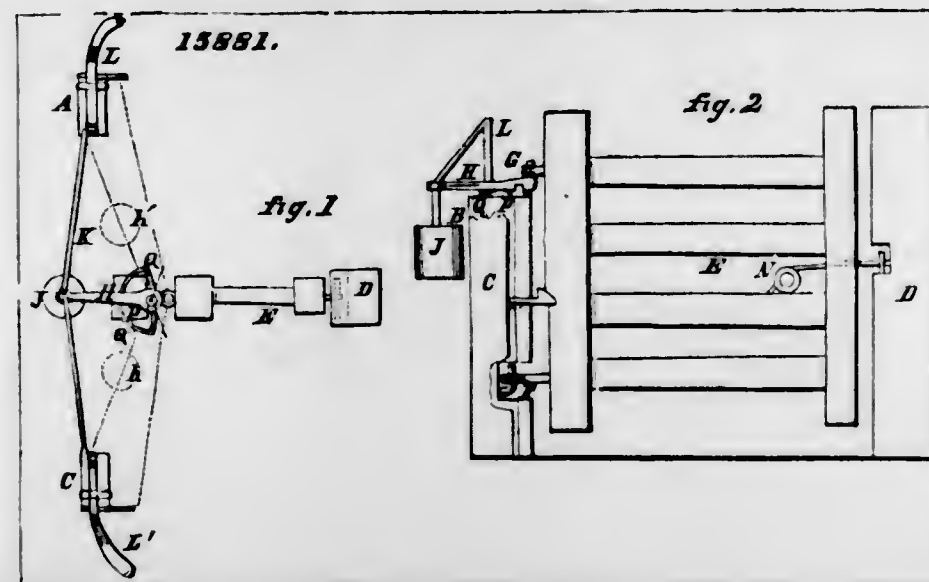
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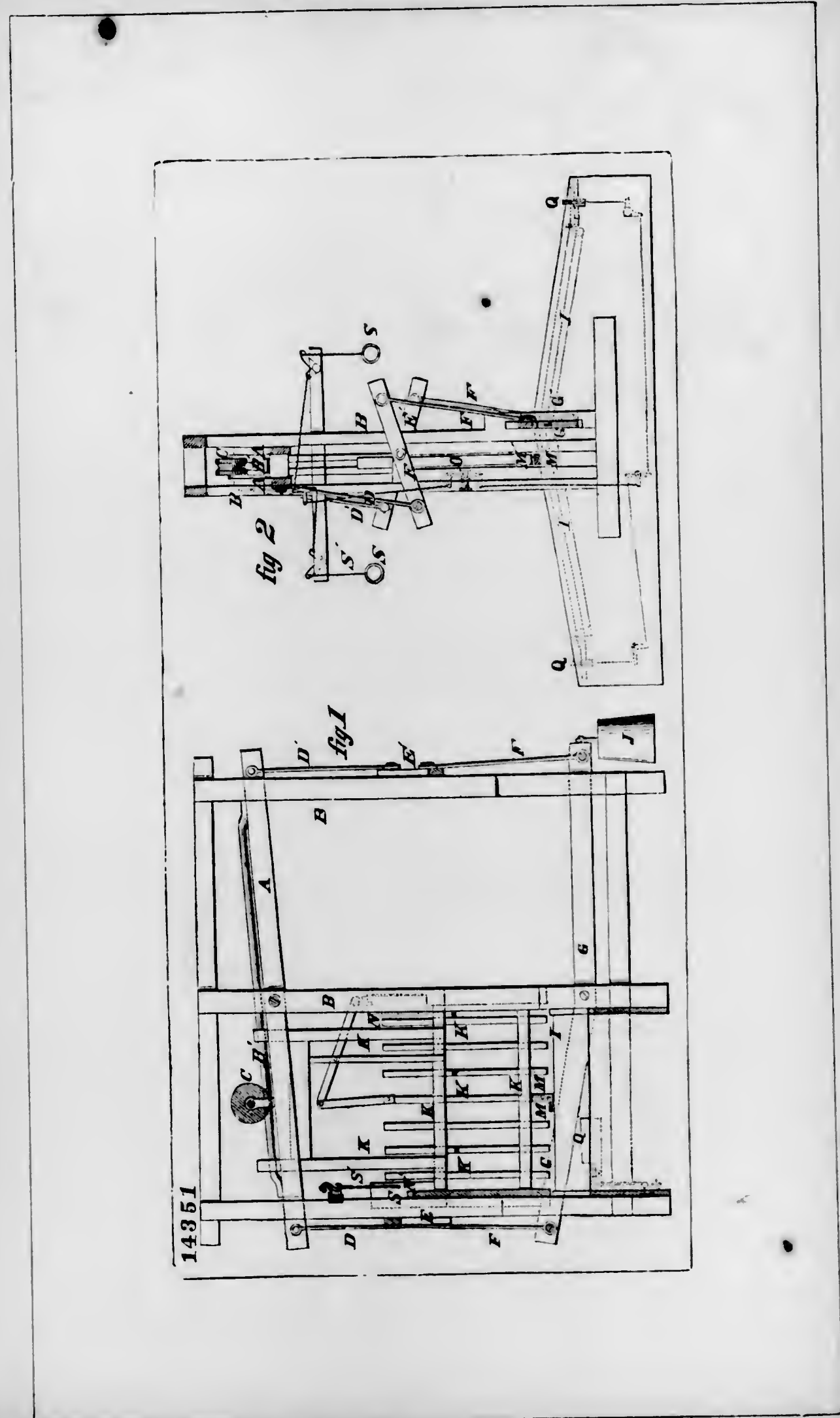
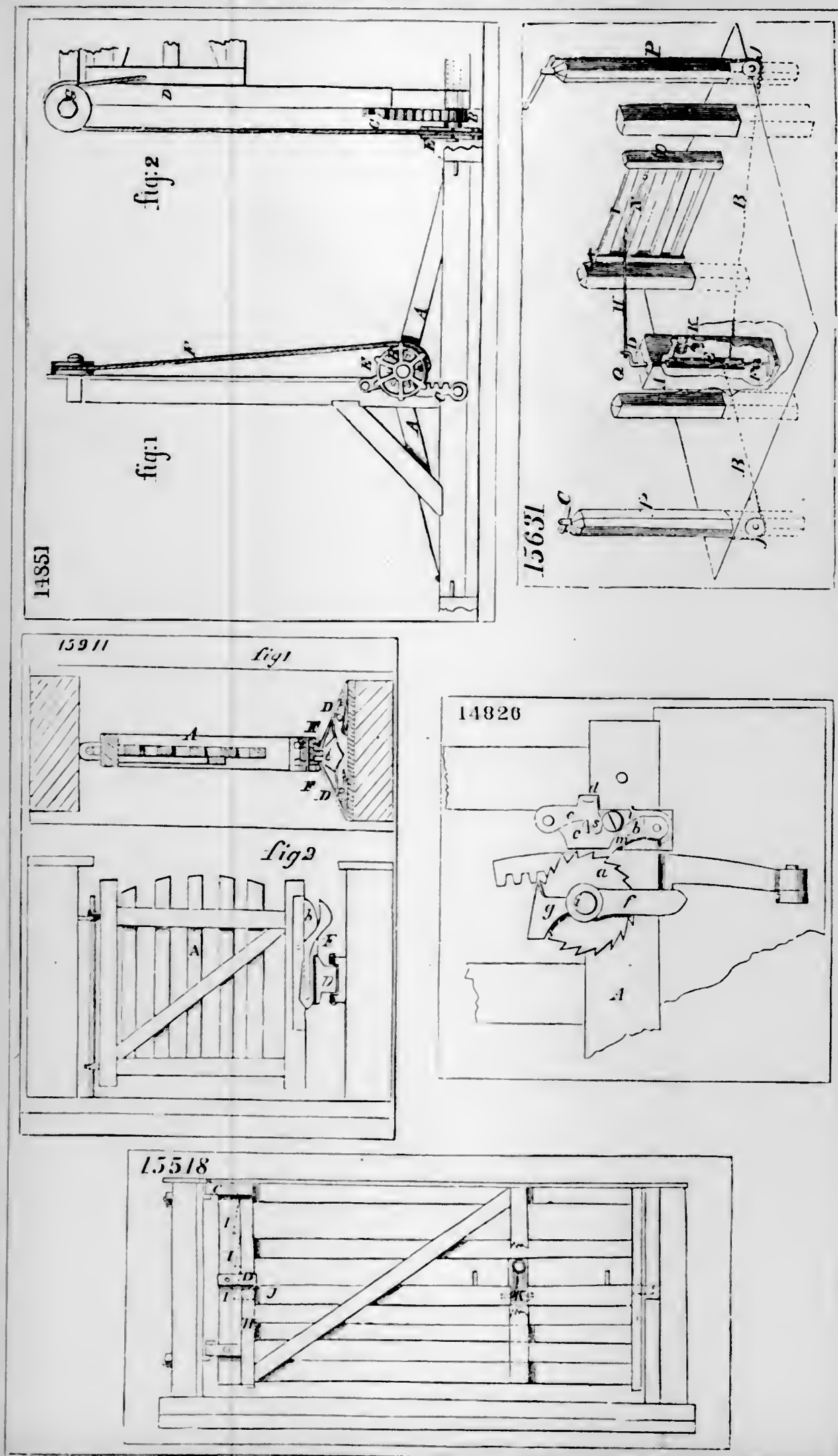


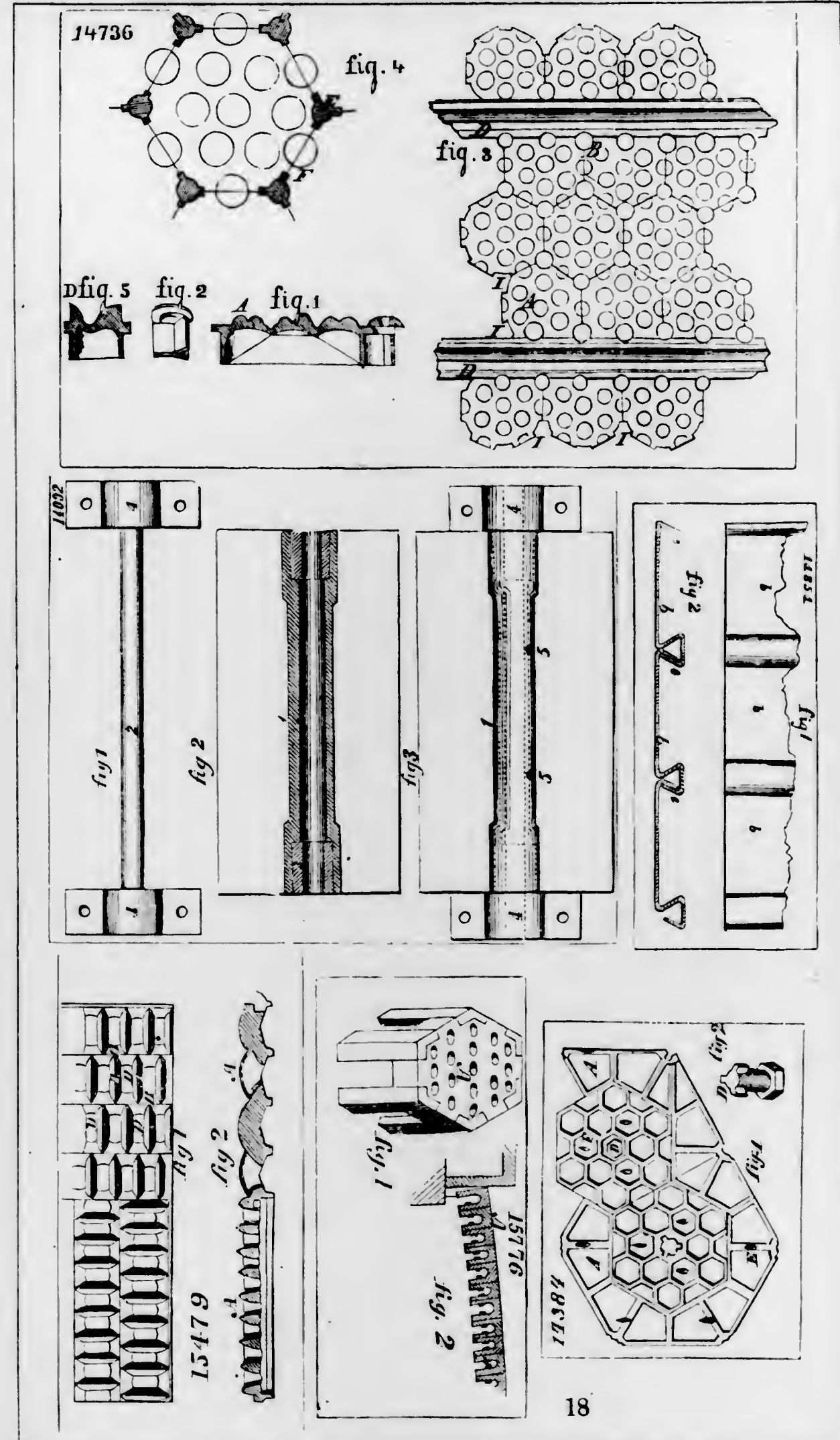
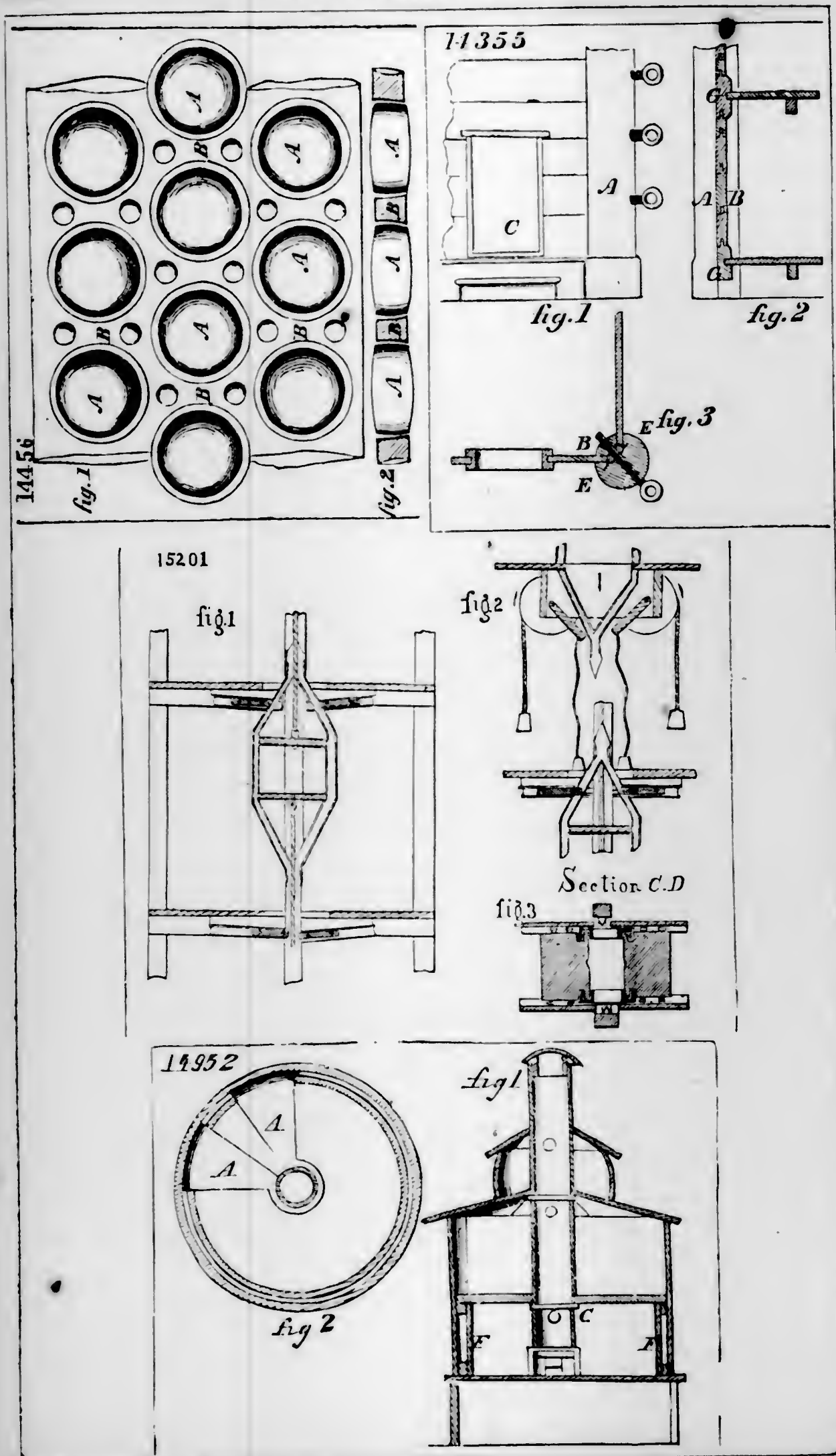
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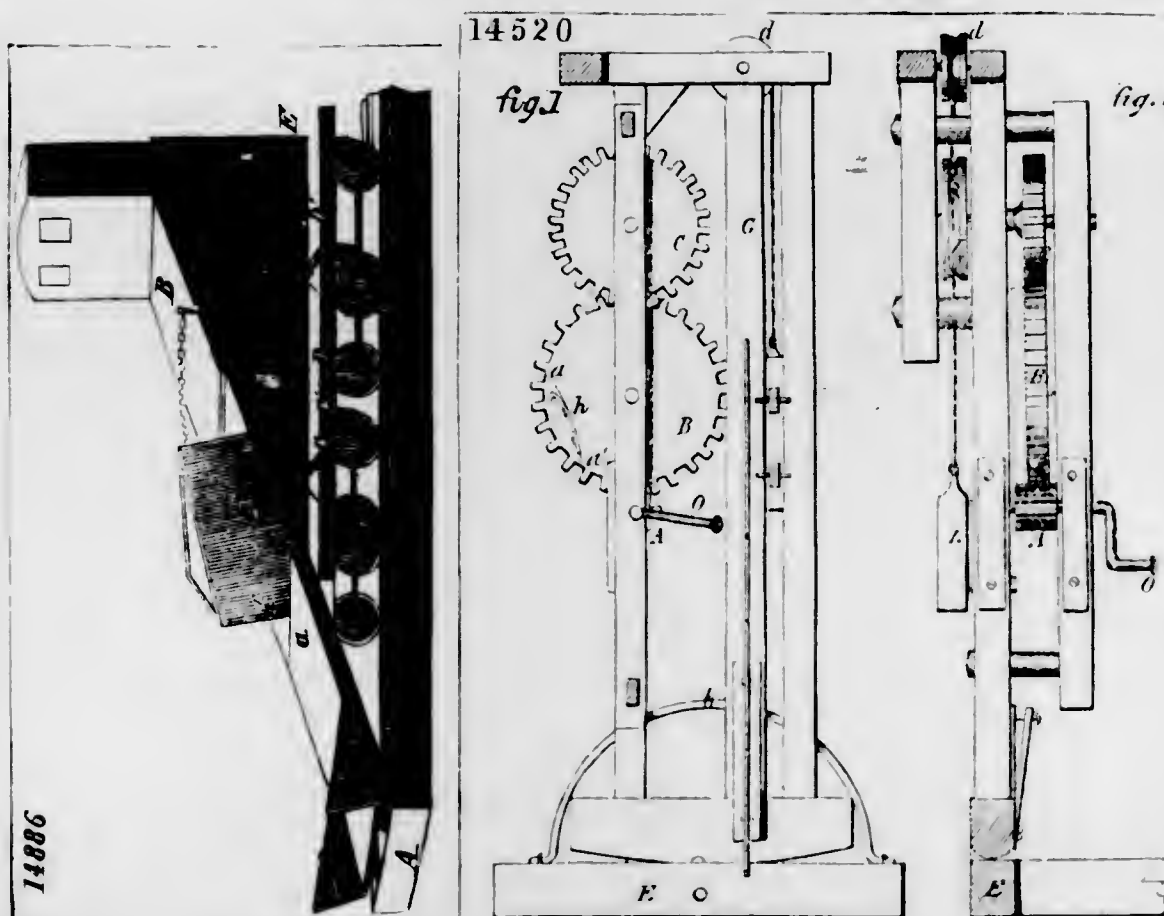
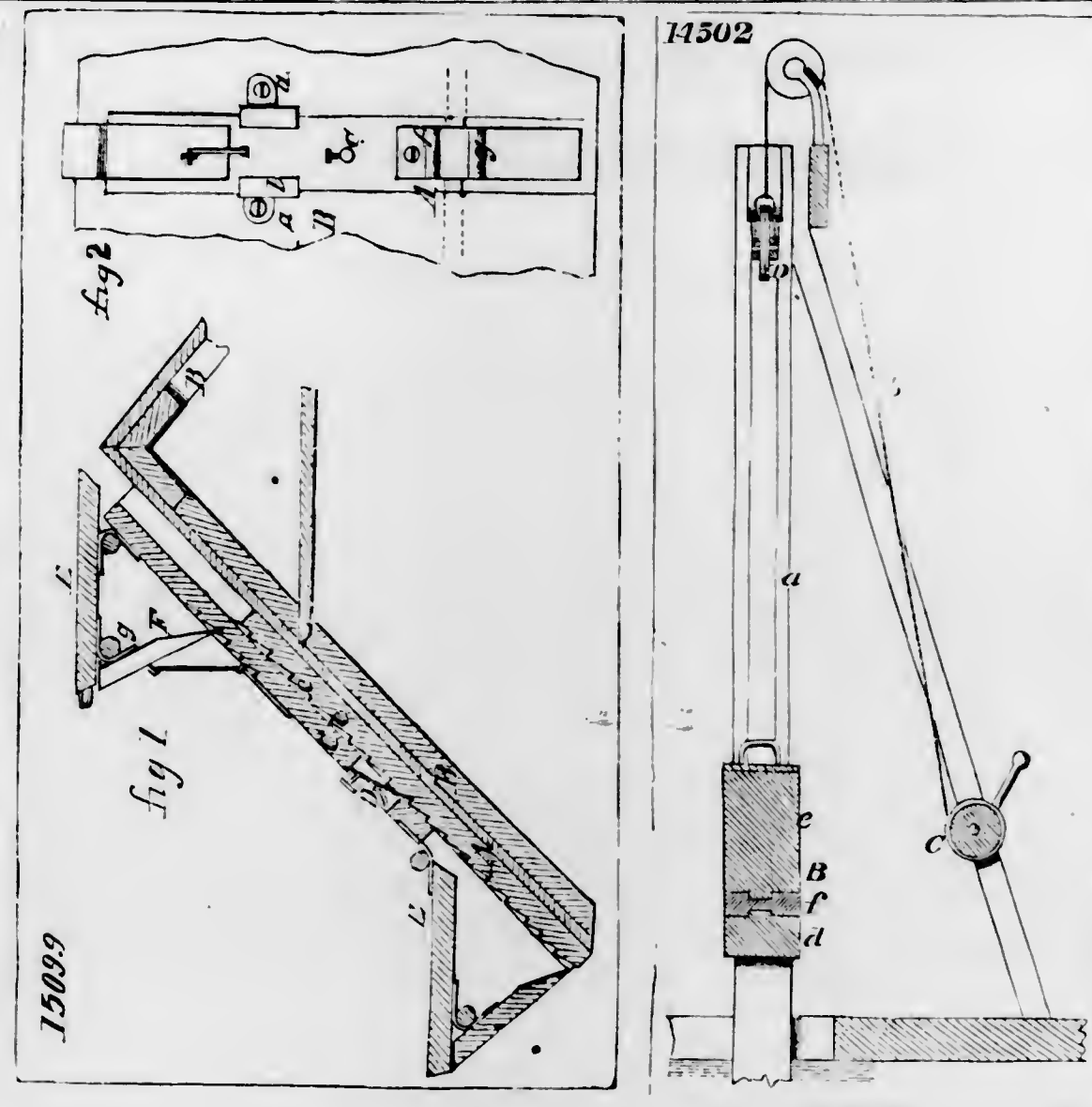
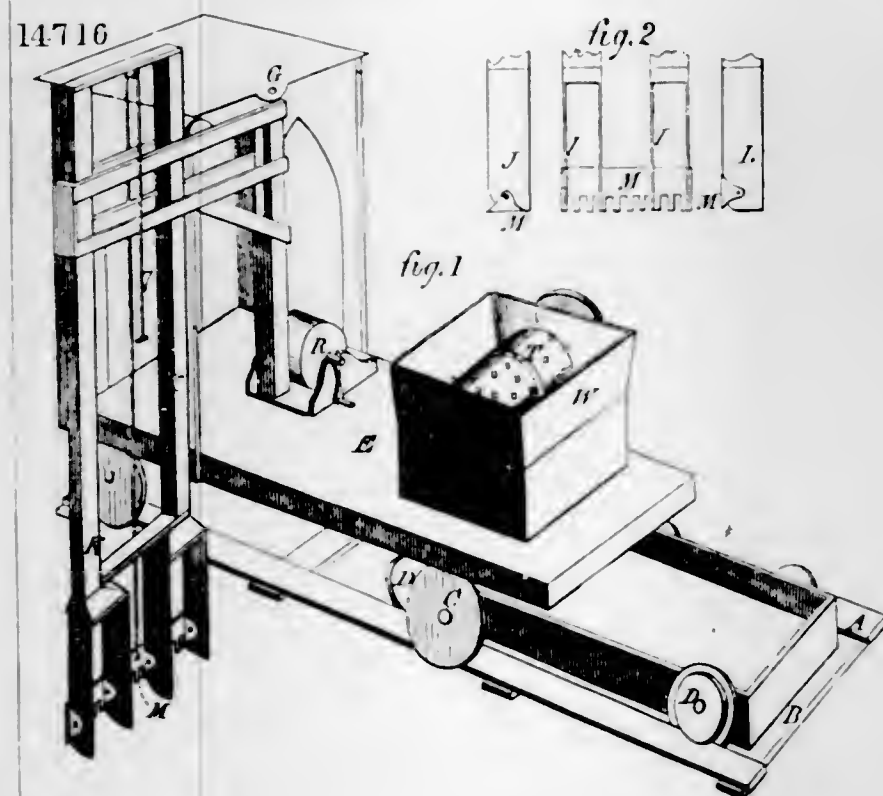
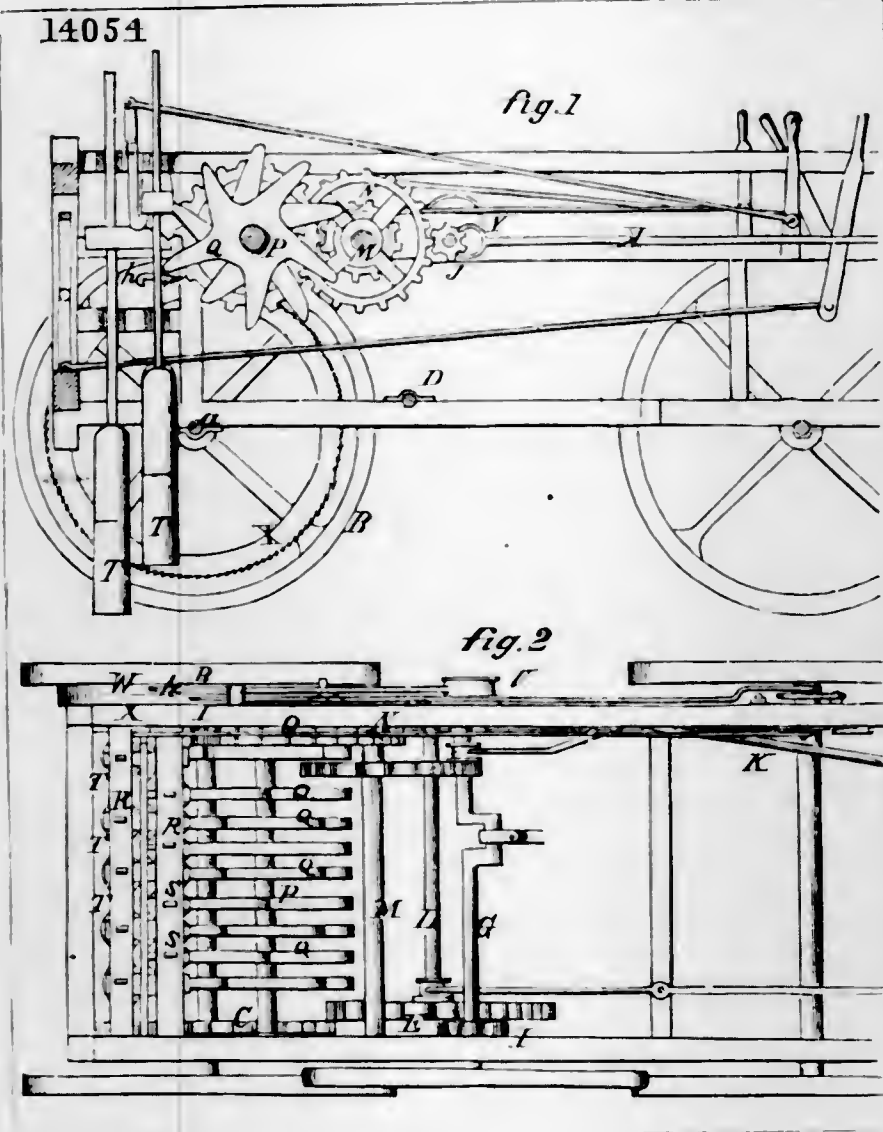


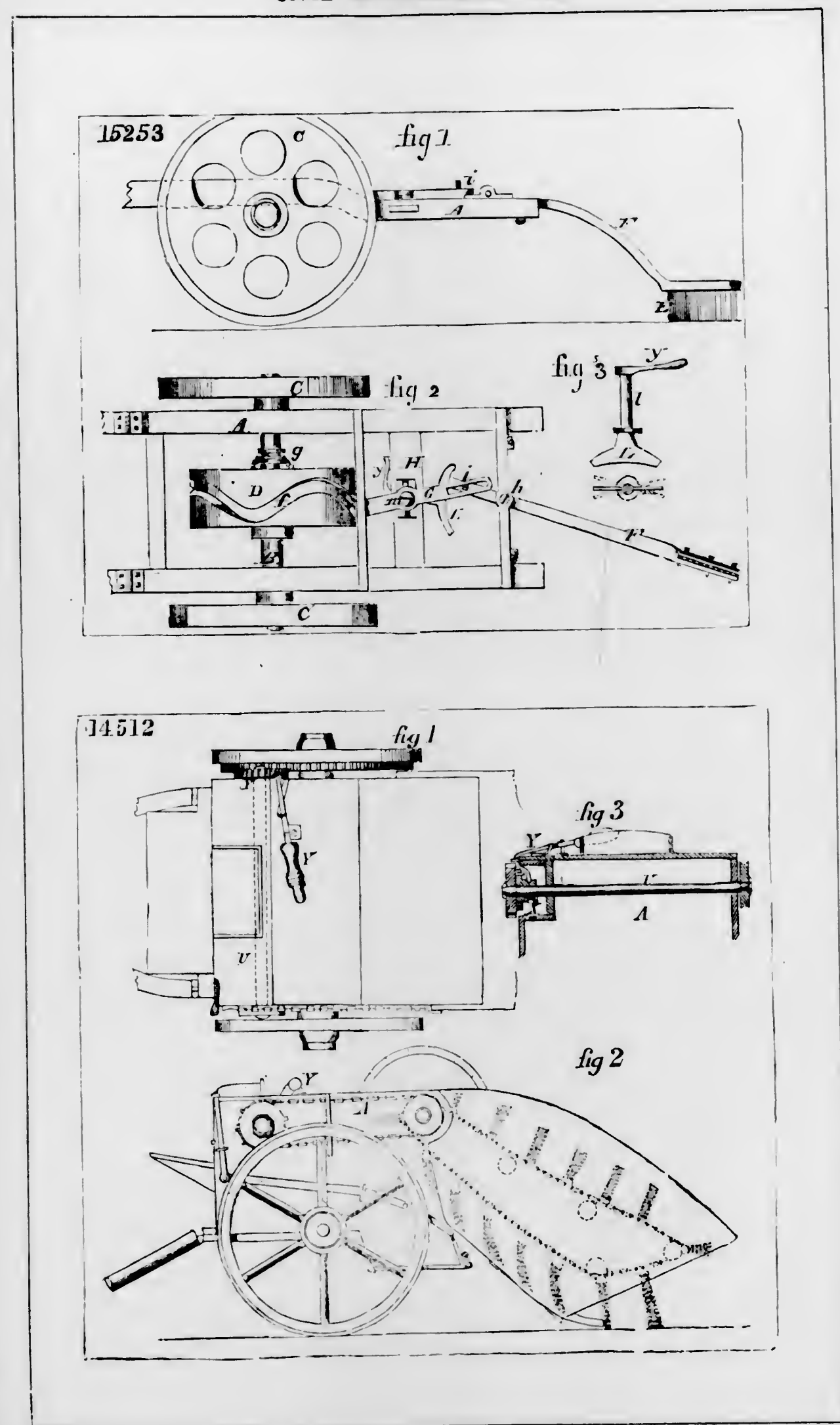
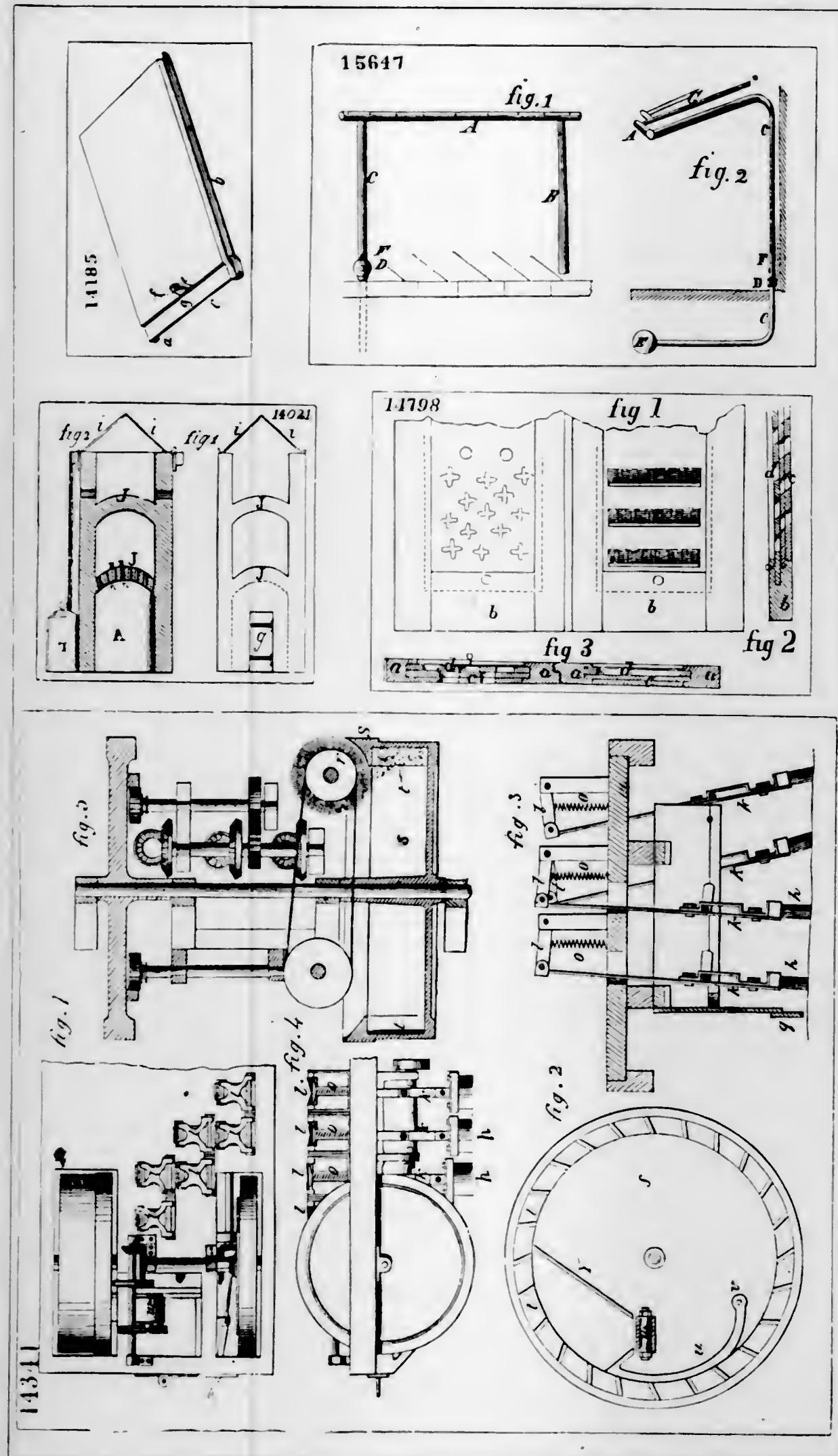
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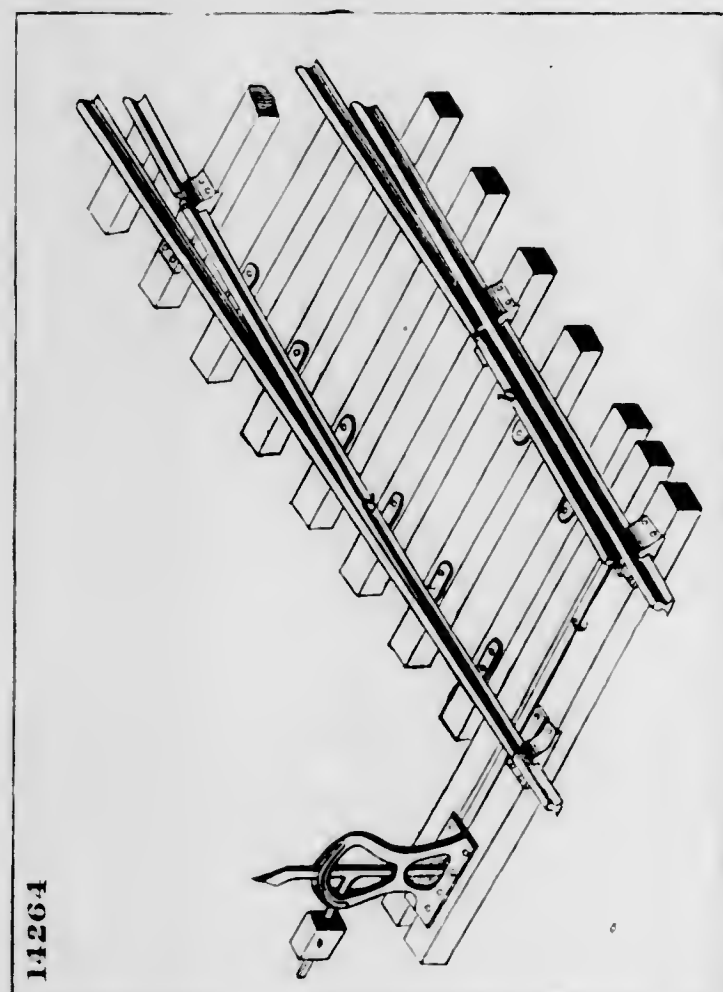
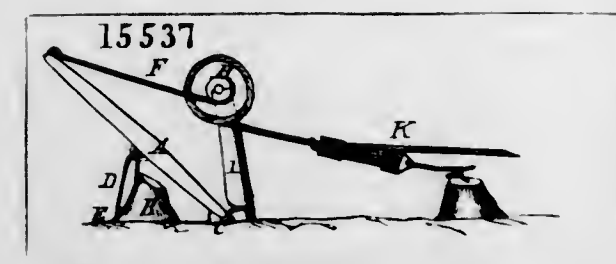
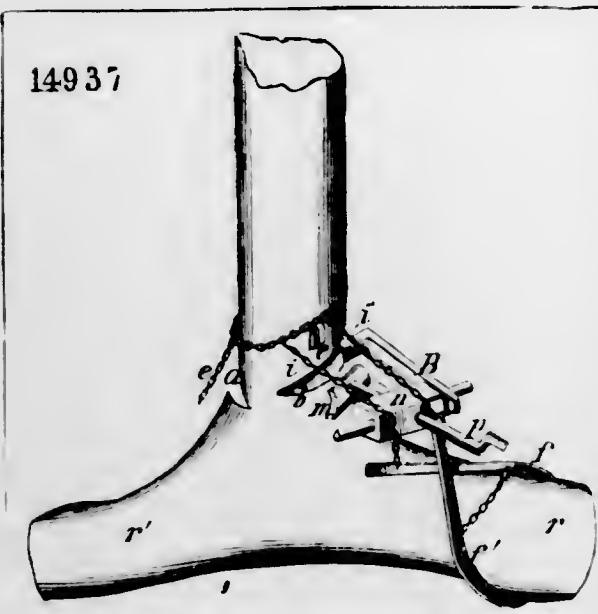
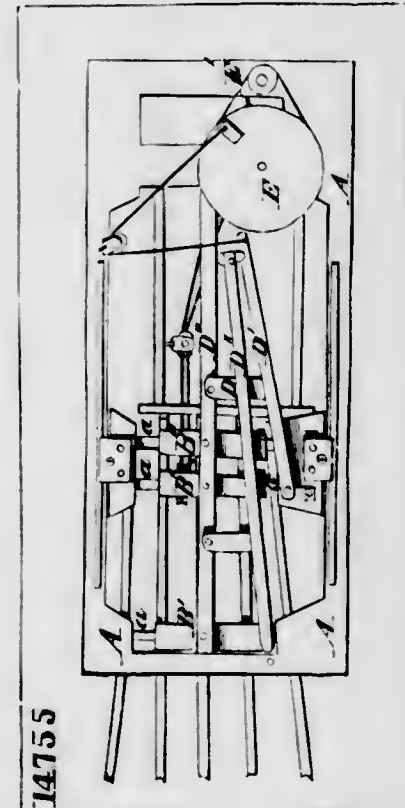
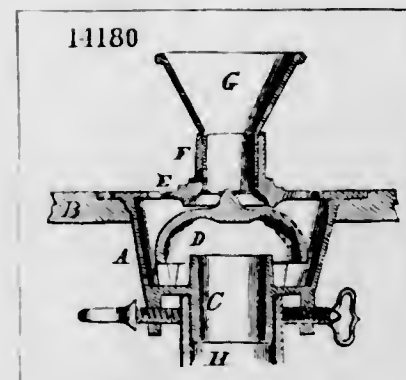
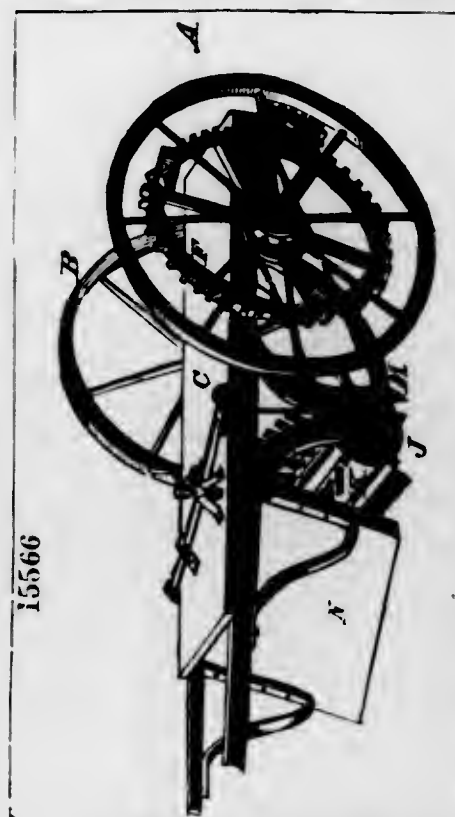
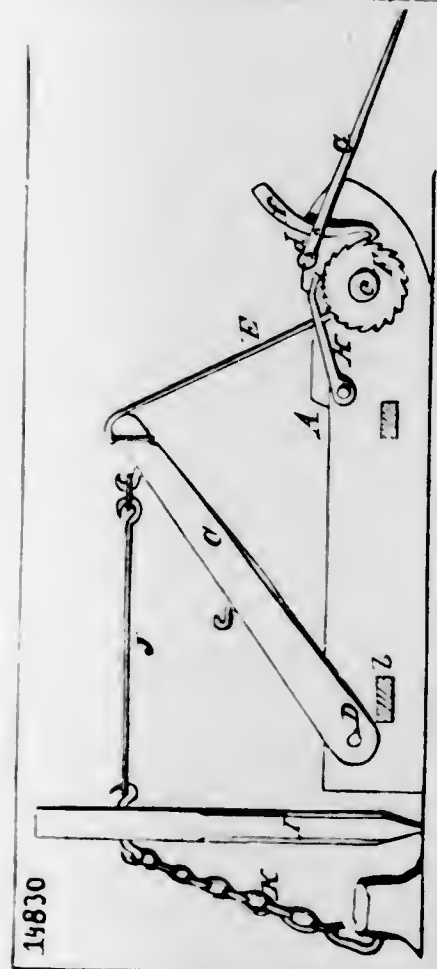
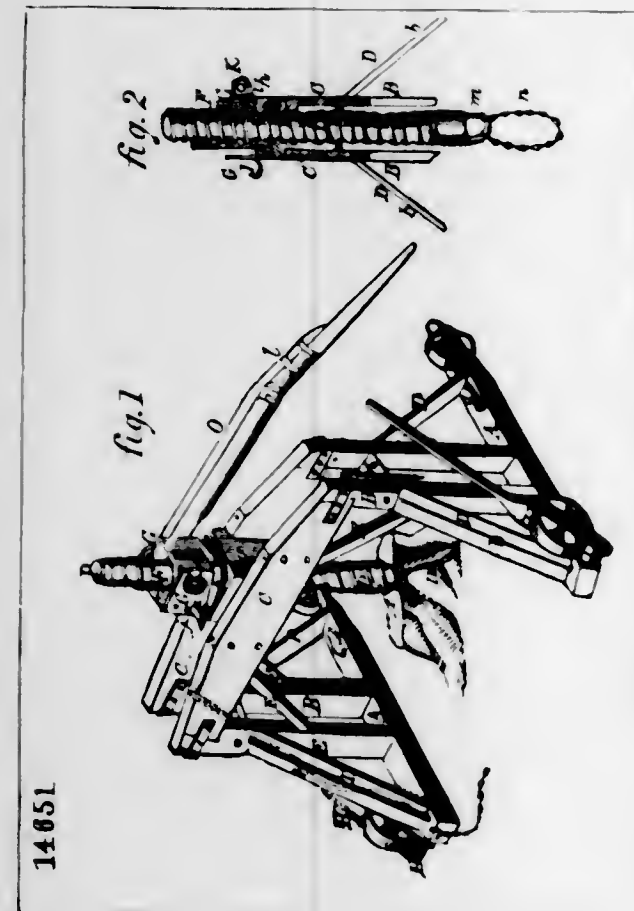
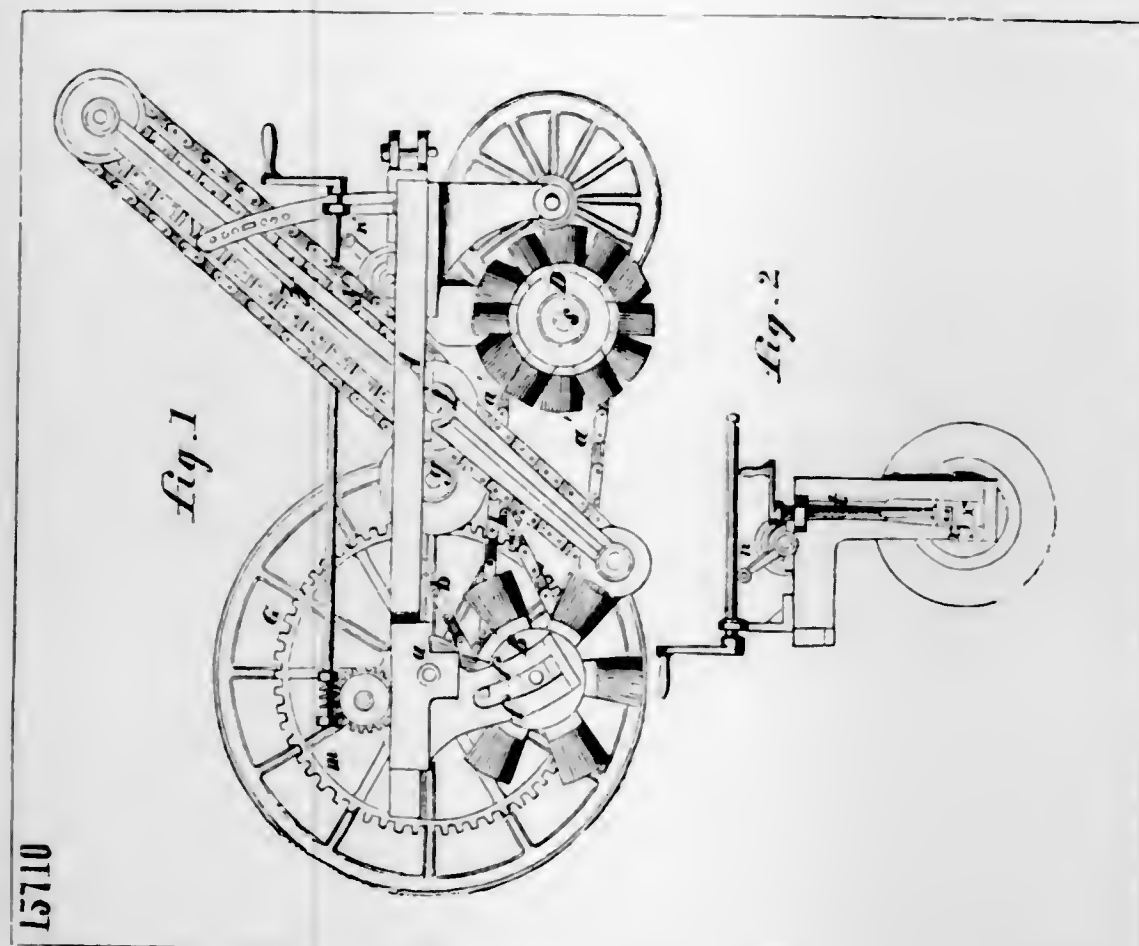


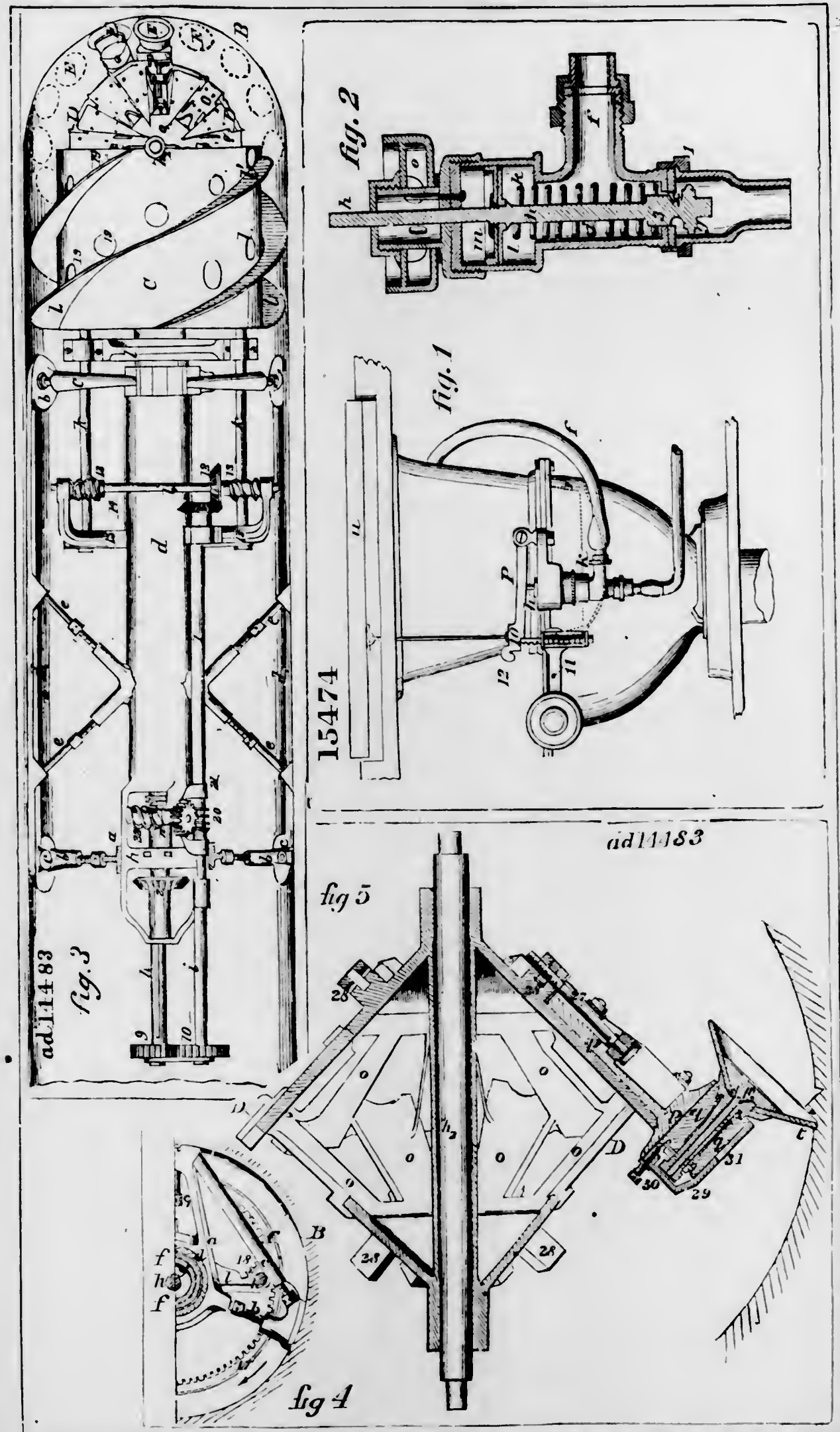
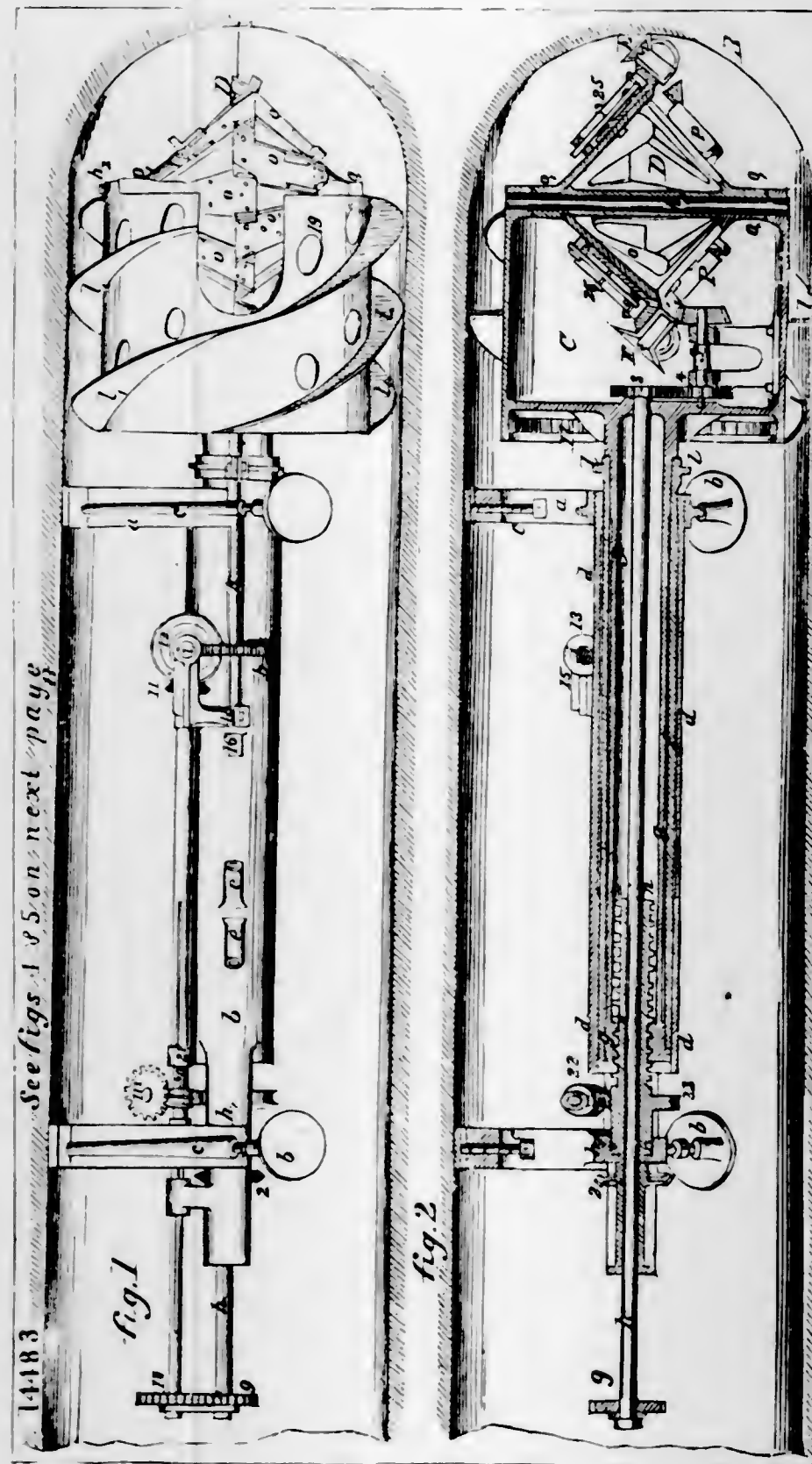


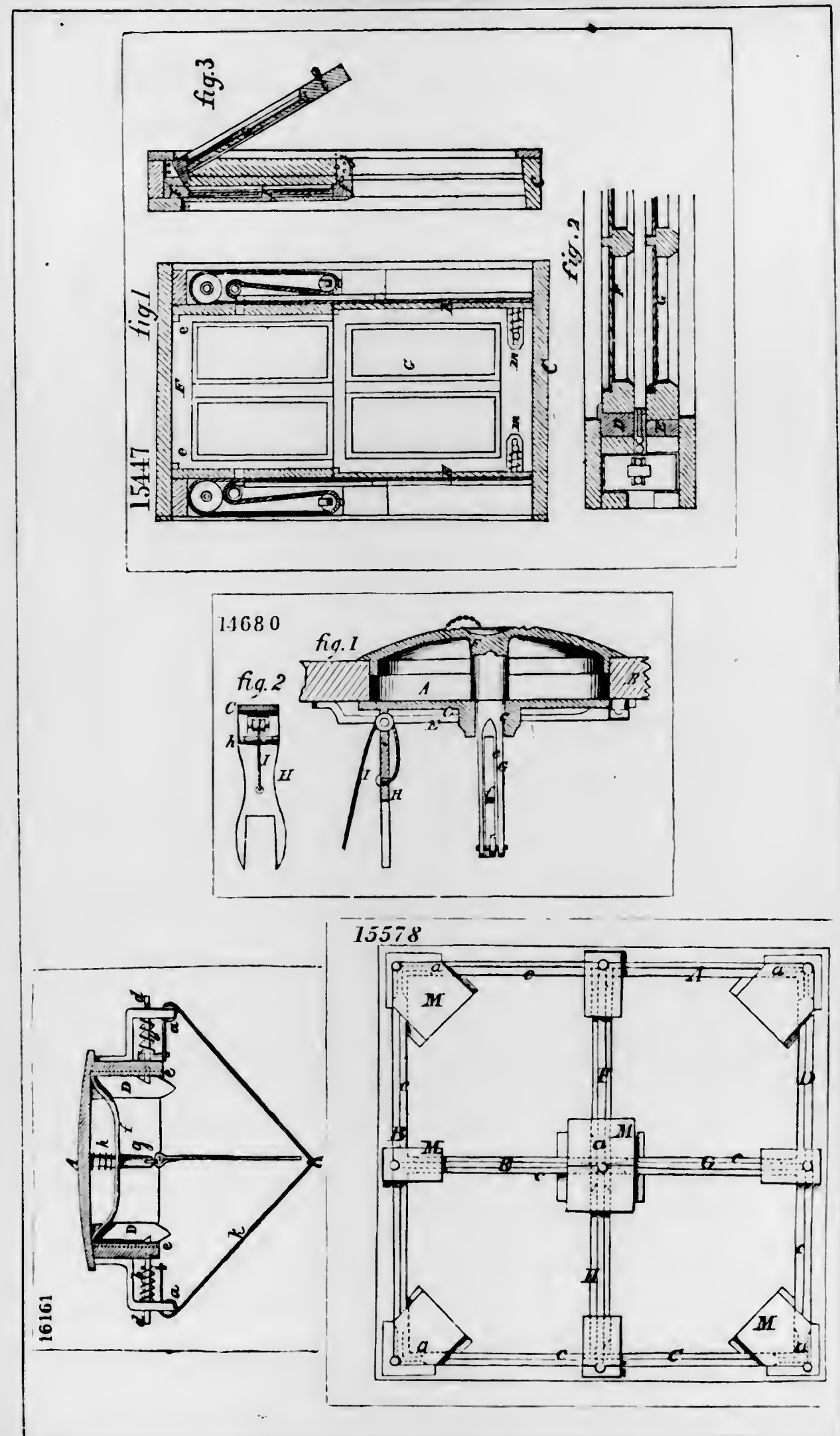
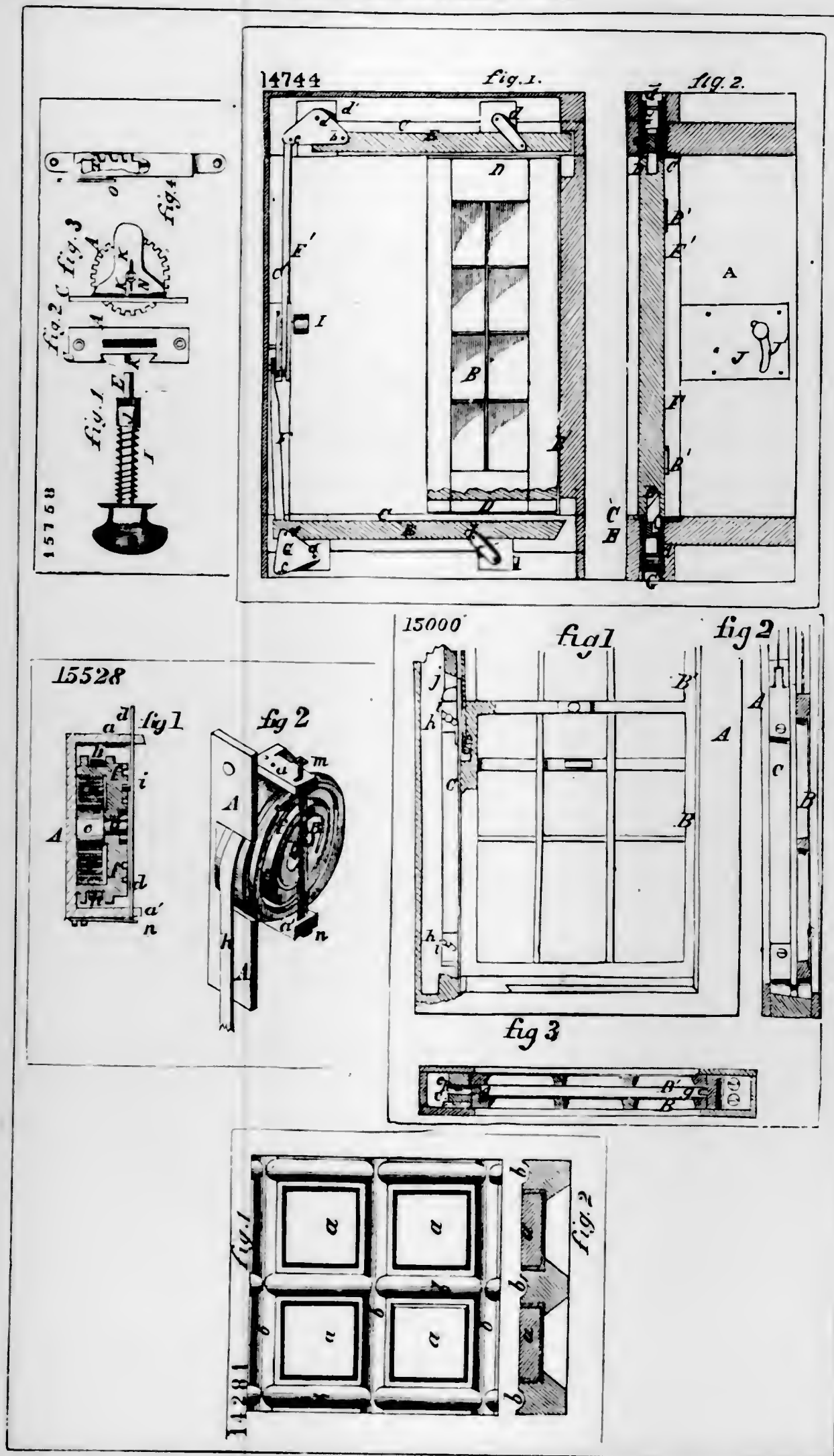


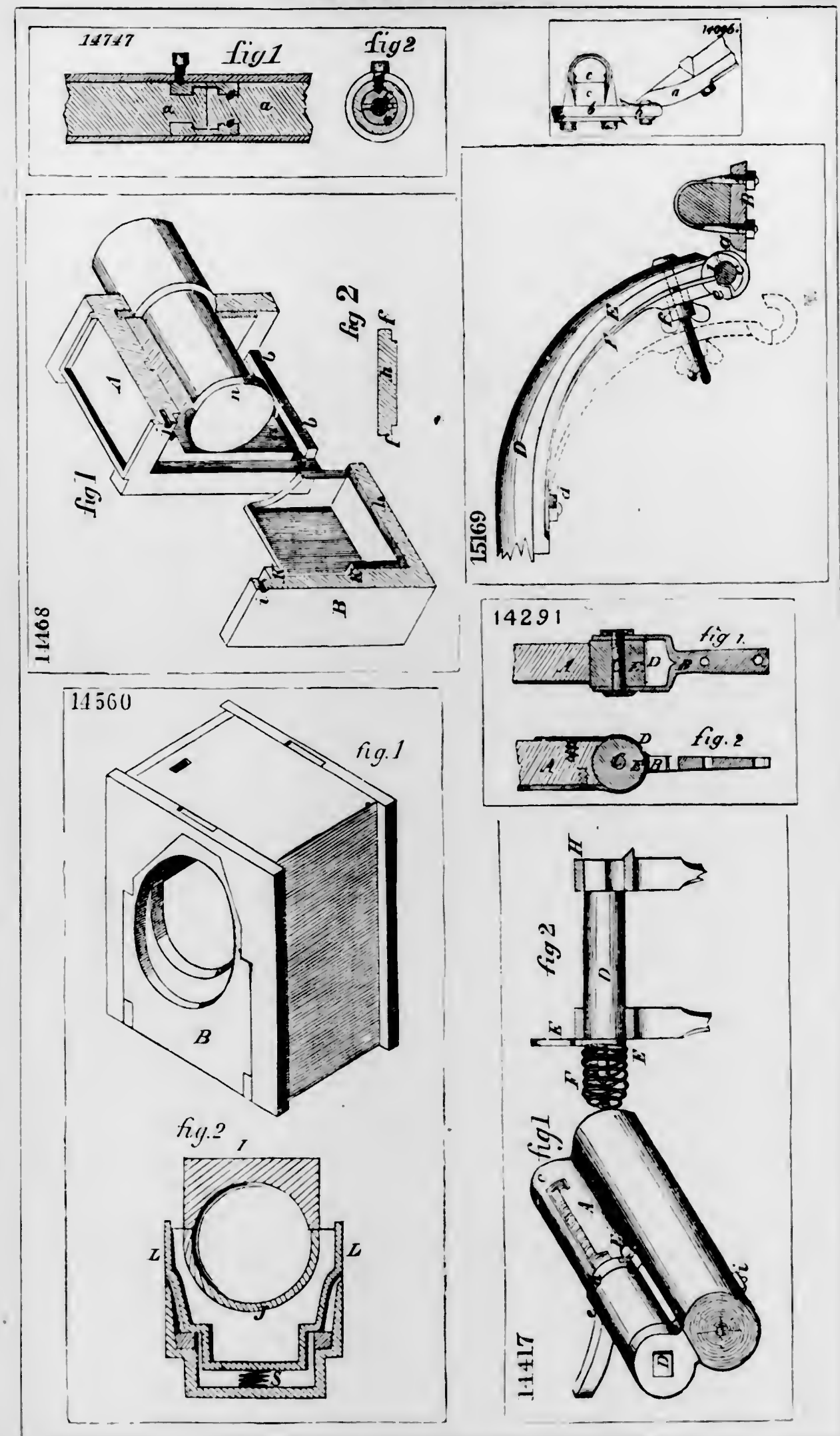
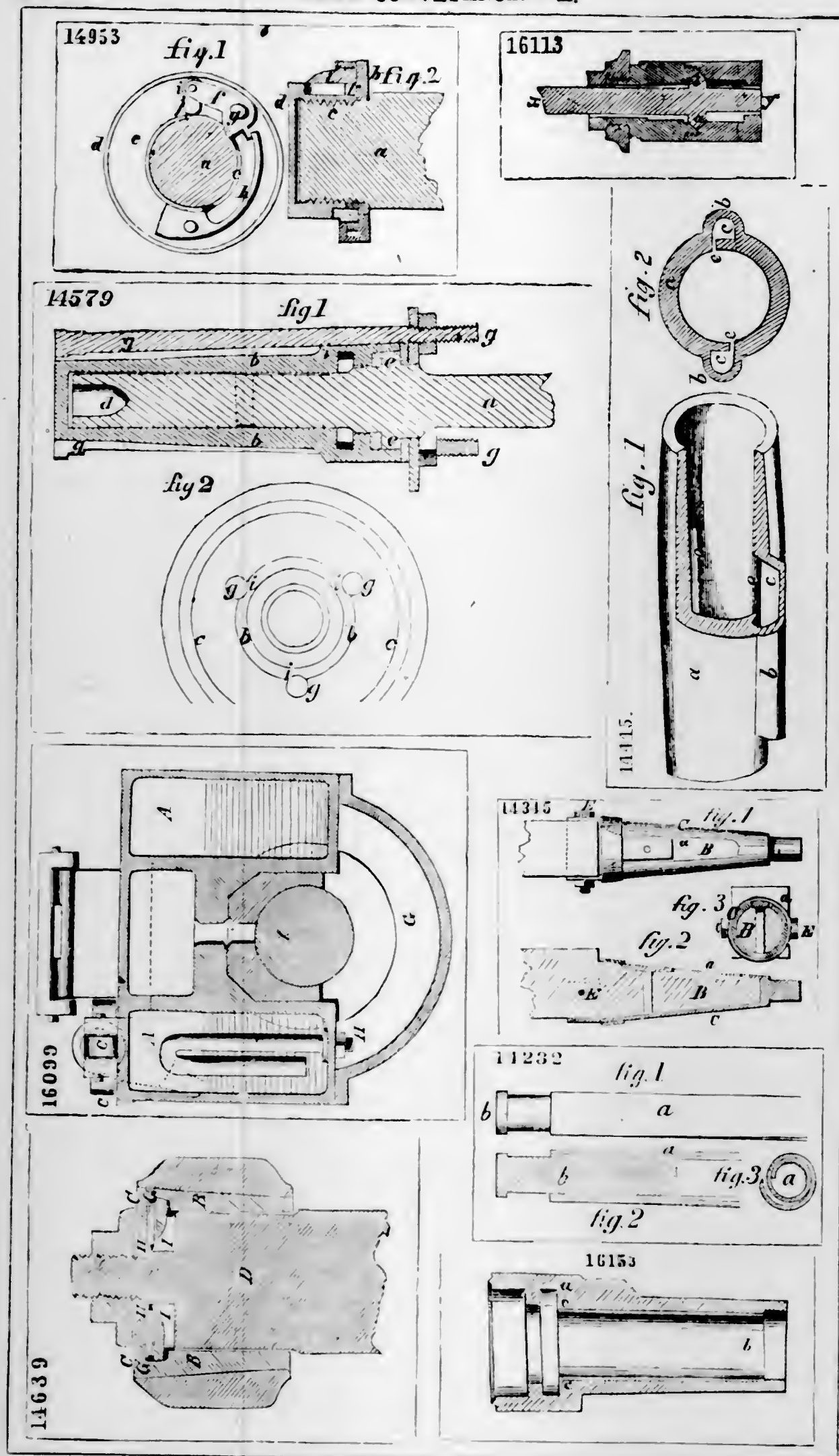


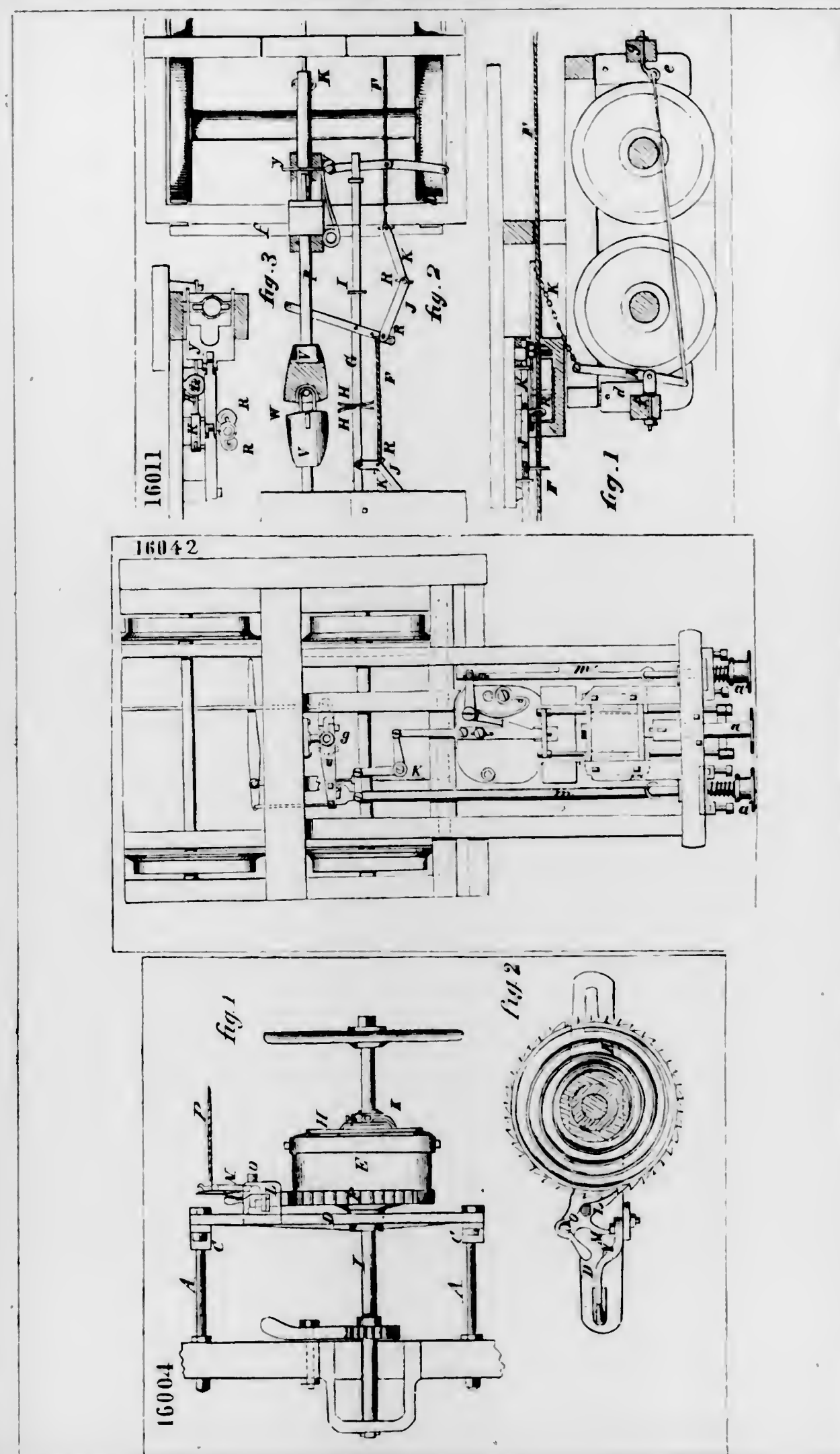
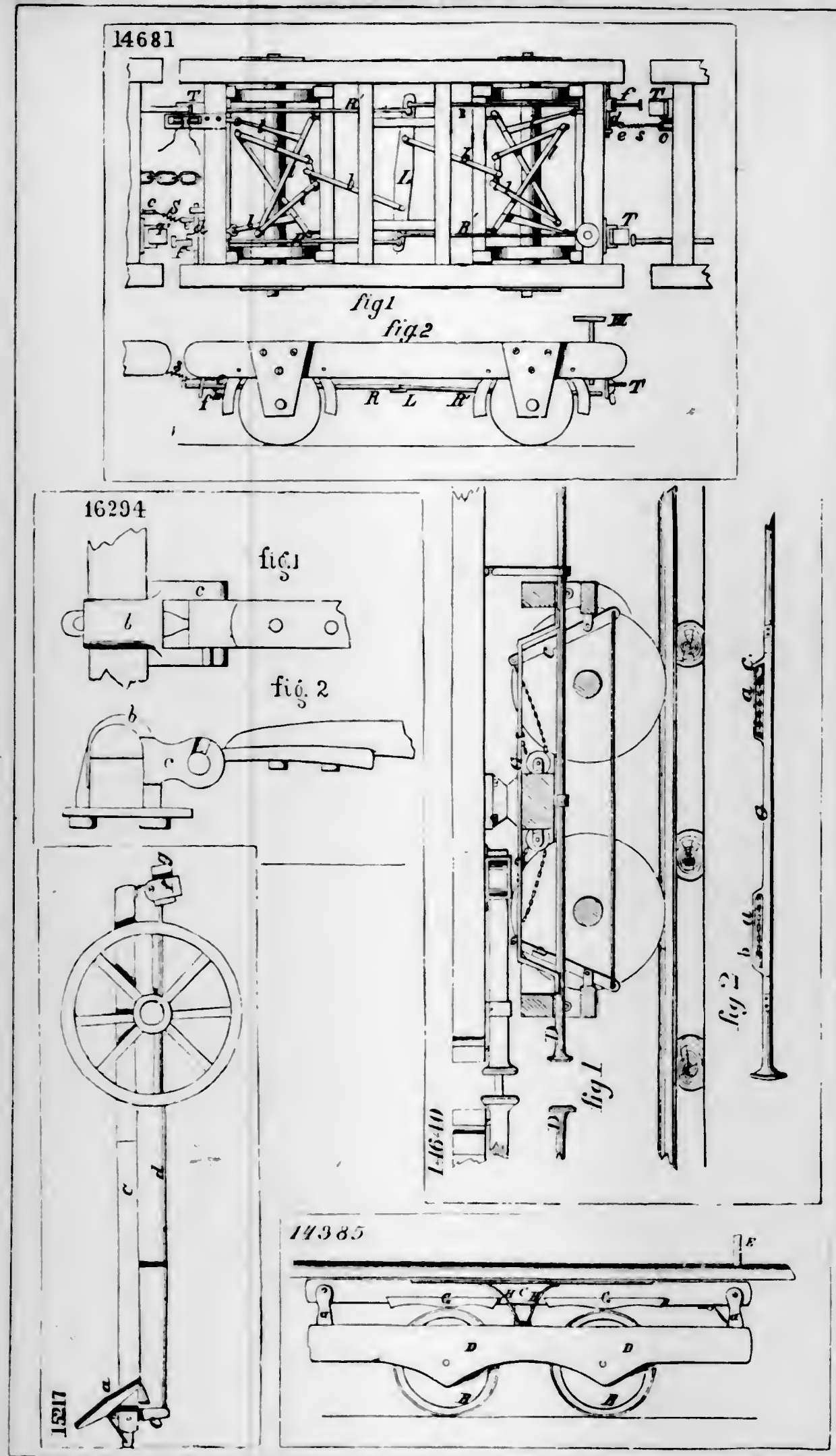


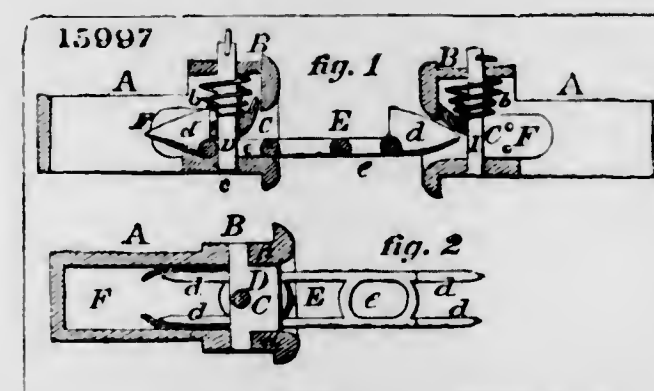
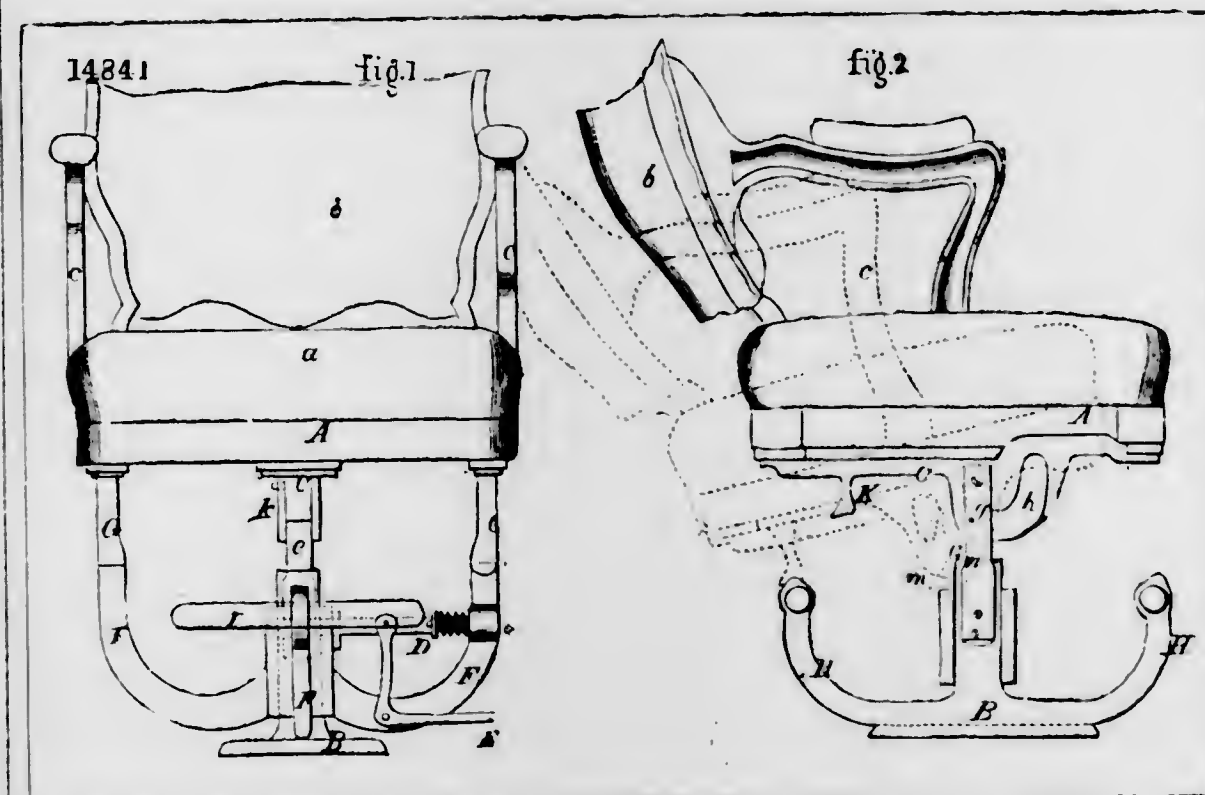
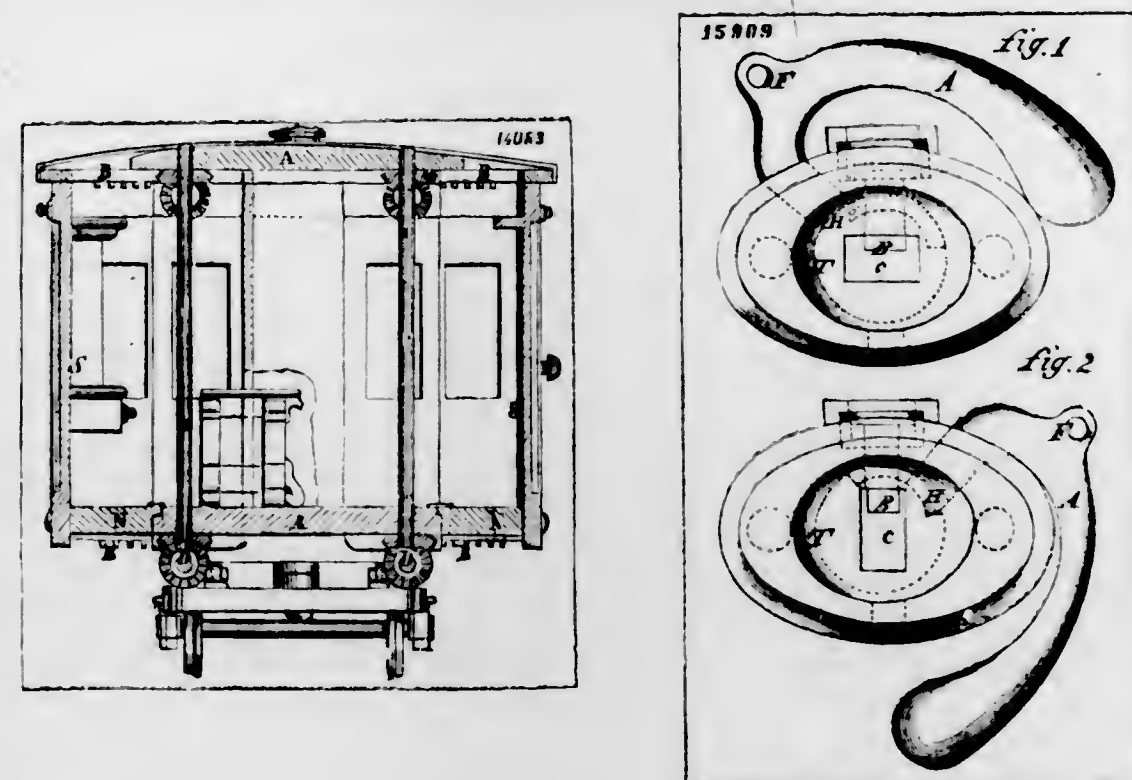
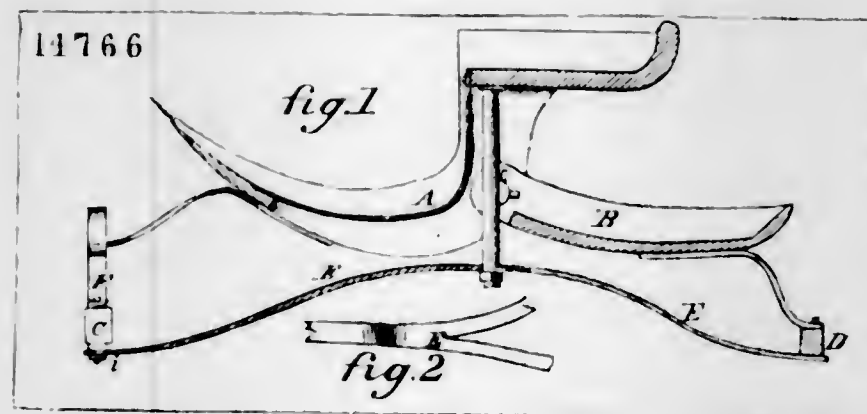
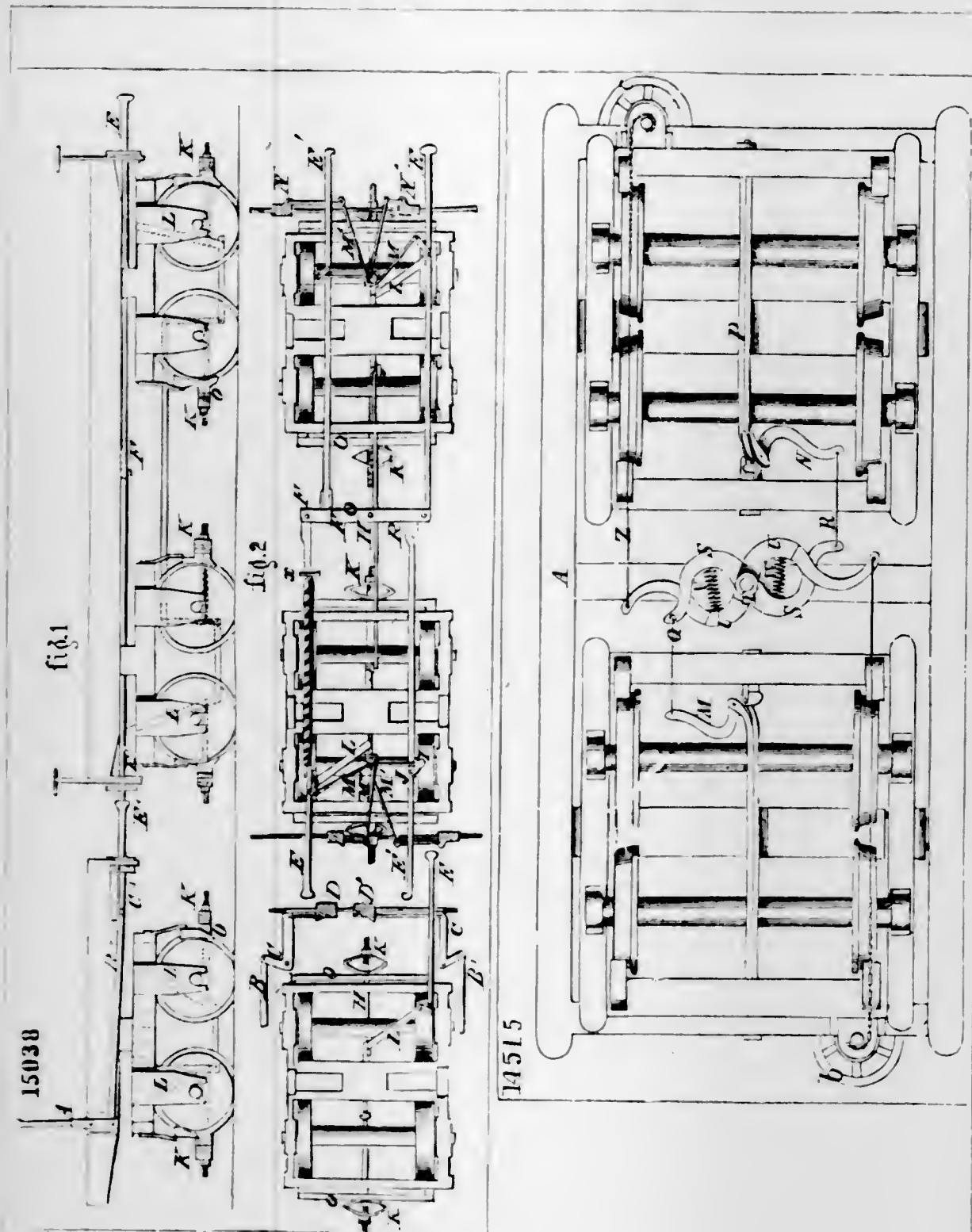


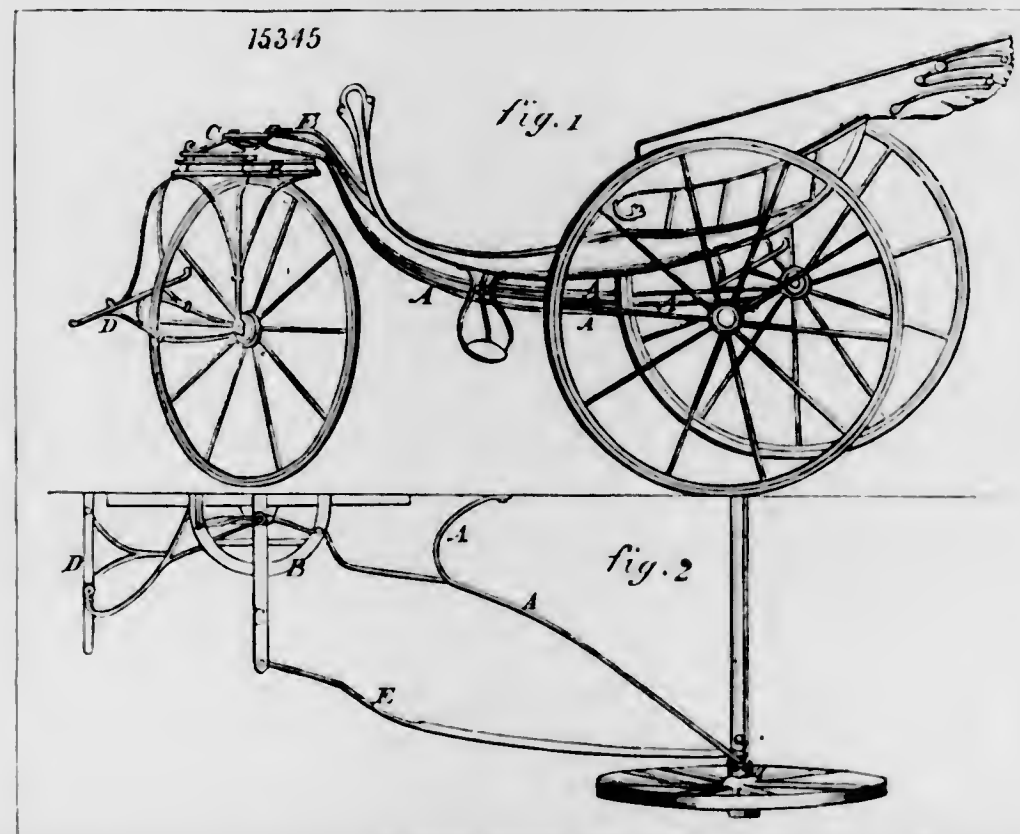
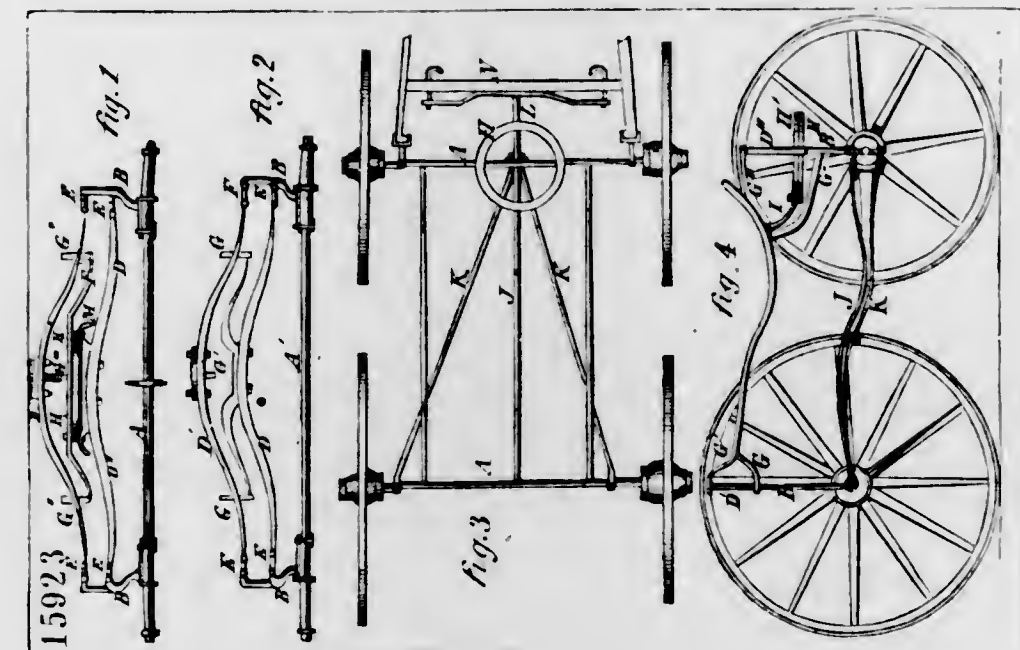
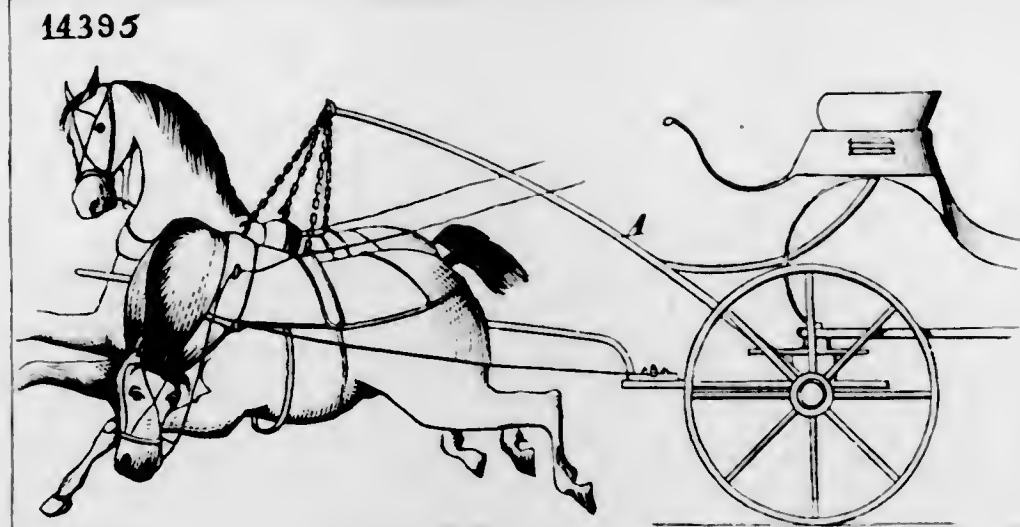
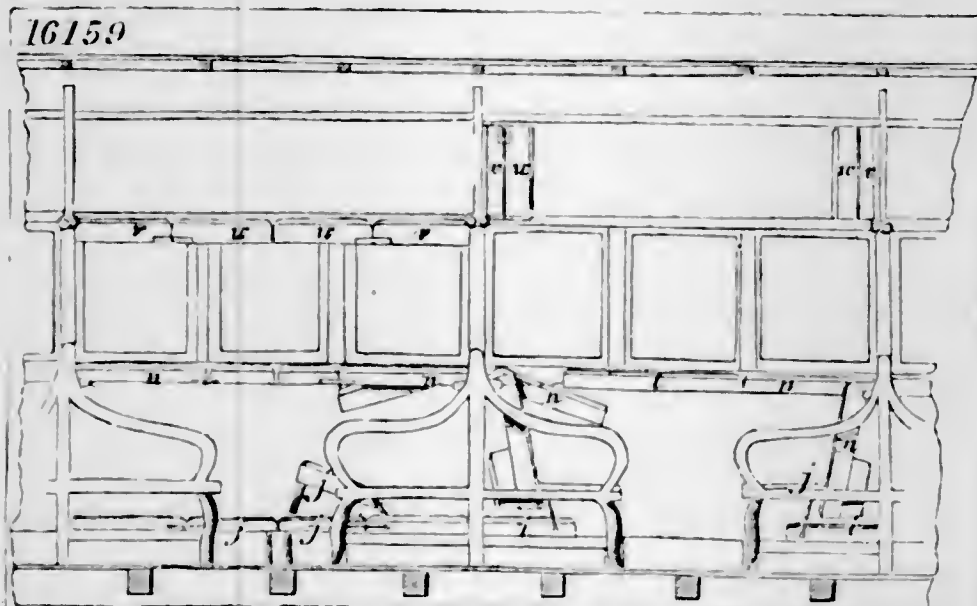
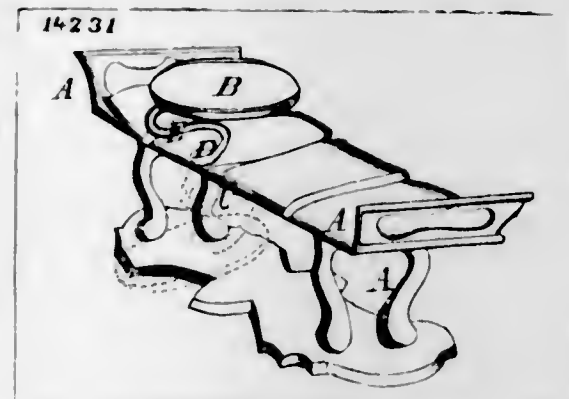
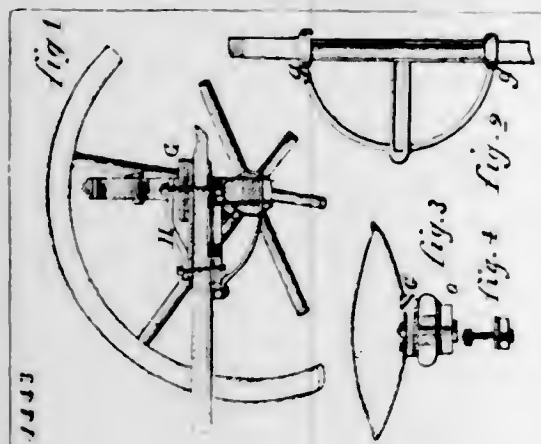
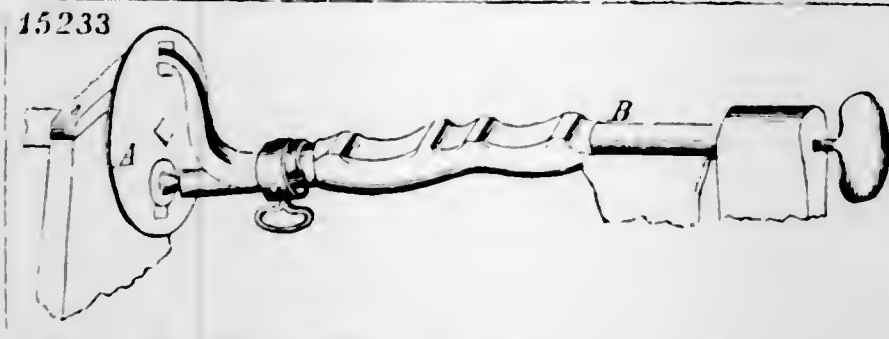
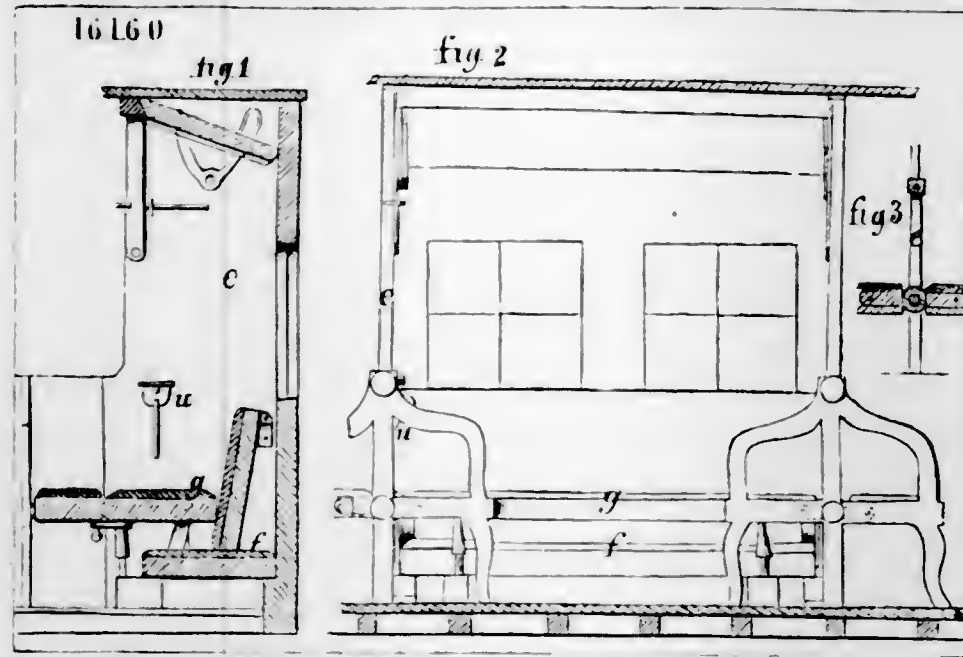


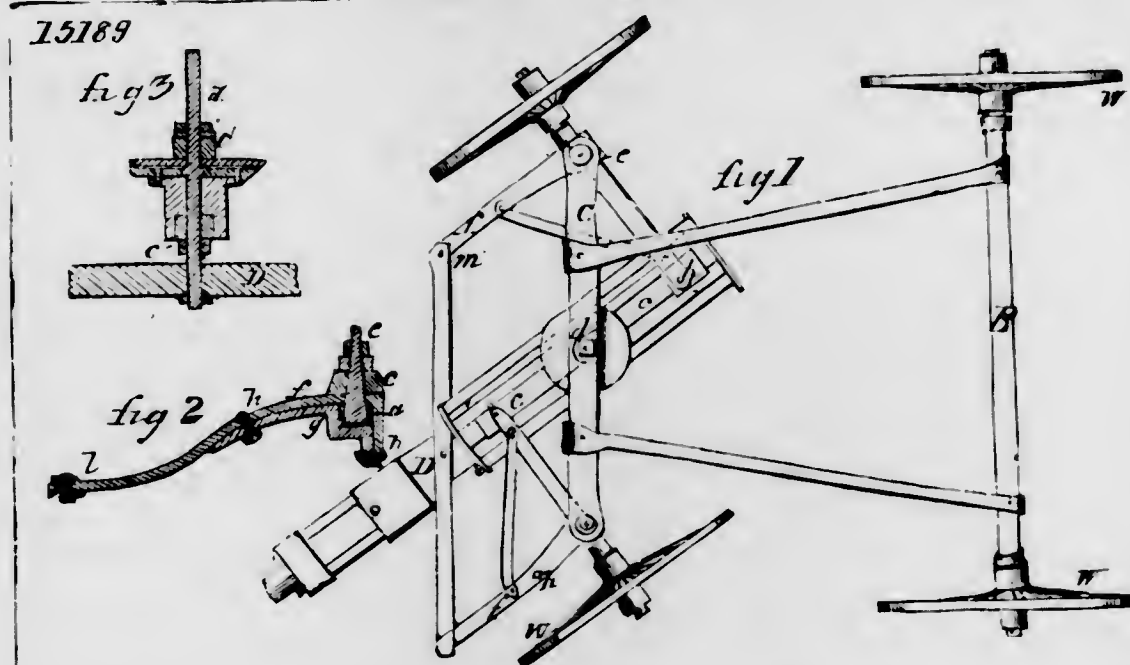
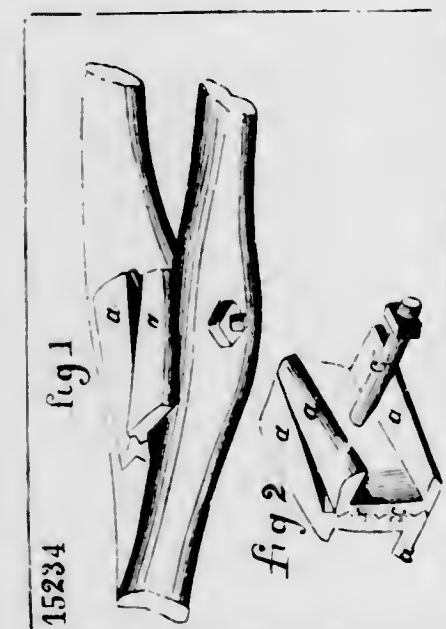
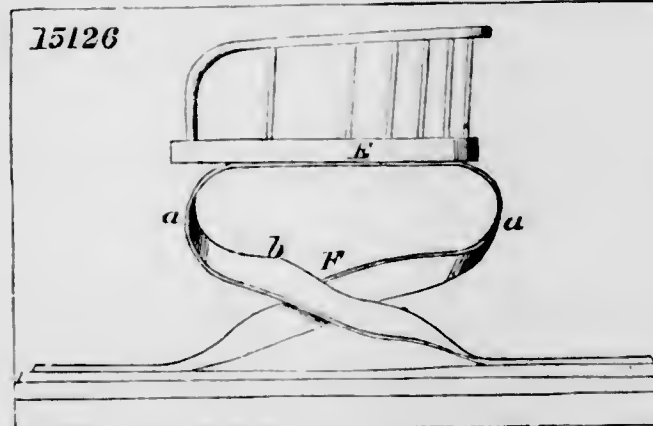
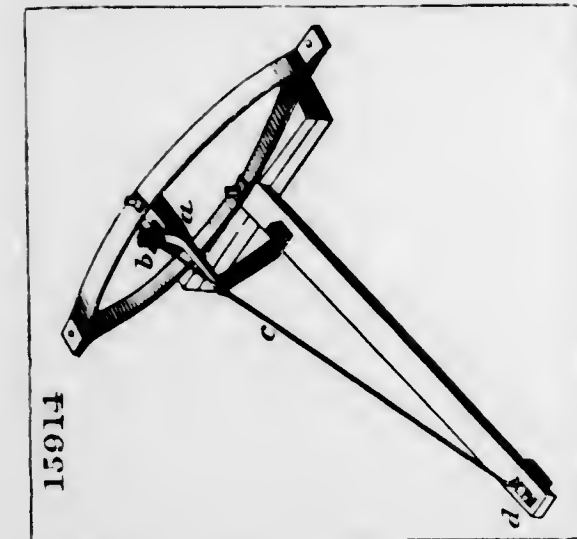
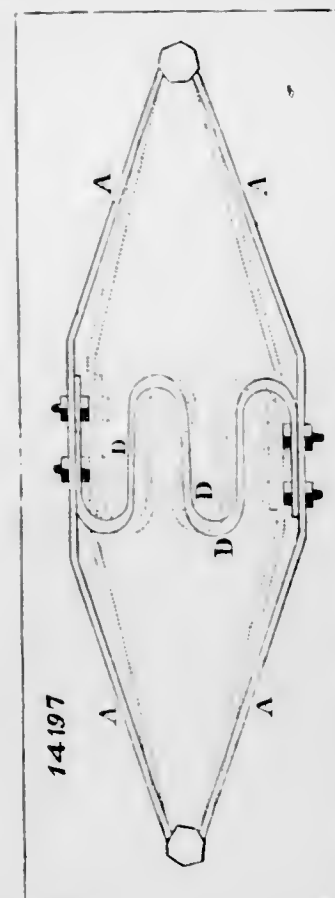
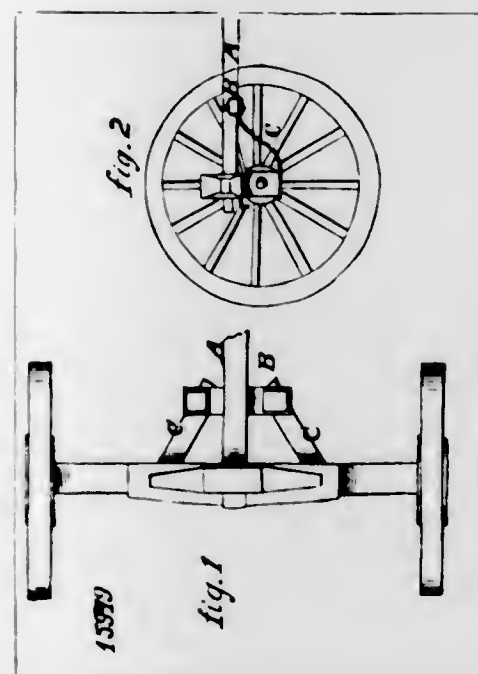
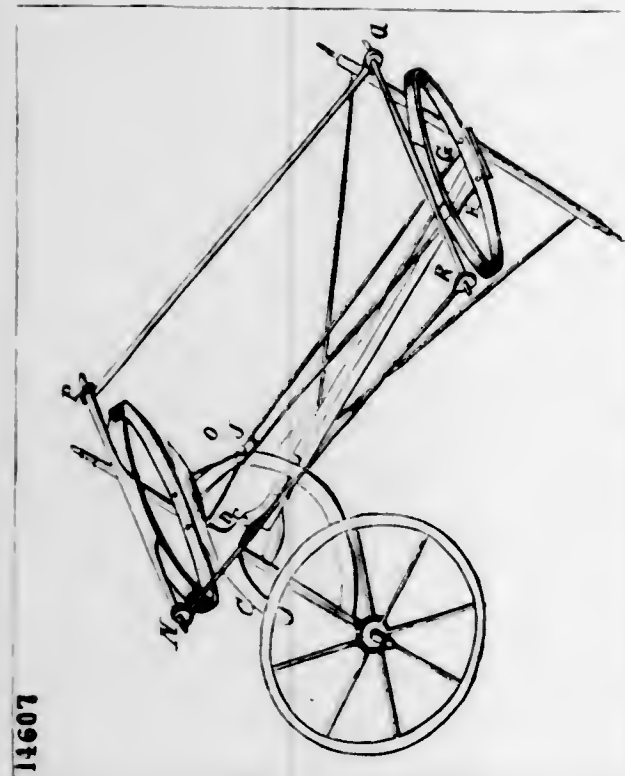
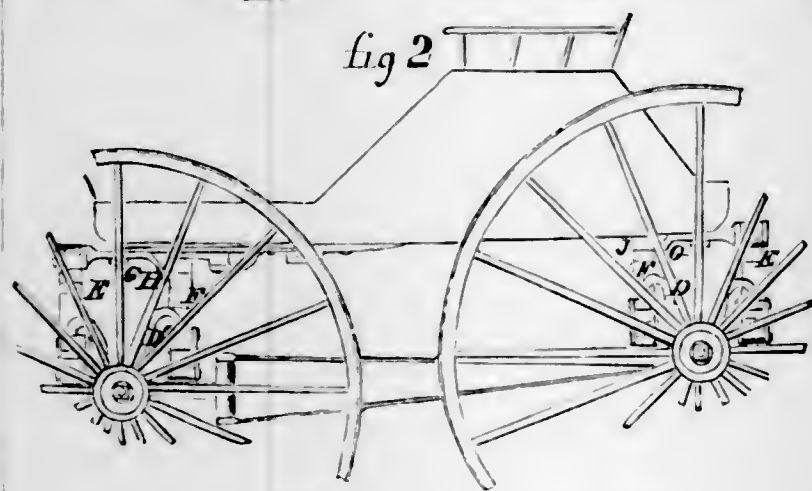
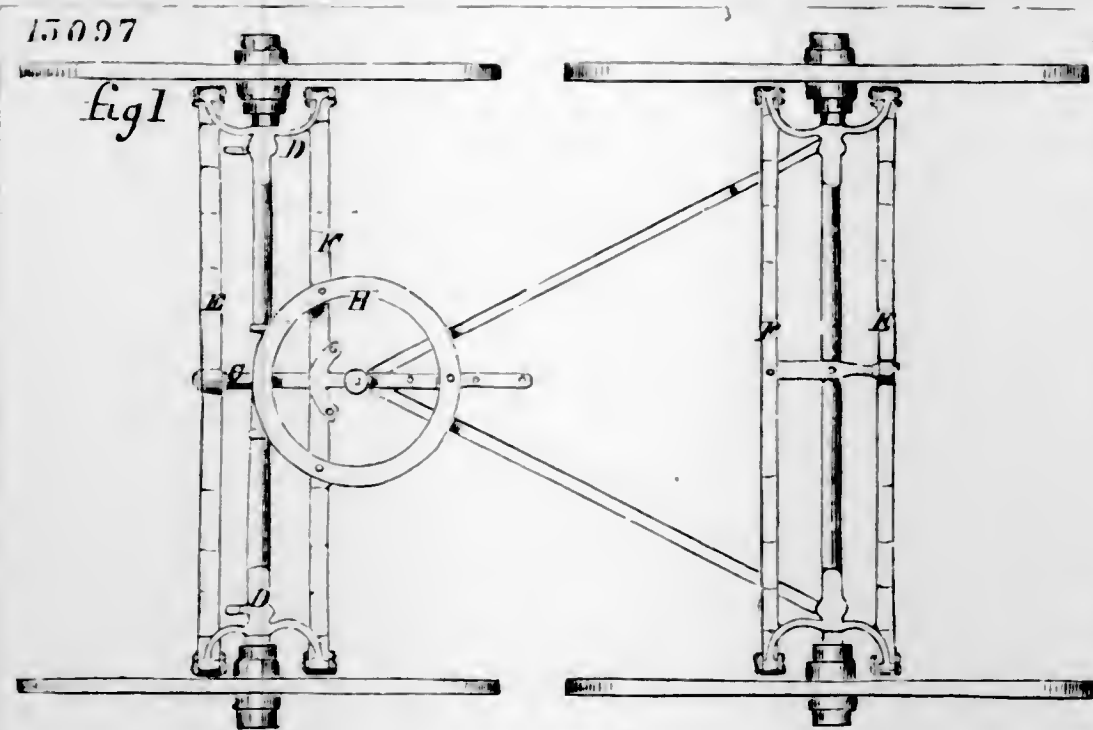












15567



fig. 3

fig. 2

fig. 1

14931

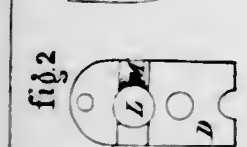


fig. 5

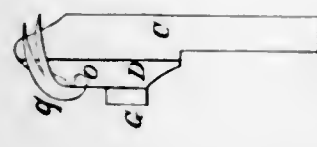
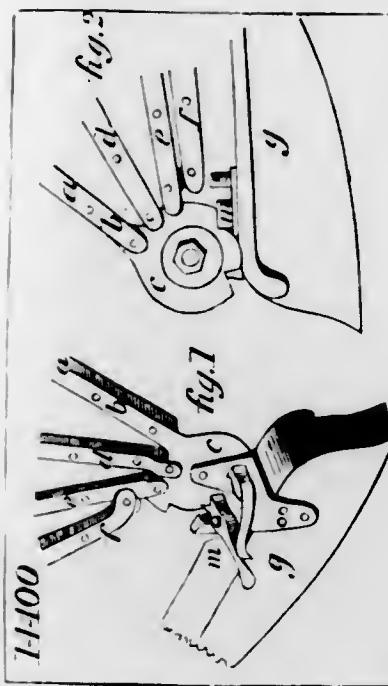
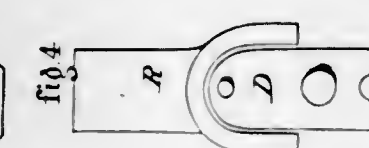
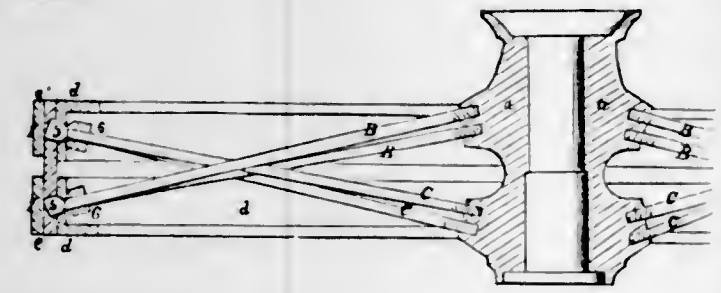


fig. 4

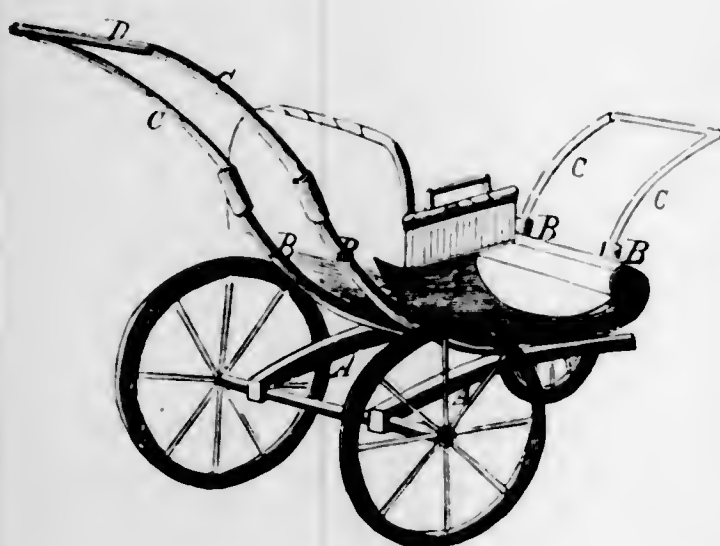


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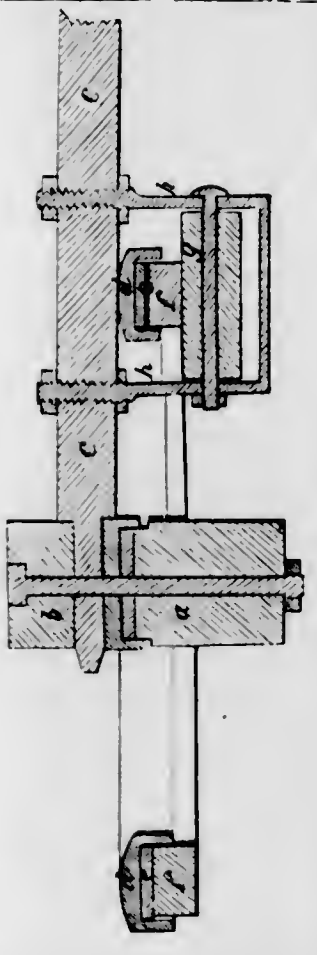
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15071



16122



14735



14364

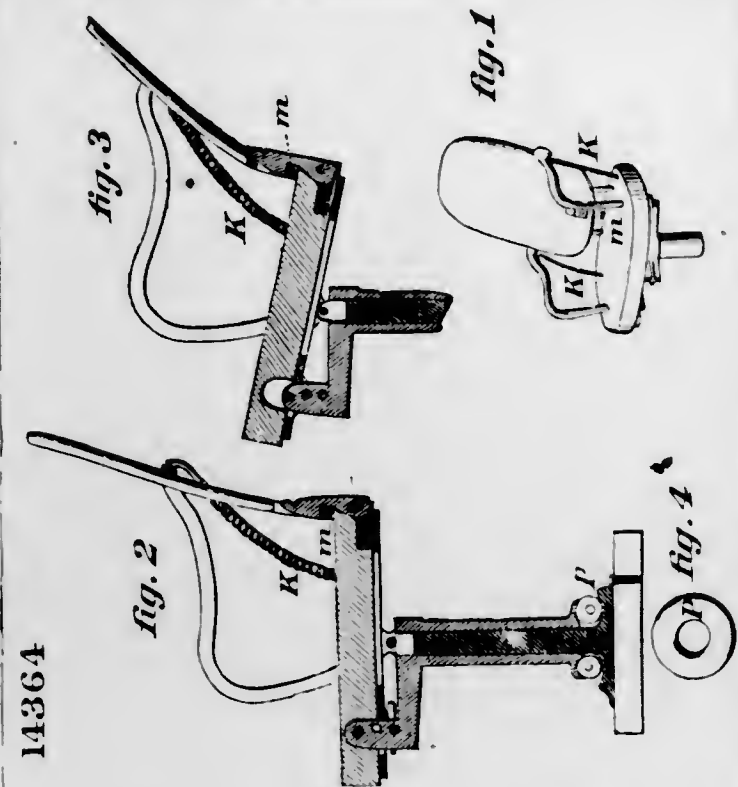
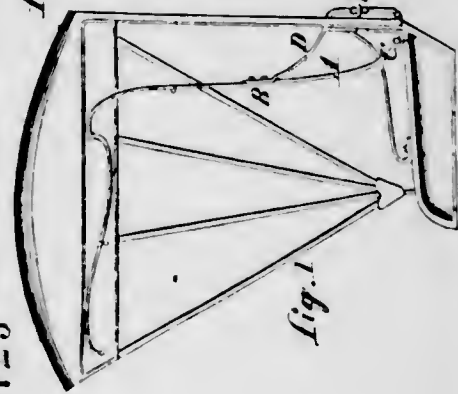
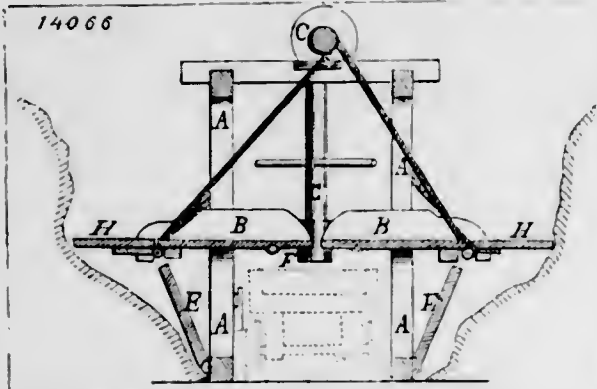


fig. 2

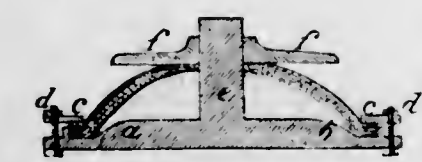
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14066



15698



15869

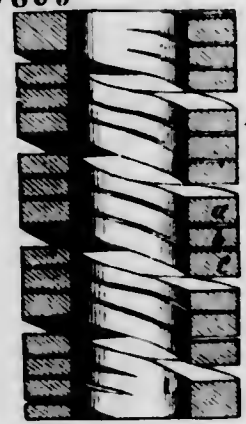
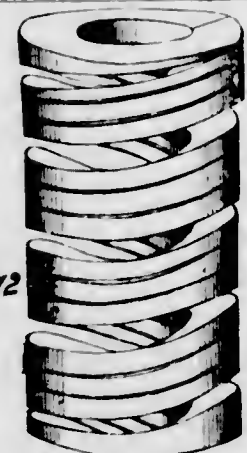


fig. 1

fig. 2



15699

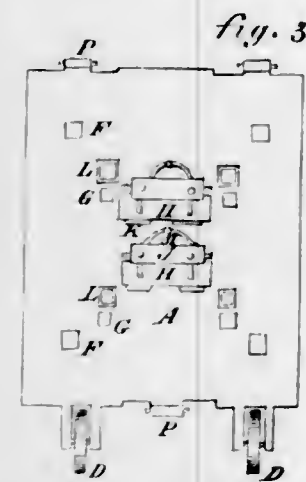


fig. 3

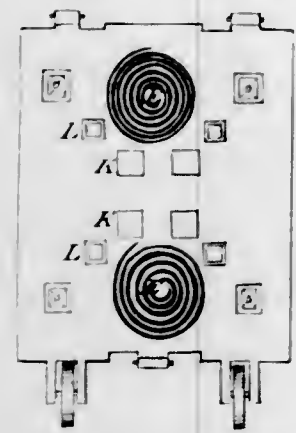


fig. 2

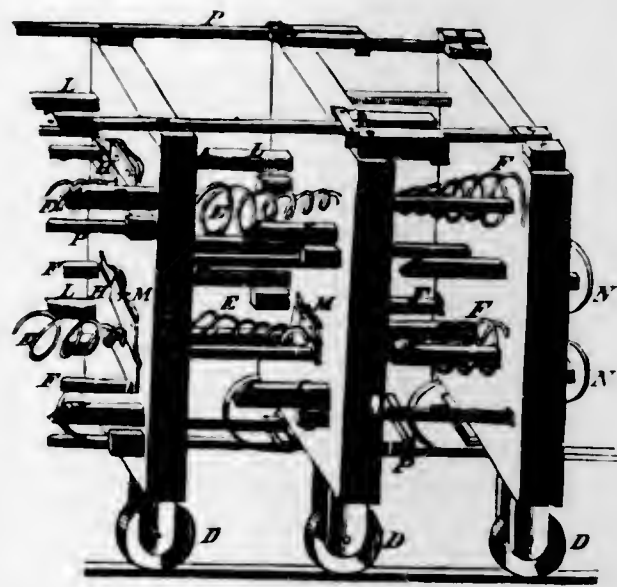


fig. 1

14154

fig. 4

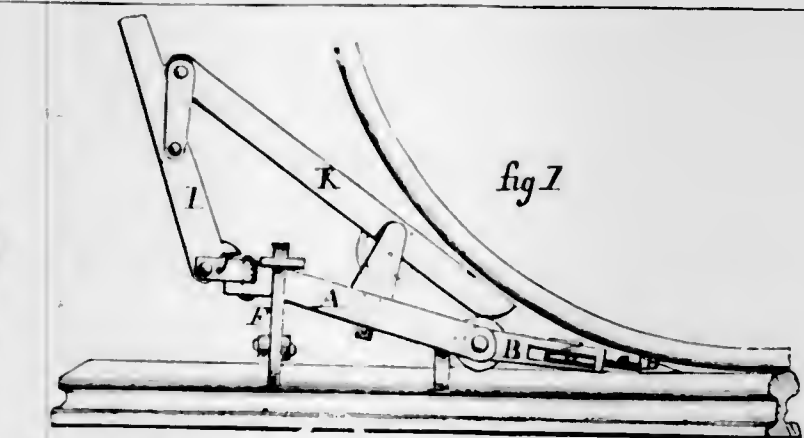


fig. 1

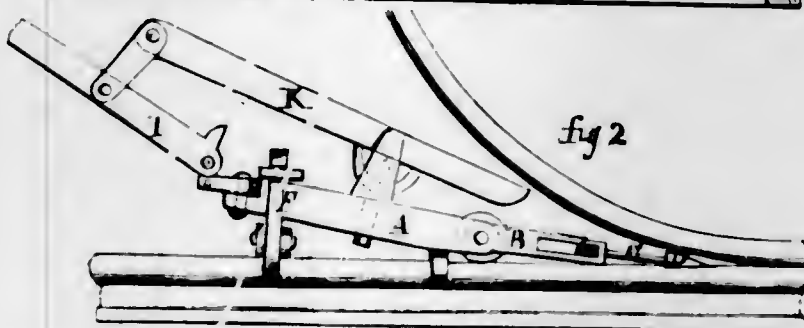


fig. 2

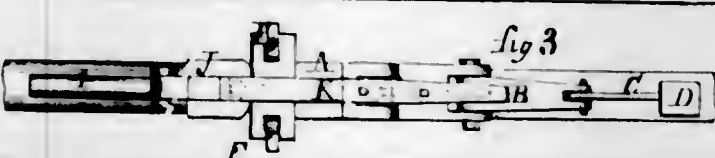
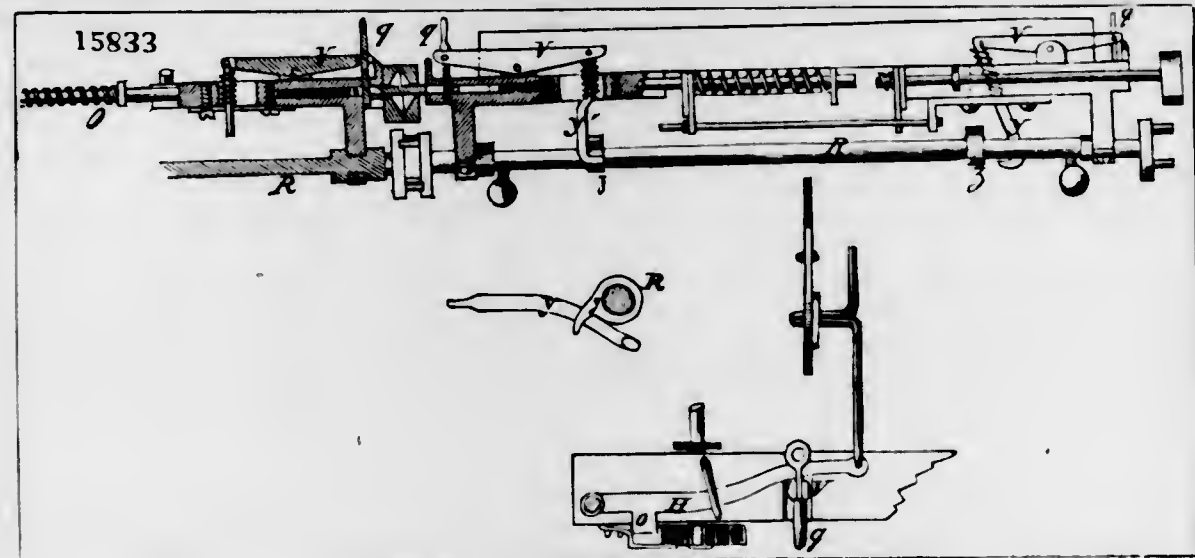
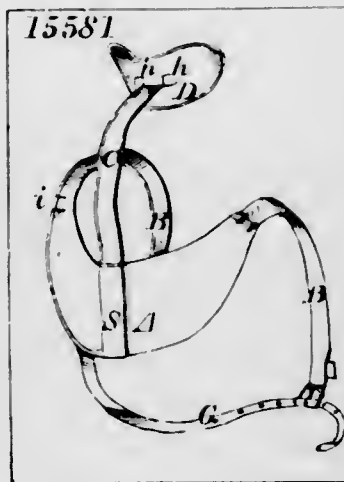


fig. 3

15833



15581



14881

fig. 1

fig. 2

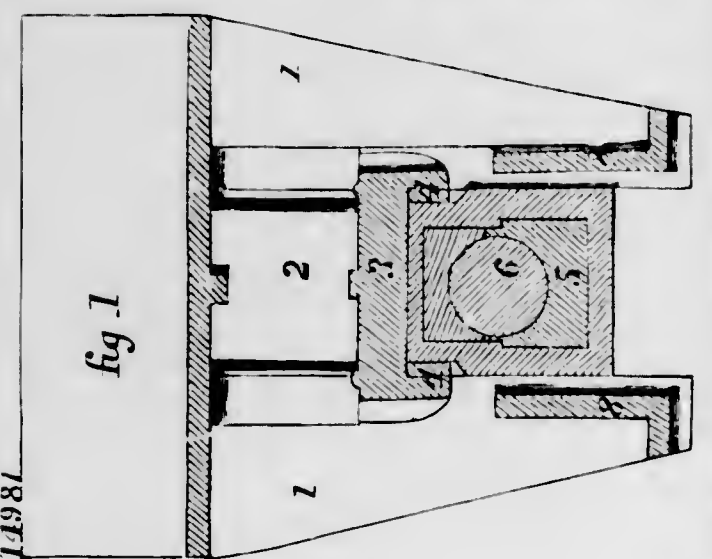
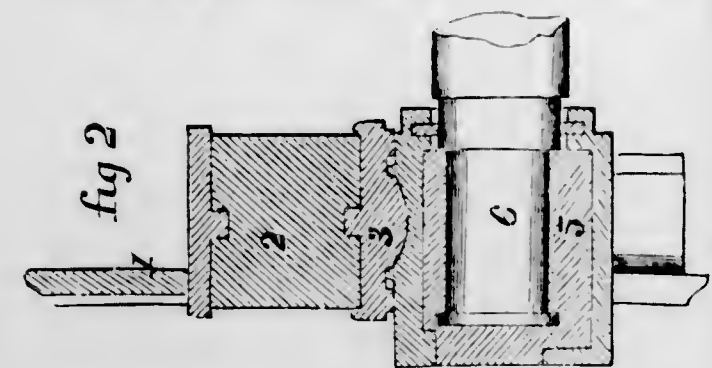
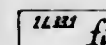
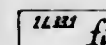
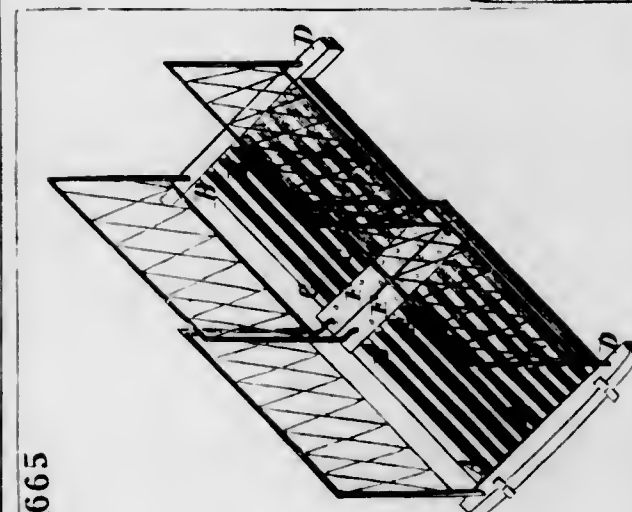


fig. 1



14665

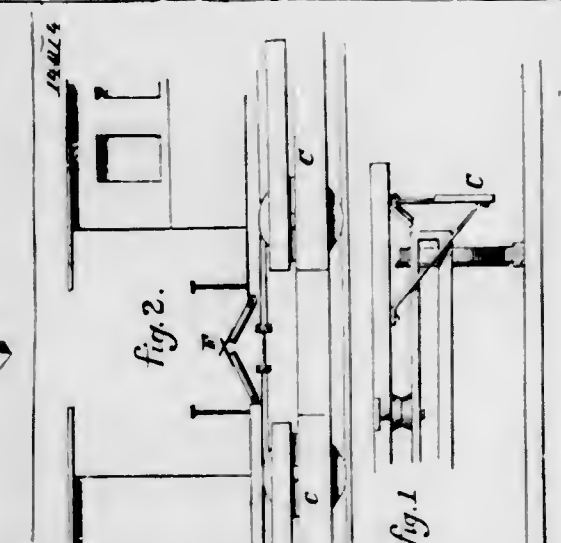
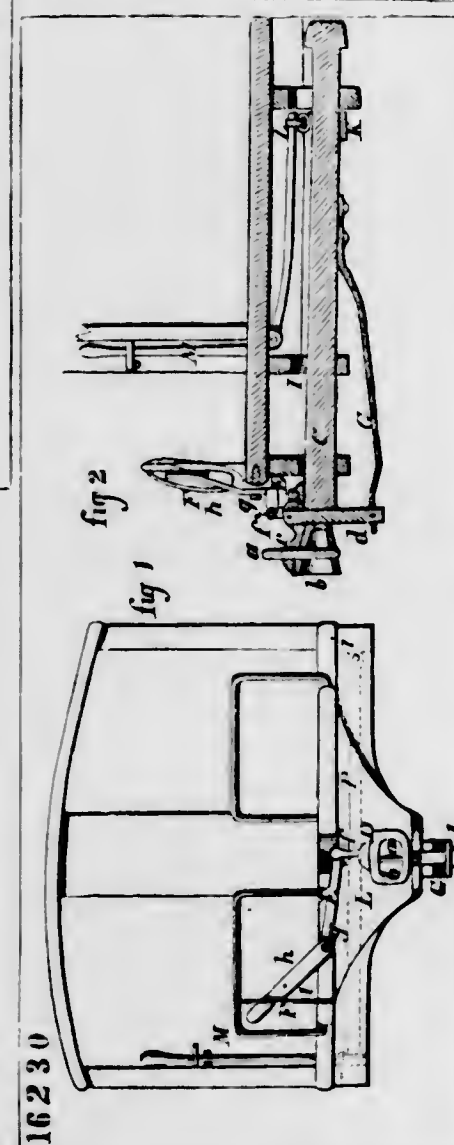
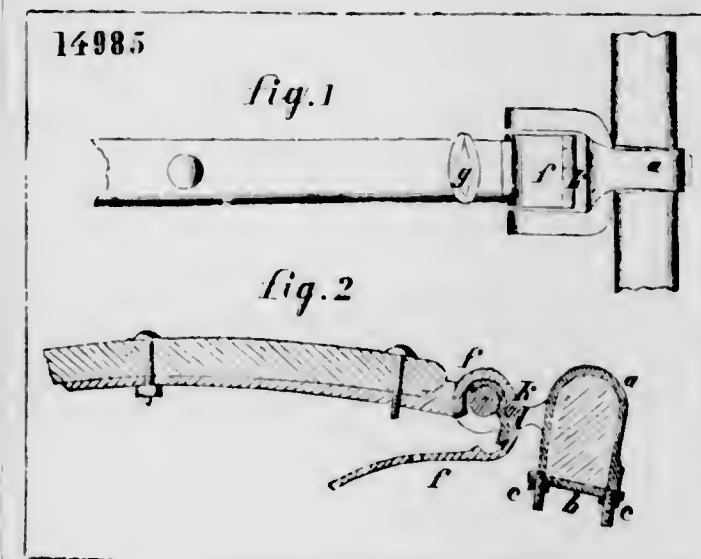
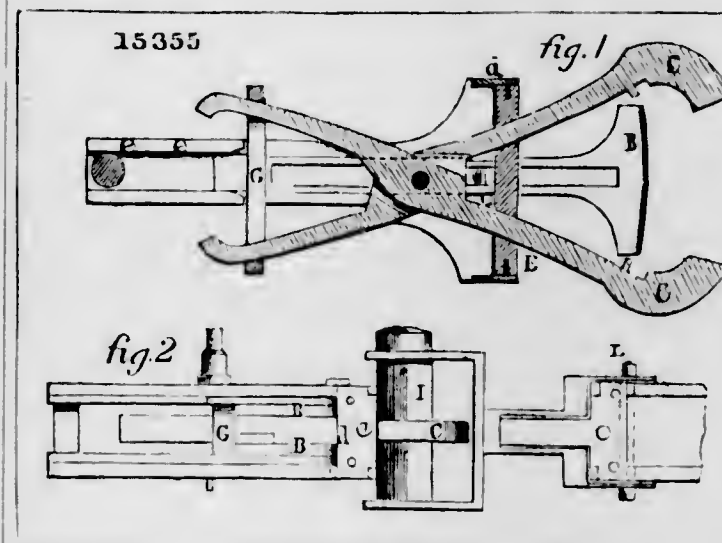
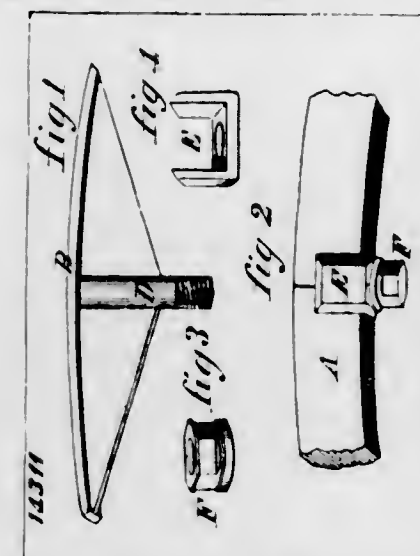
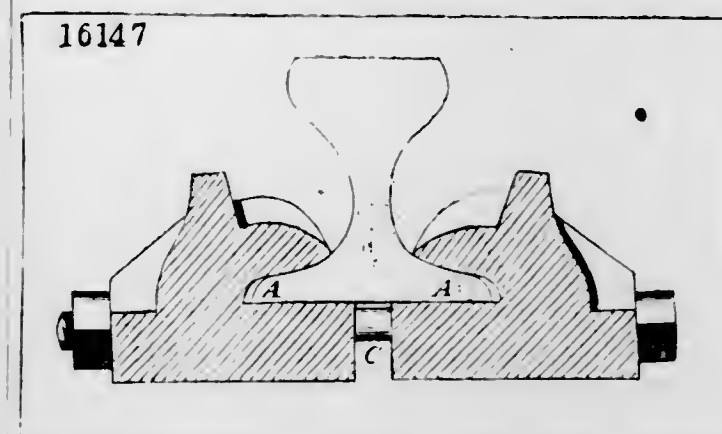
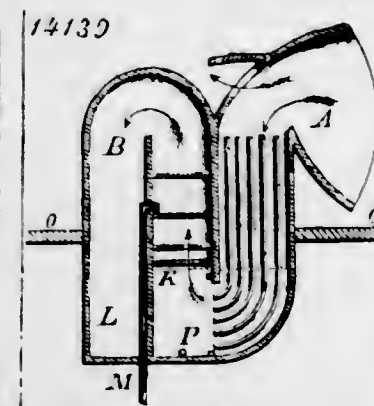
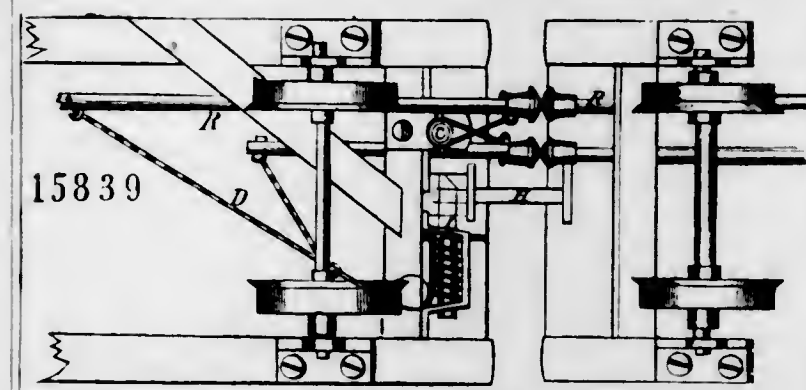
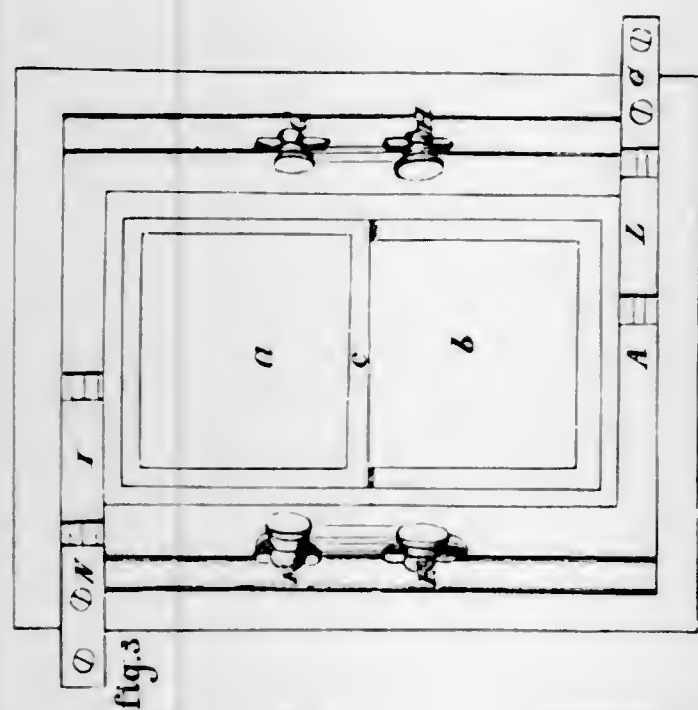
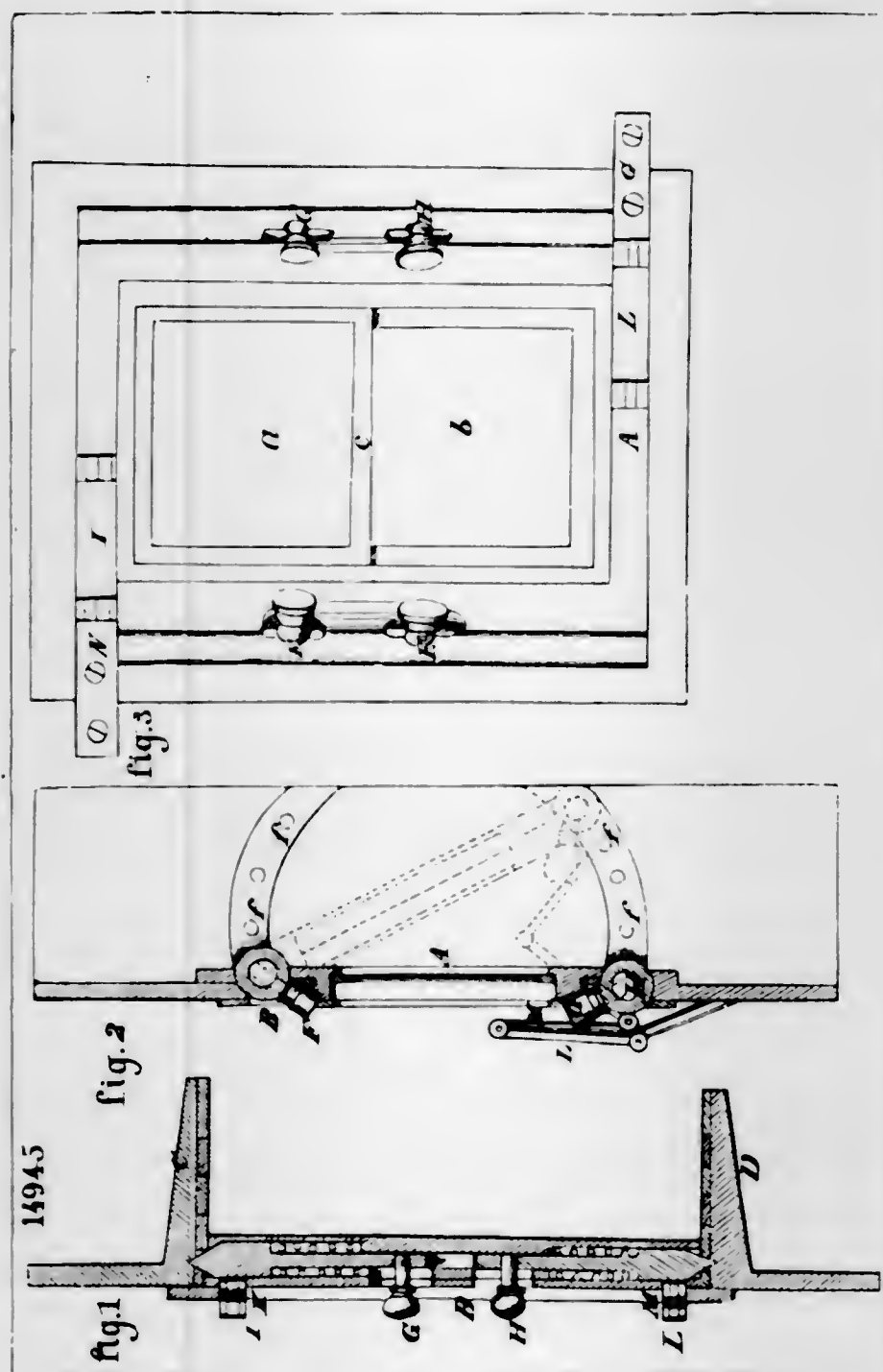
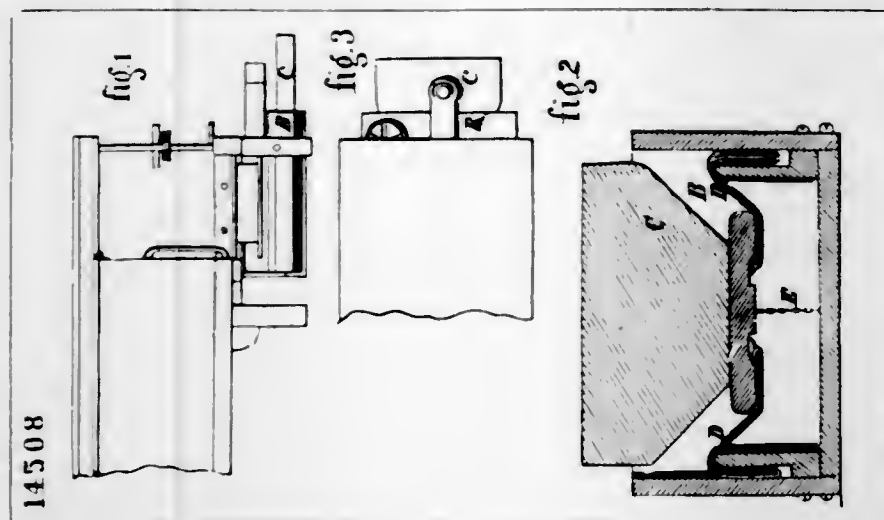
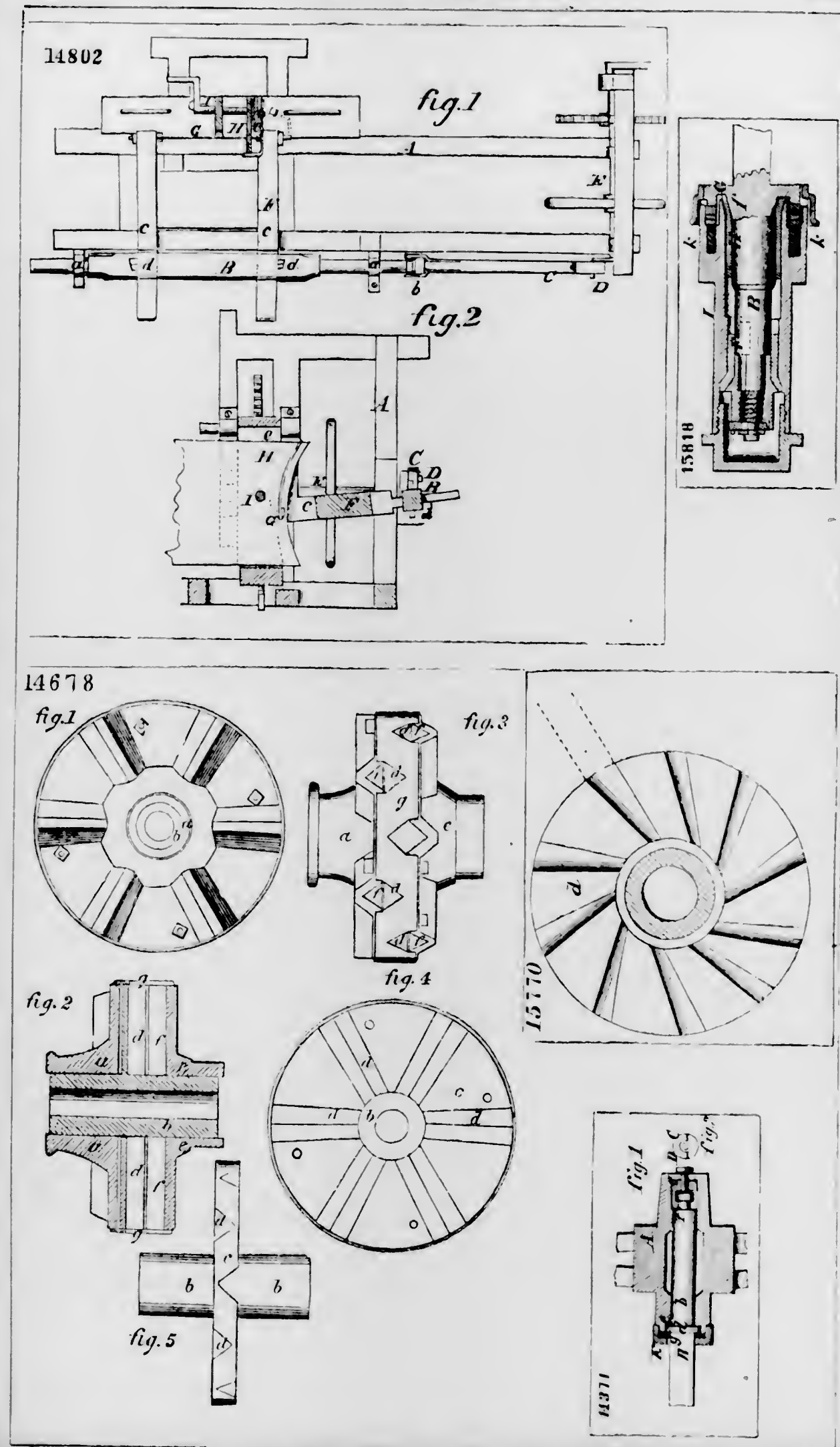
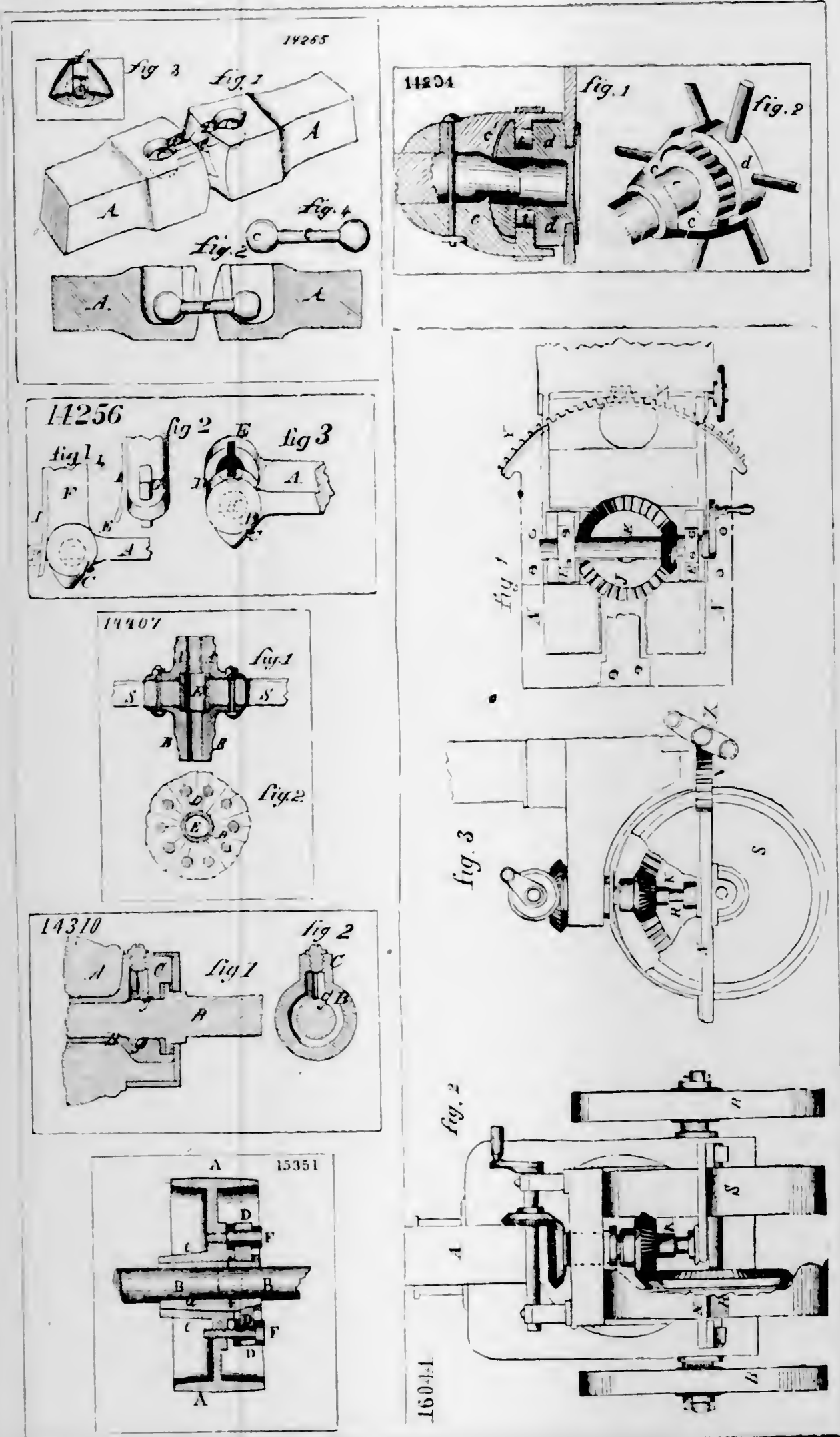


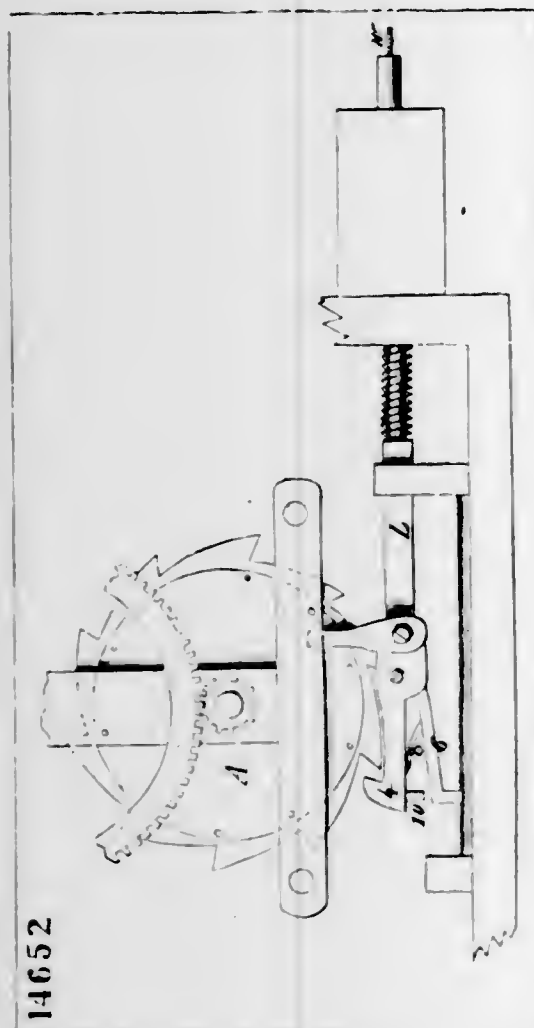
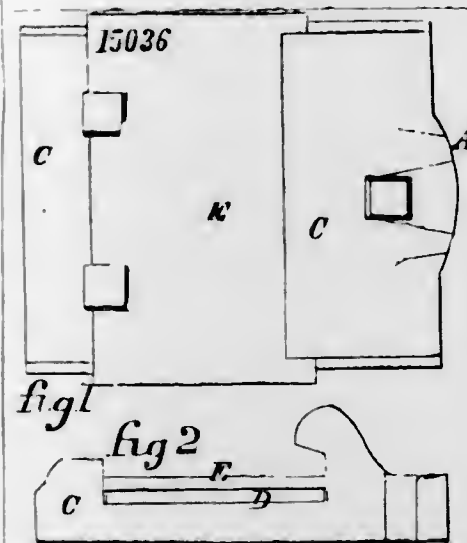
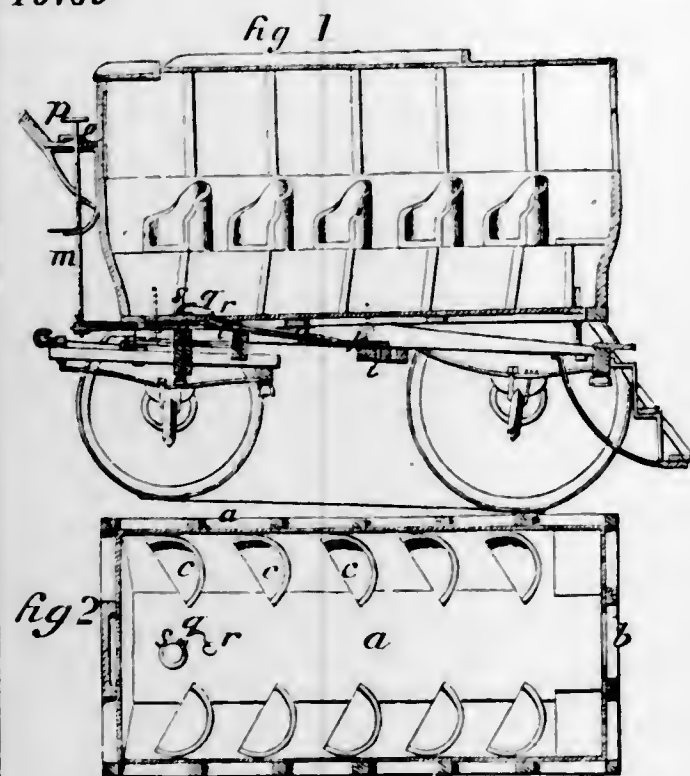
fig. 2

fig. 1

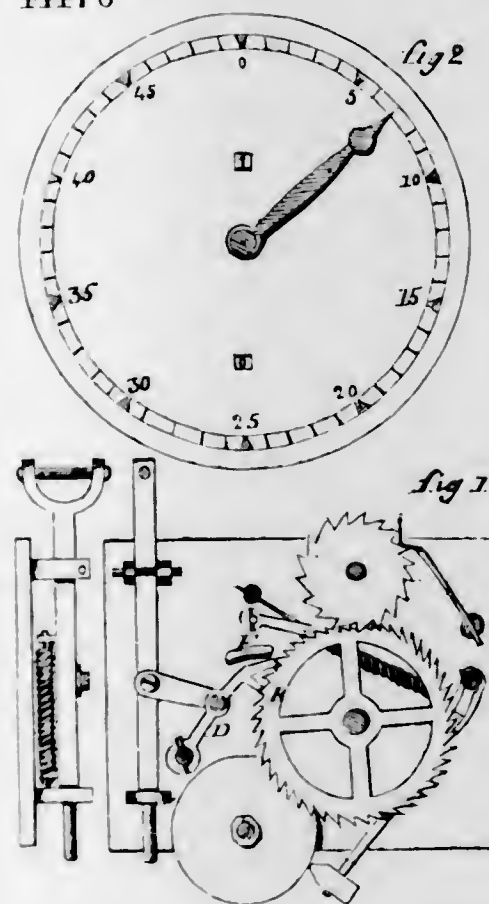




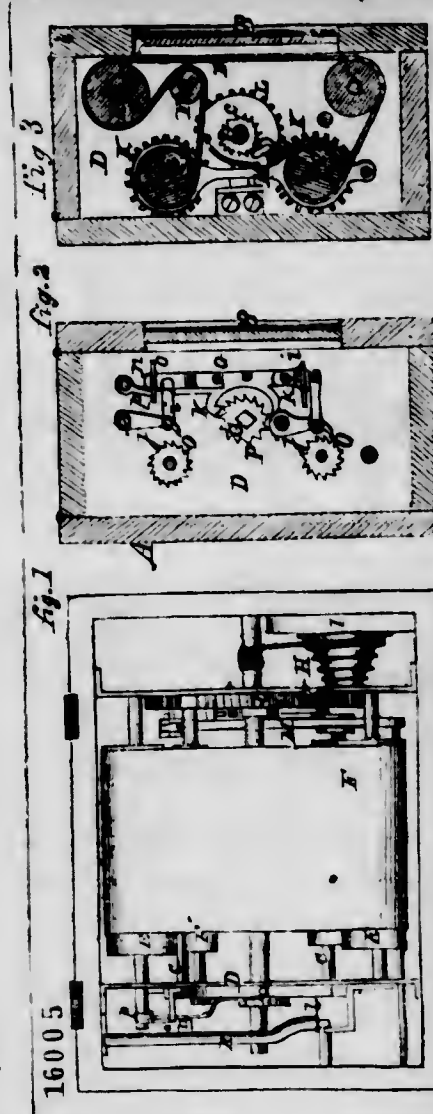
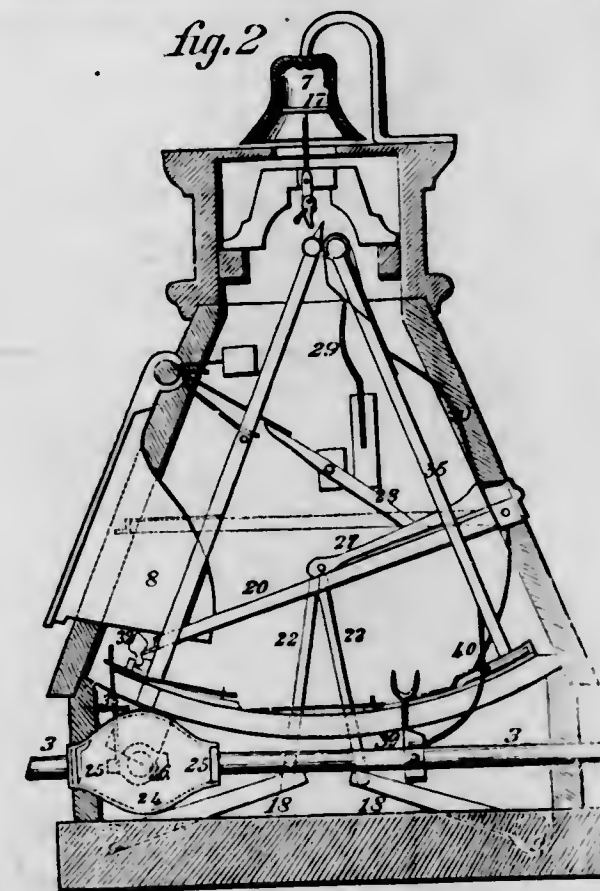
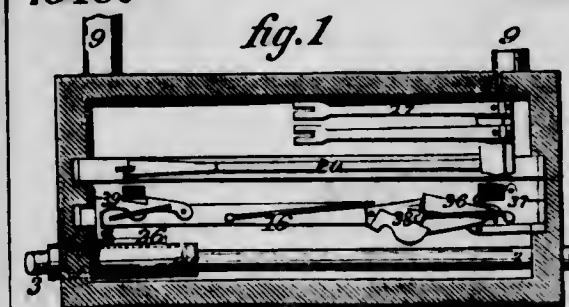
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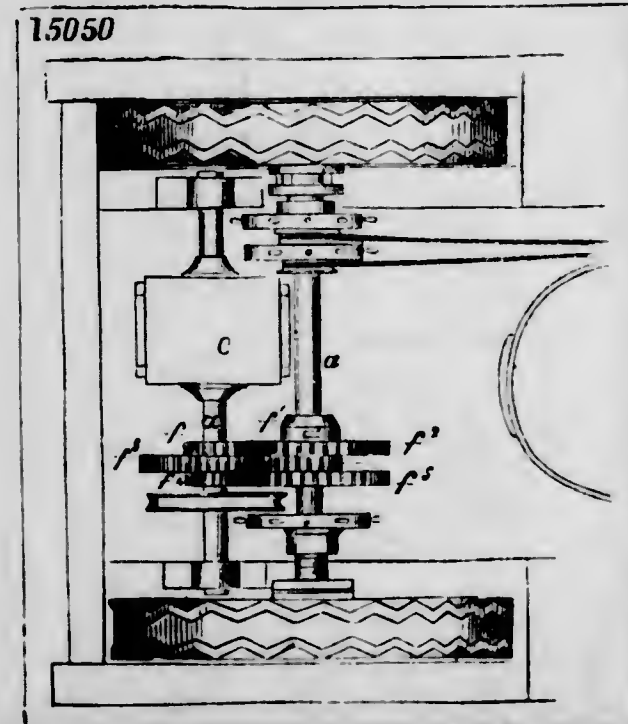
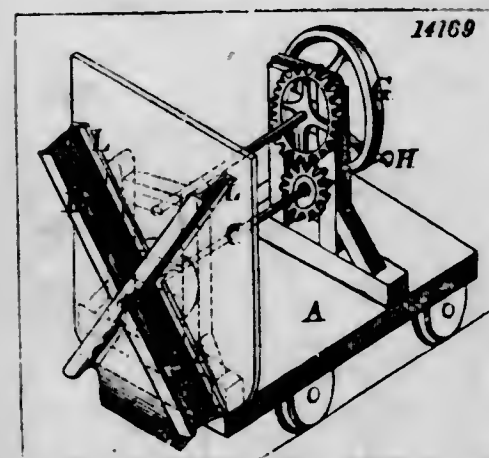
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15480



15050



20

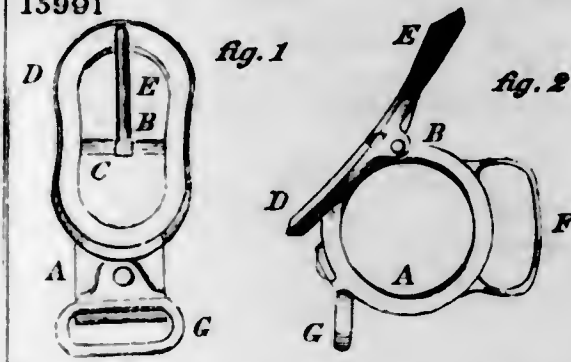
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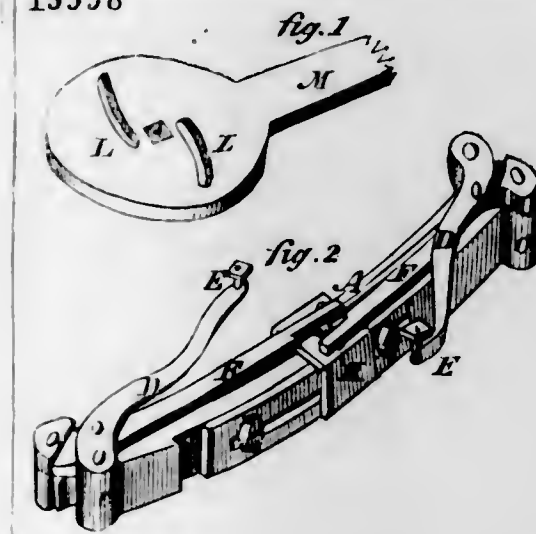
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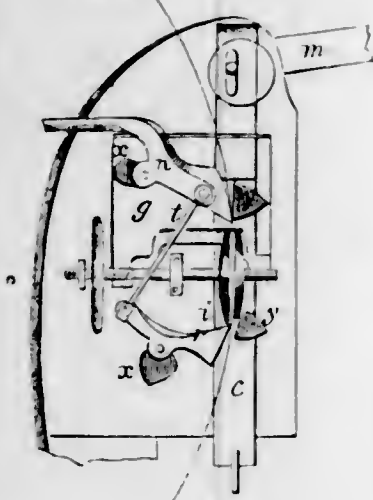
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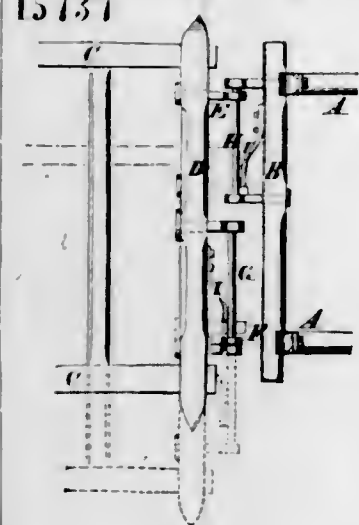
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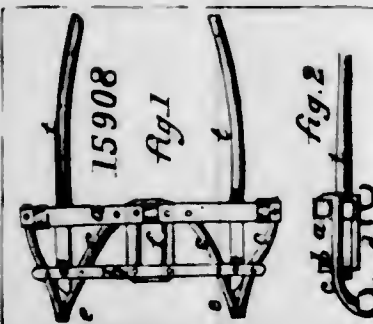
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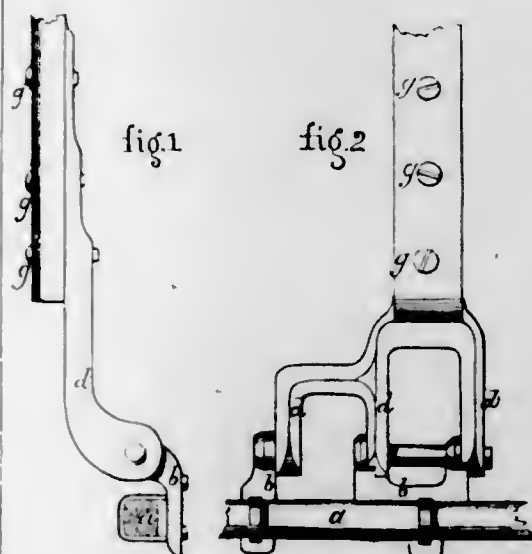
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15908



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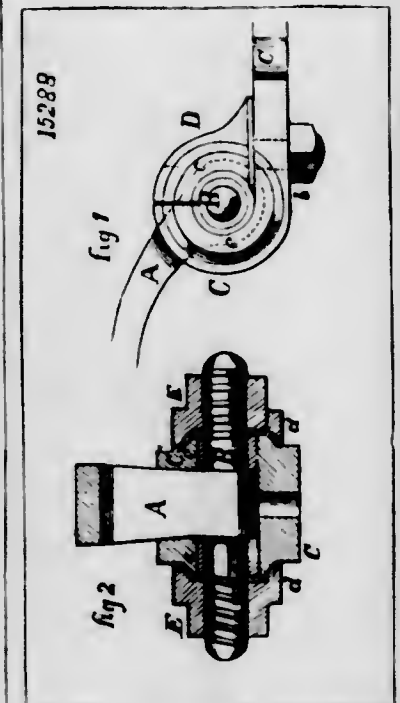
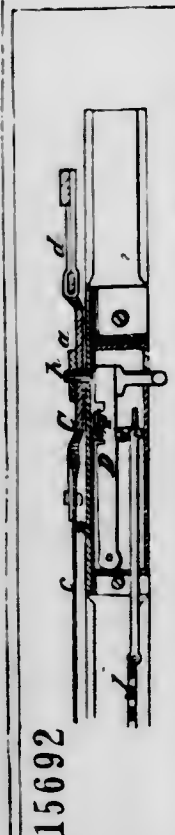
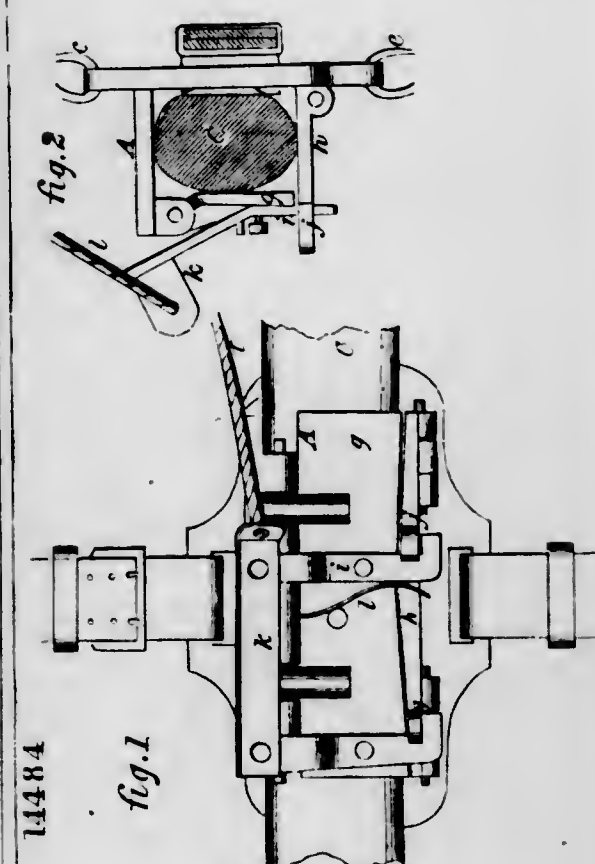
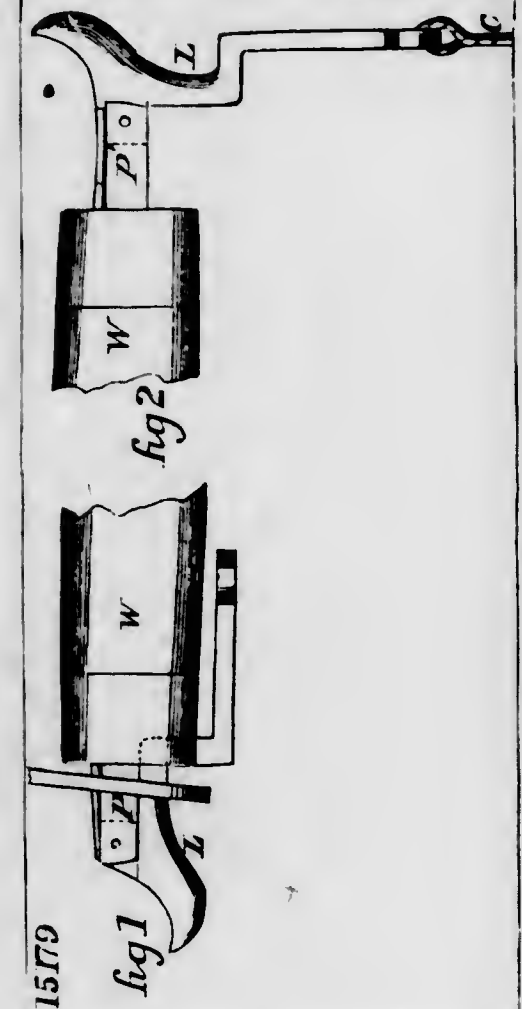
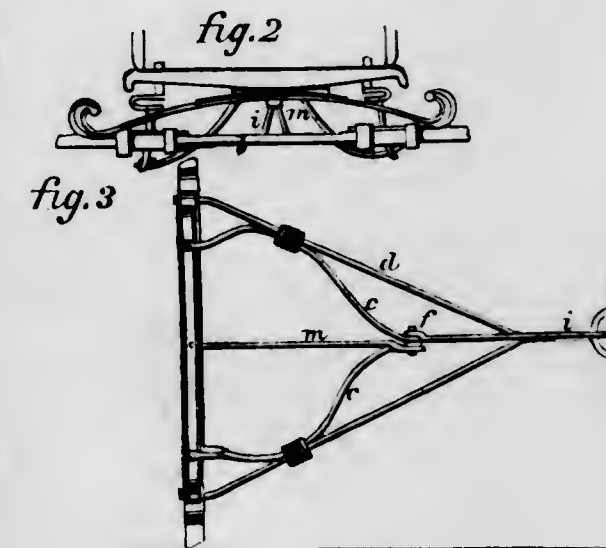
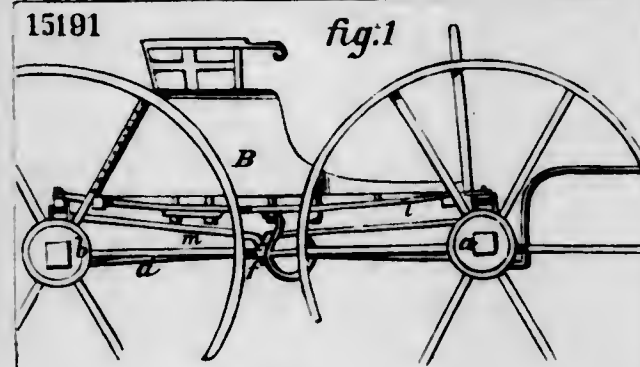


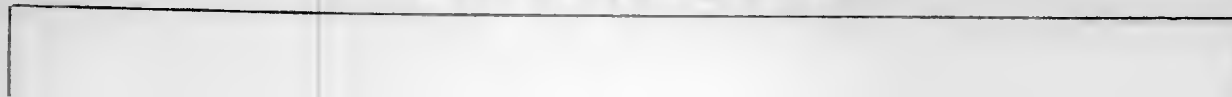
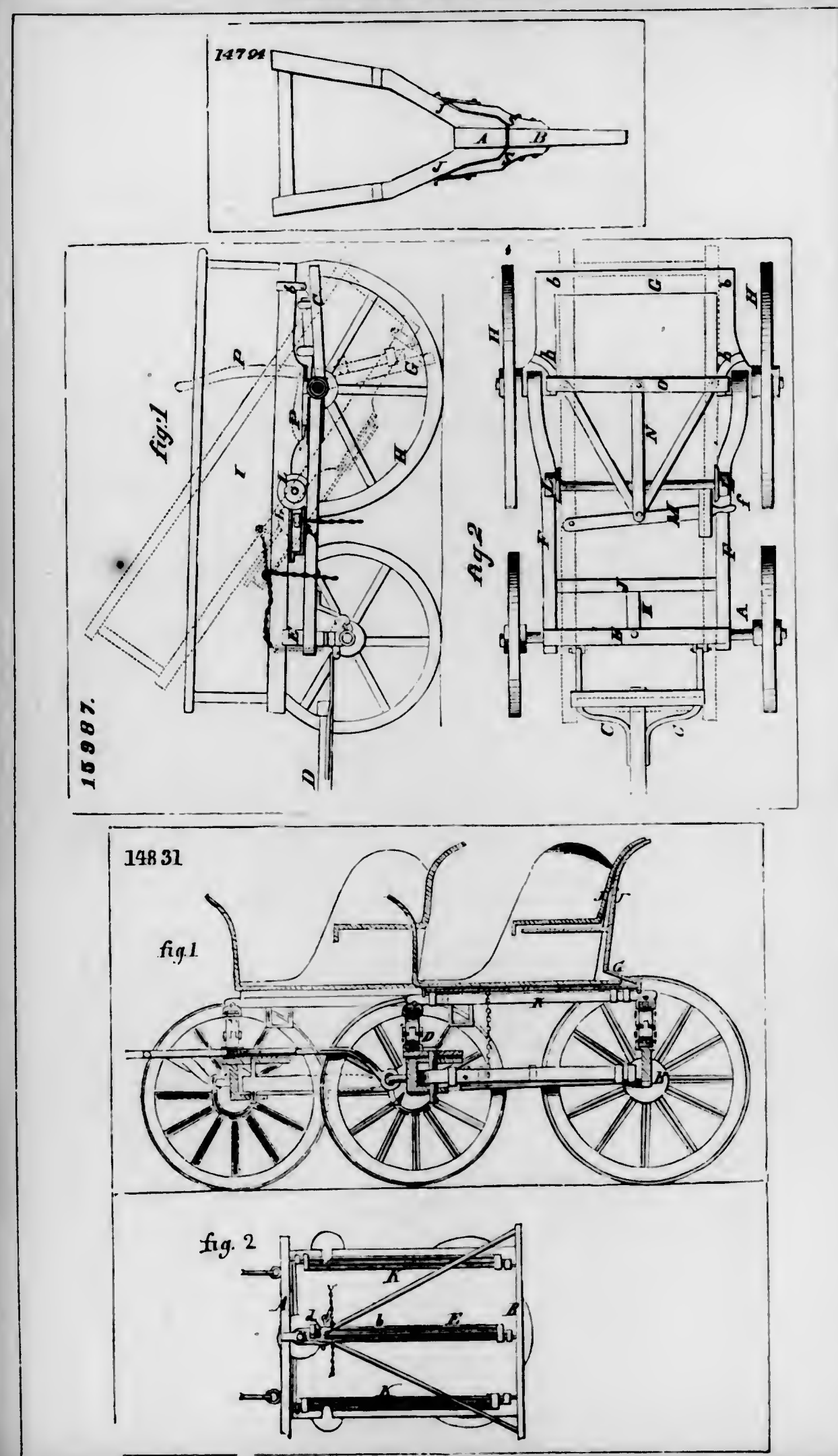
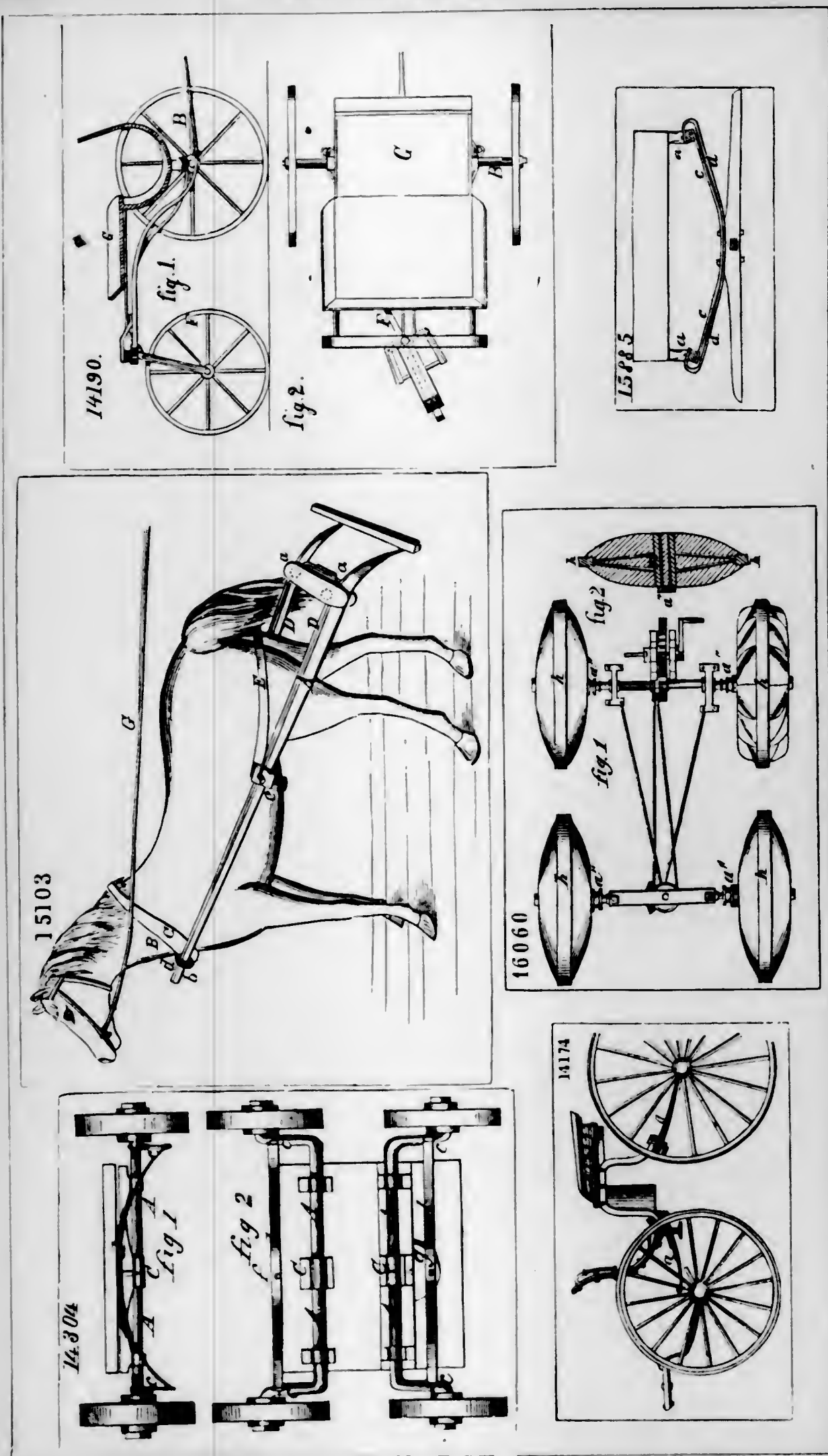
15211 fig 1

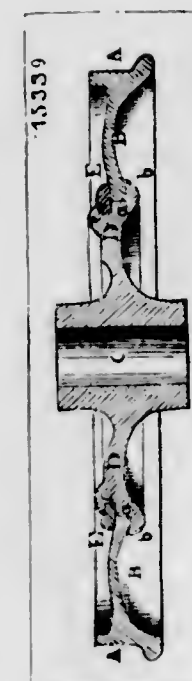
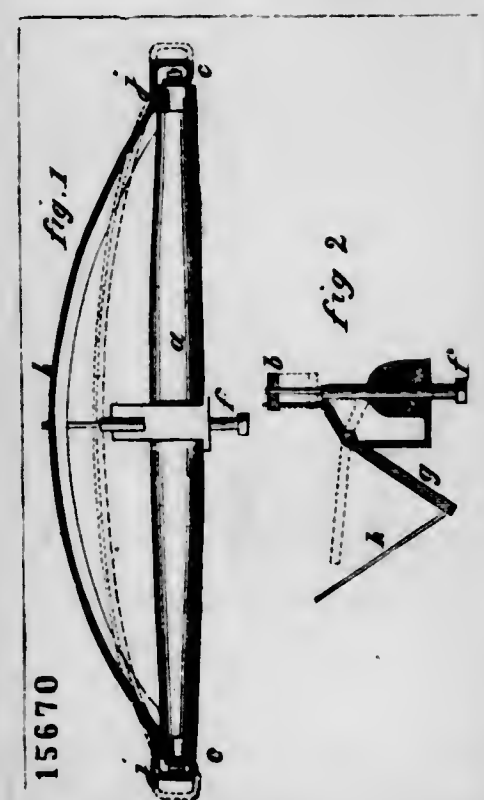
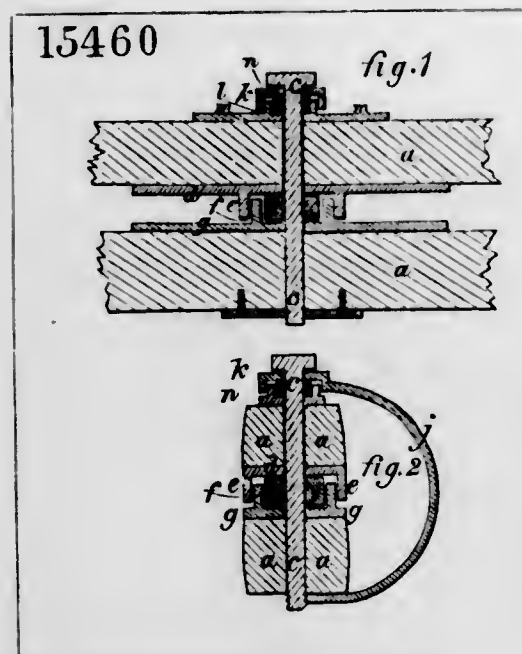
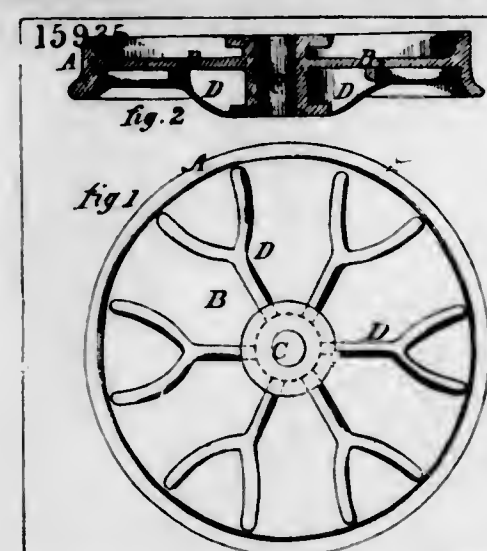
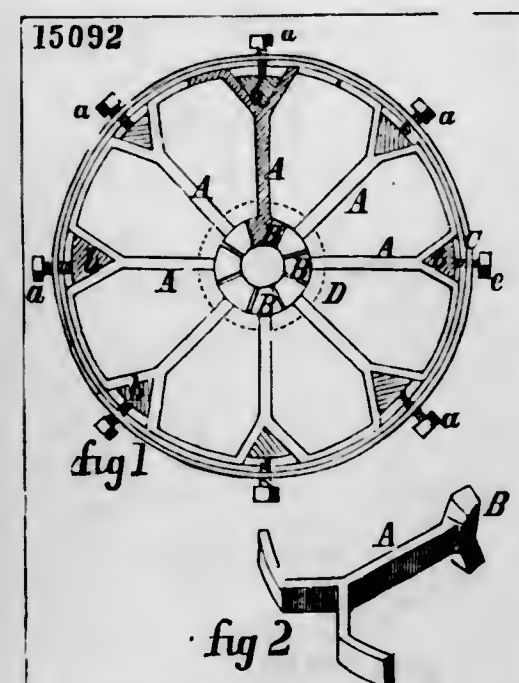
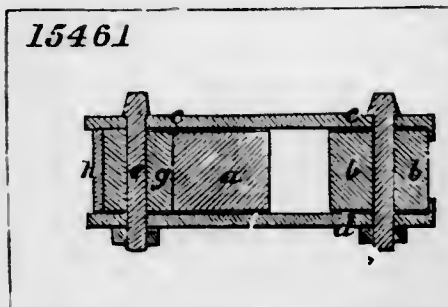
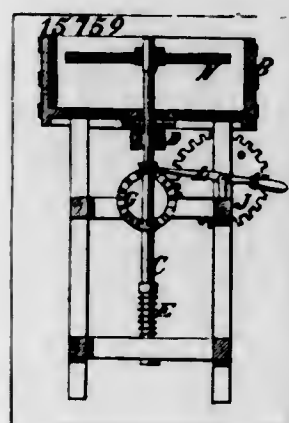
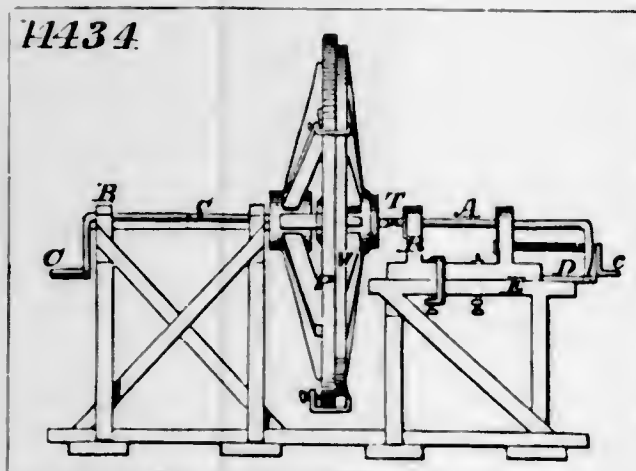
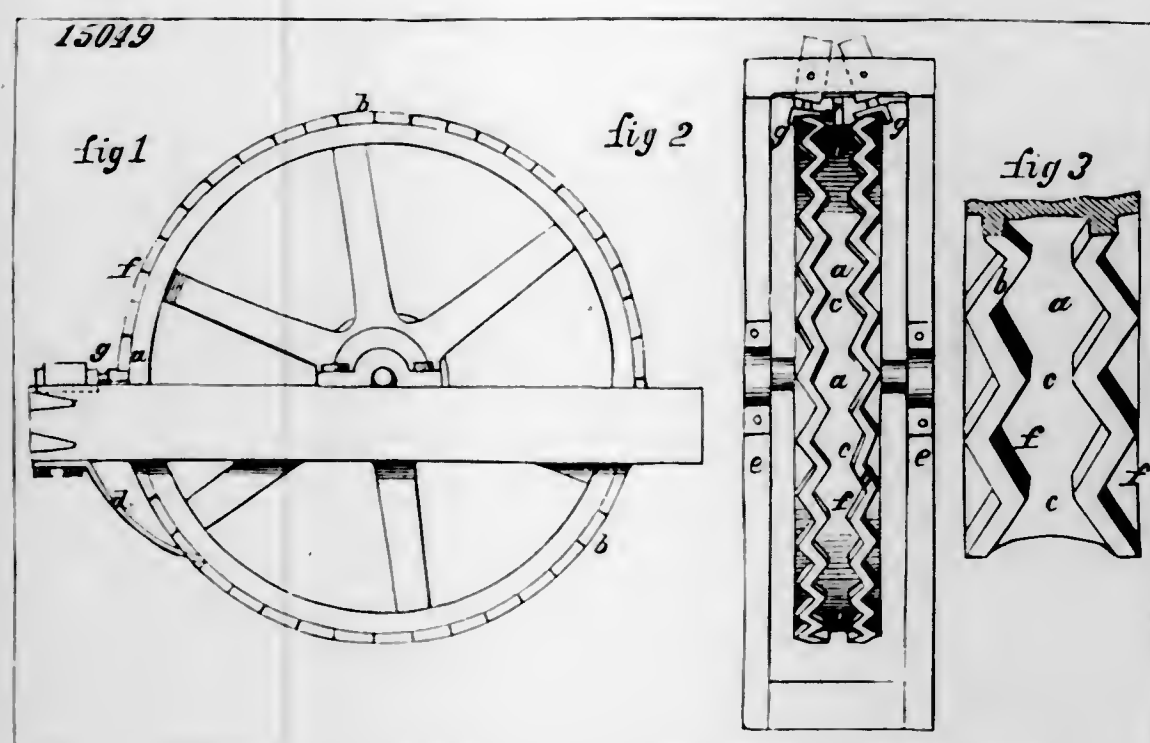
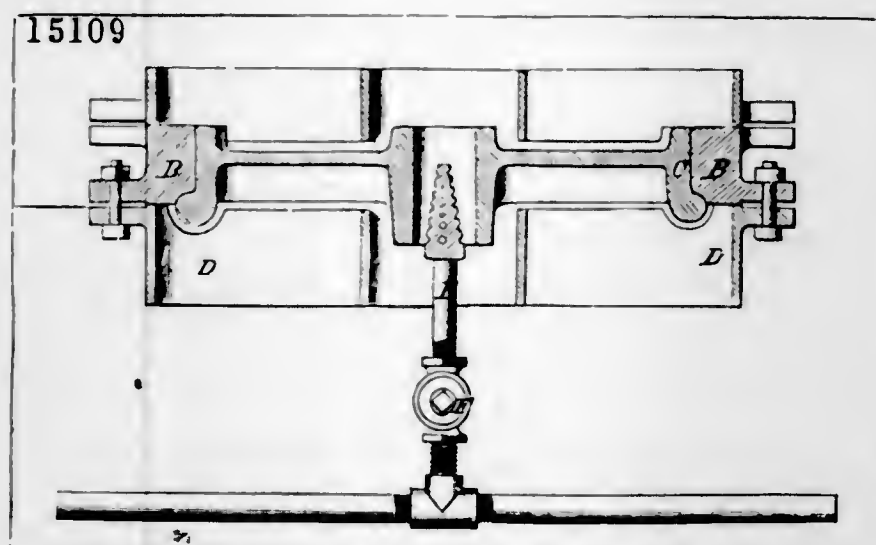
fig 2



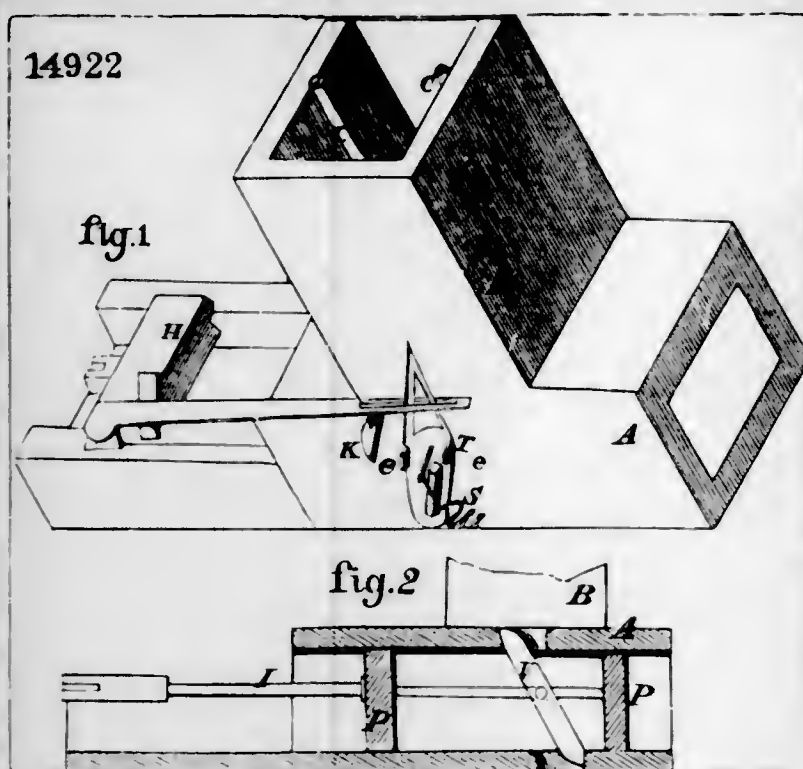
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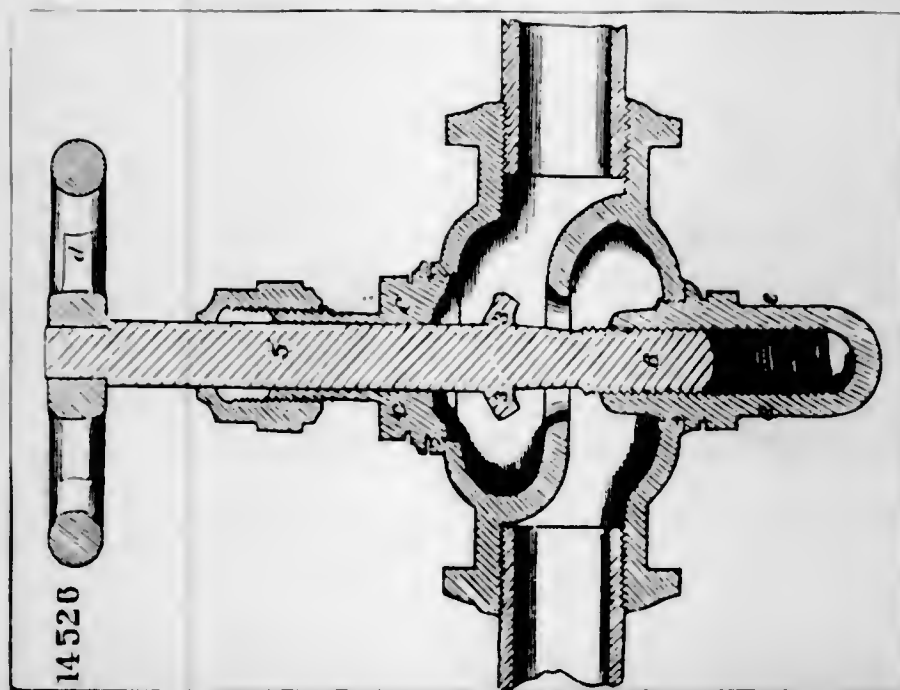
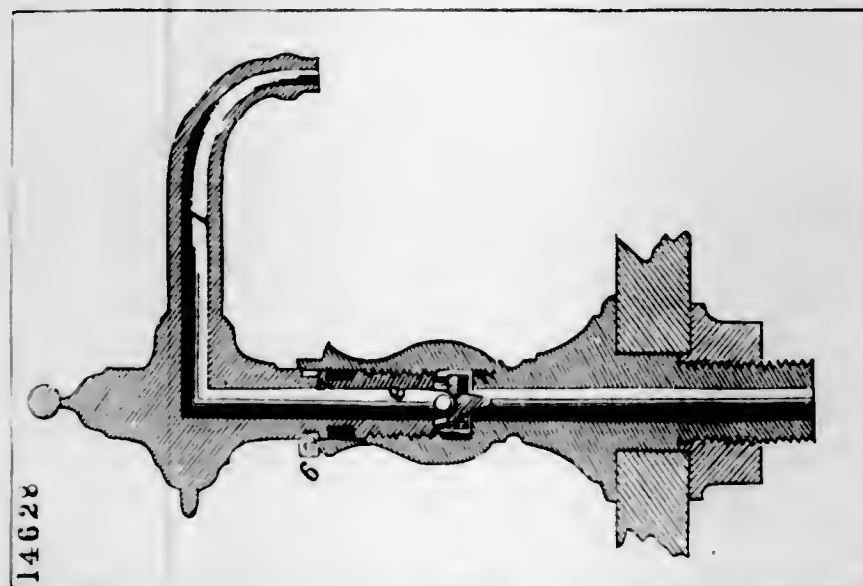
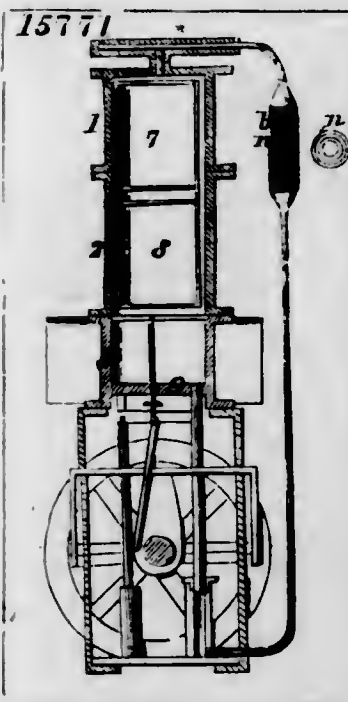




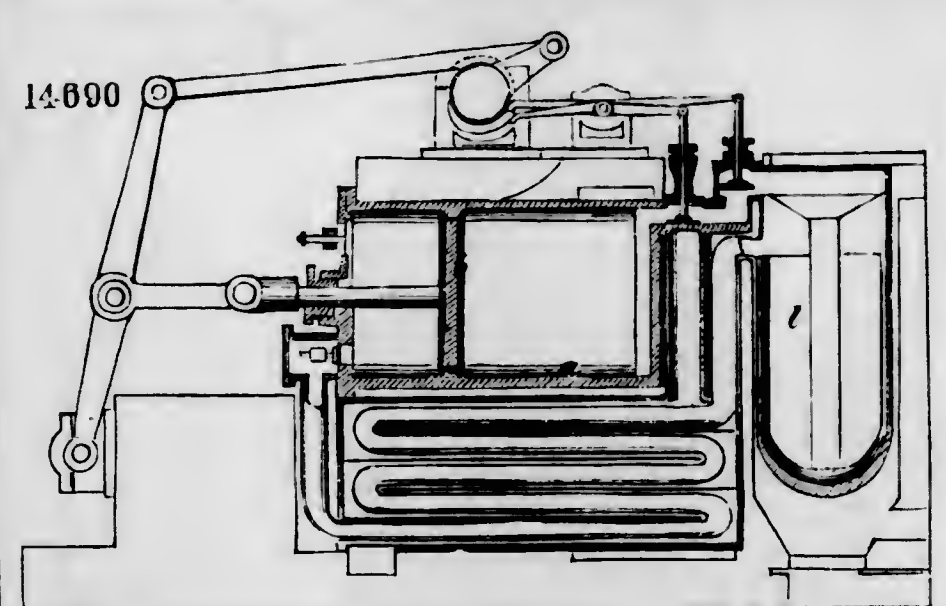
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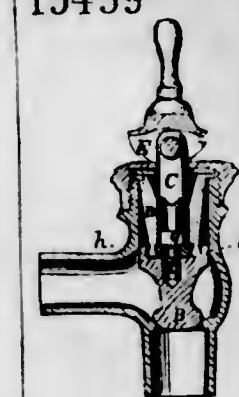
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15459



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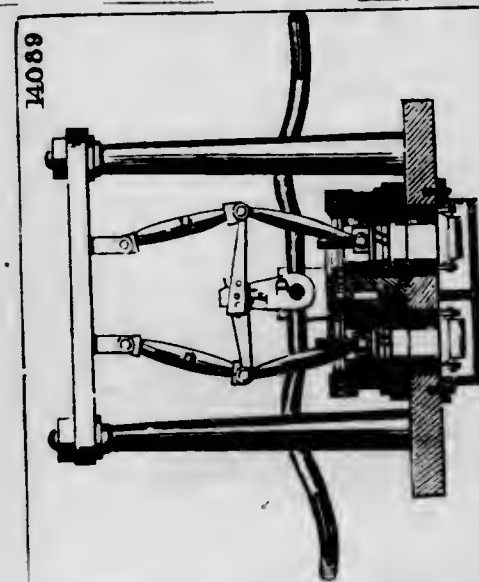


fig. 1

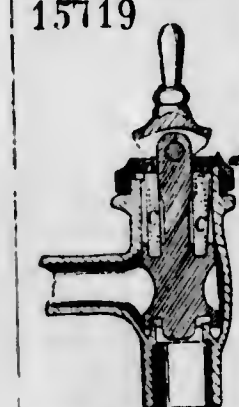
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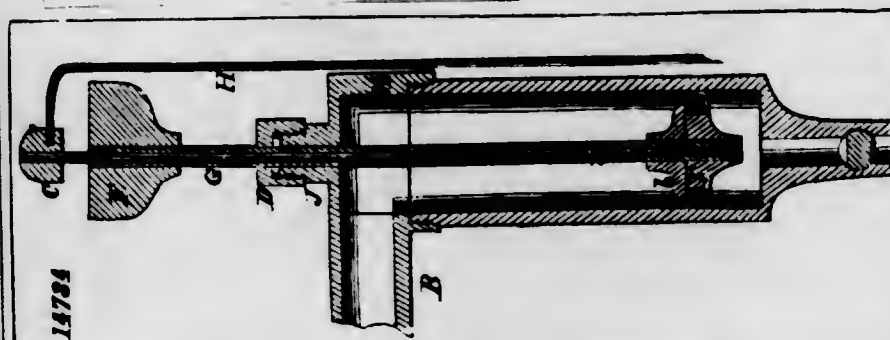
fig. 2



15719



14784



16232

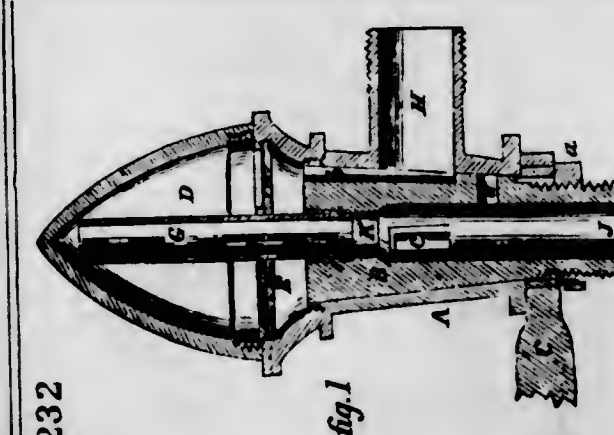
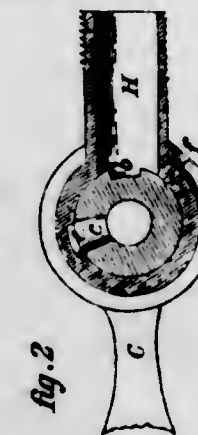
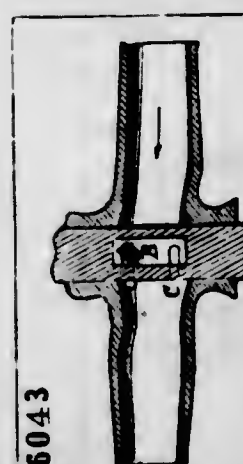


fig. 2



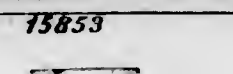
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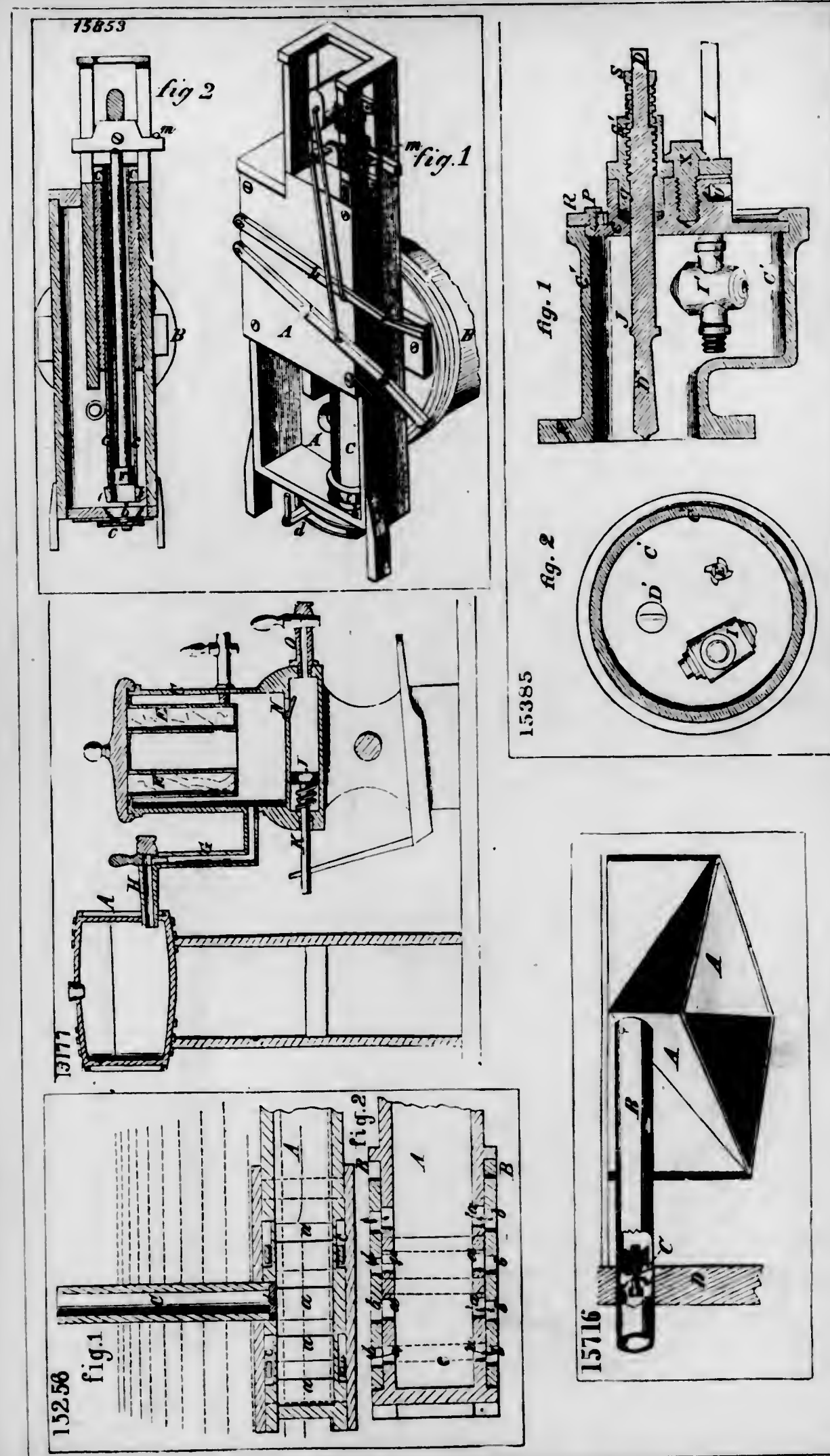
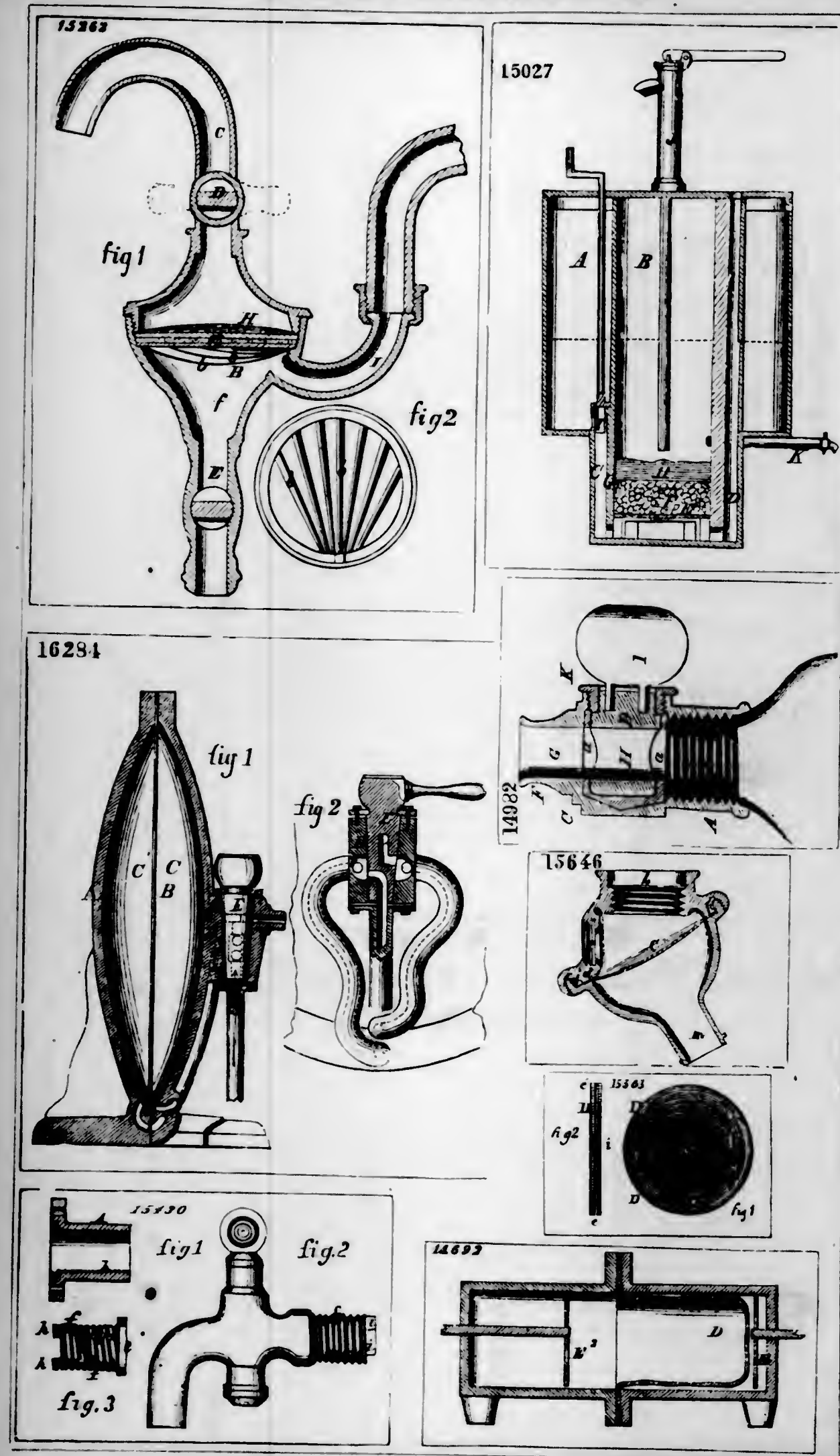


15363



15853





14602

fig.1

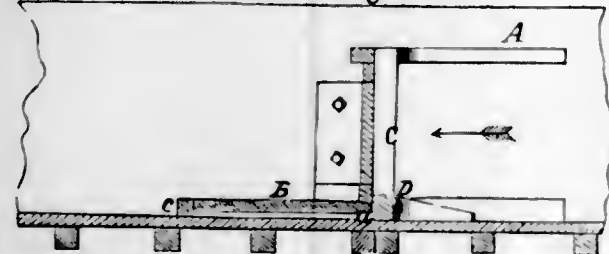
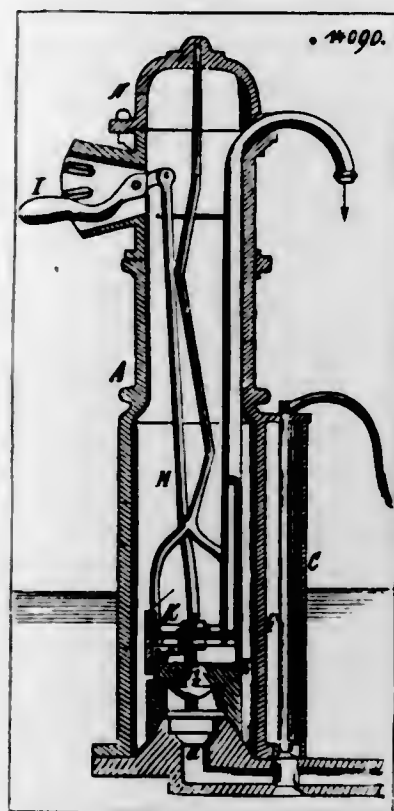
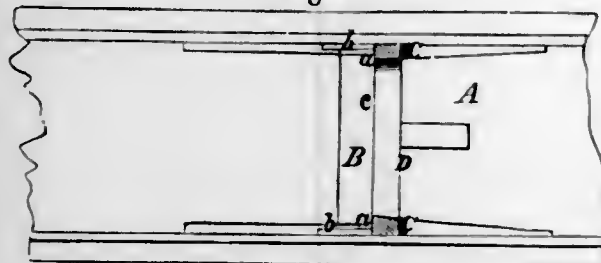


fig.2



15846

fig.1

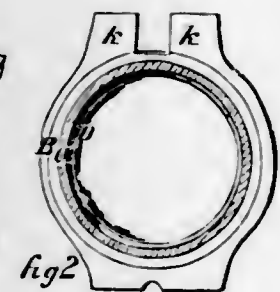
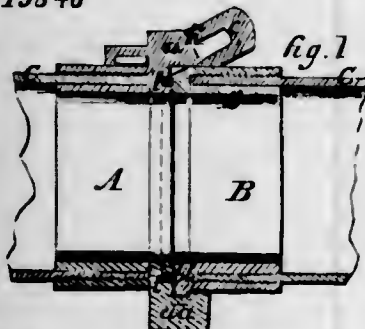


fig.2

14557

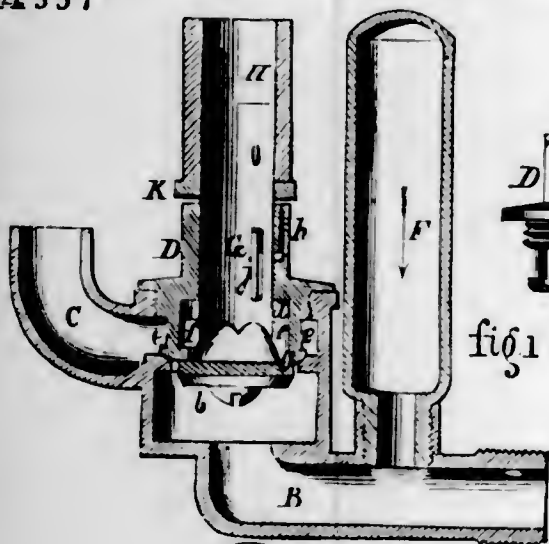


fig.1

fig.3

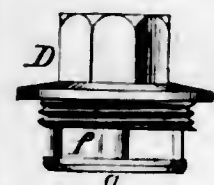
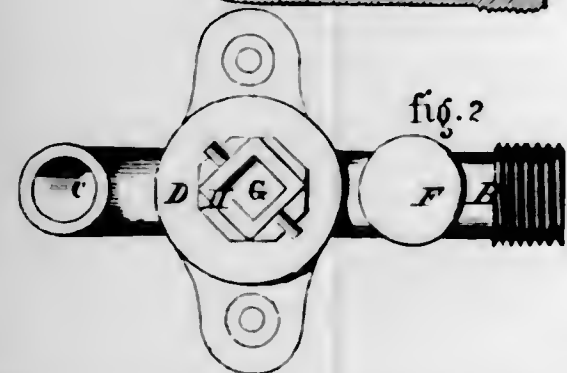
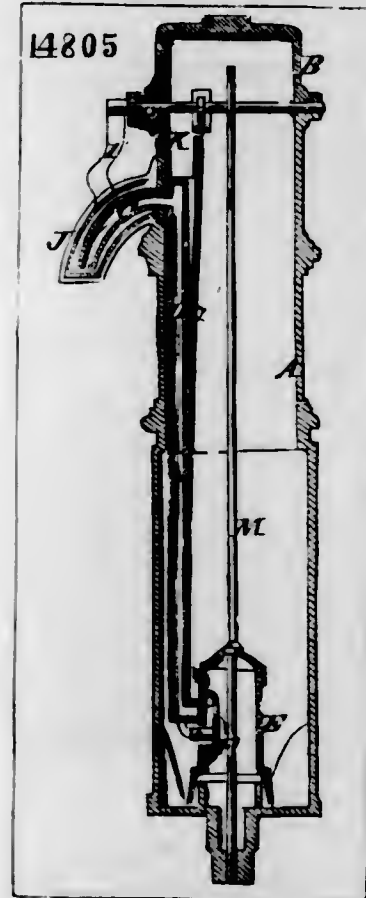


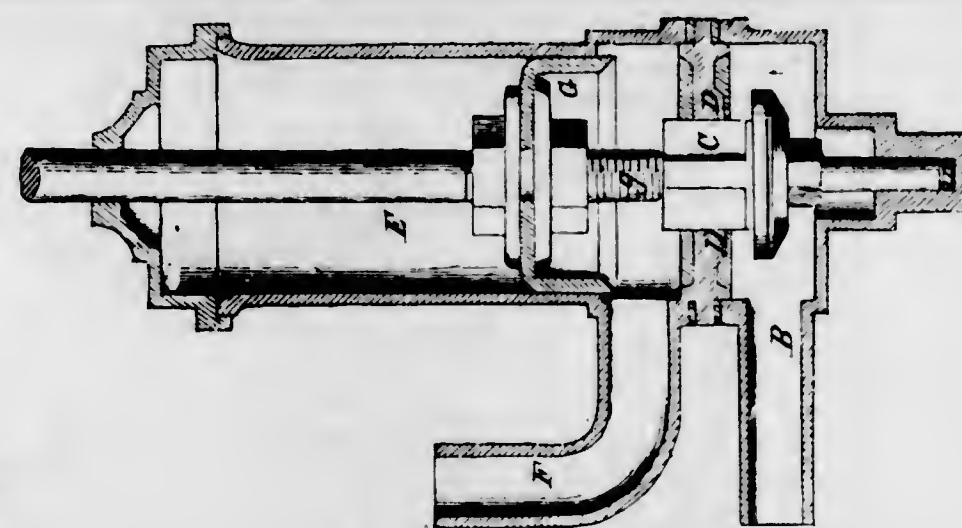
fig.2



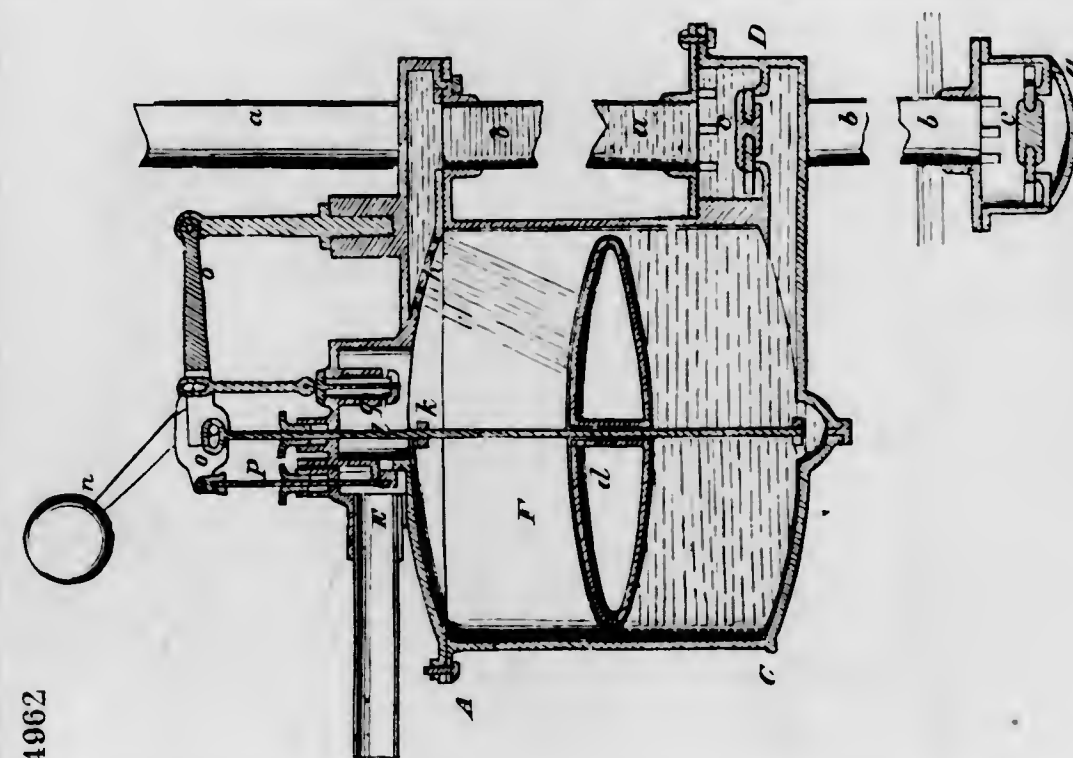
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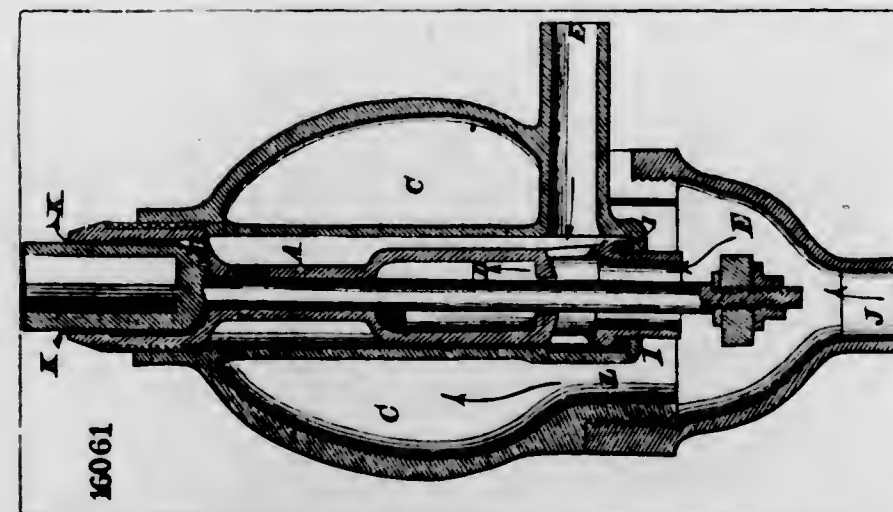
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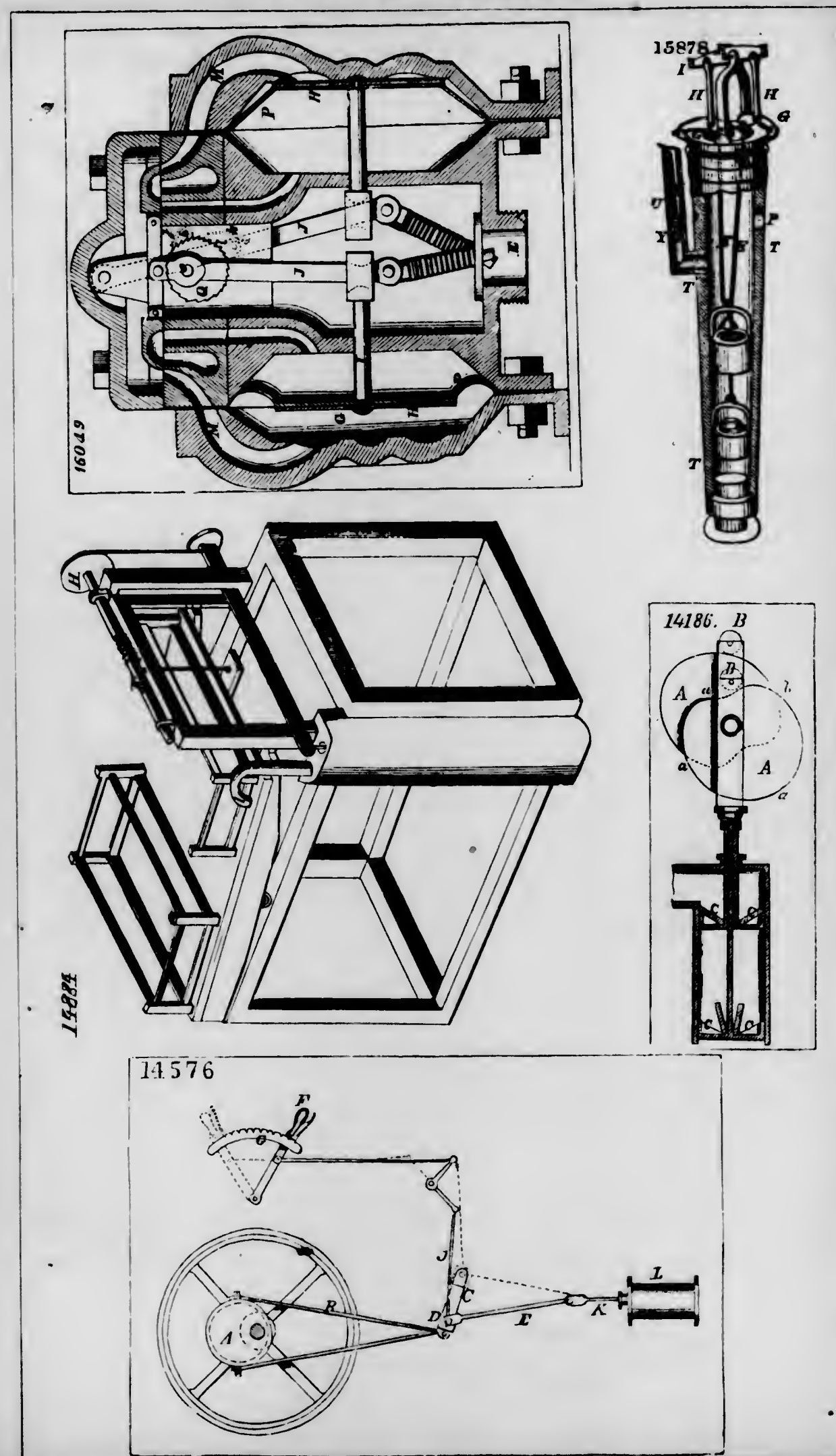
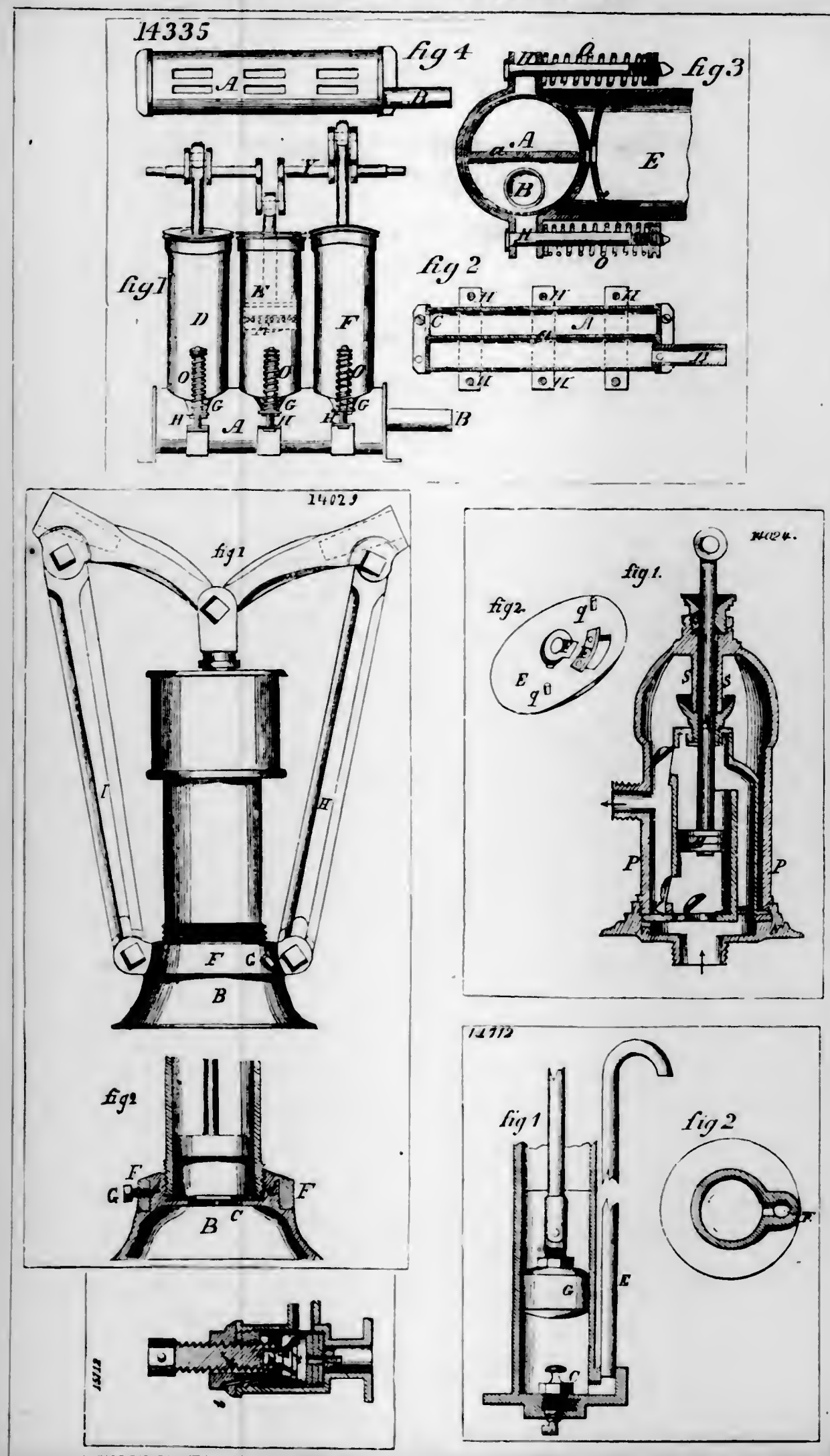
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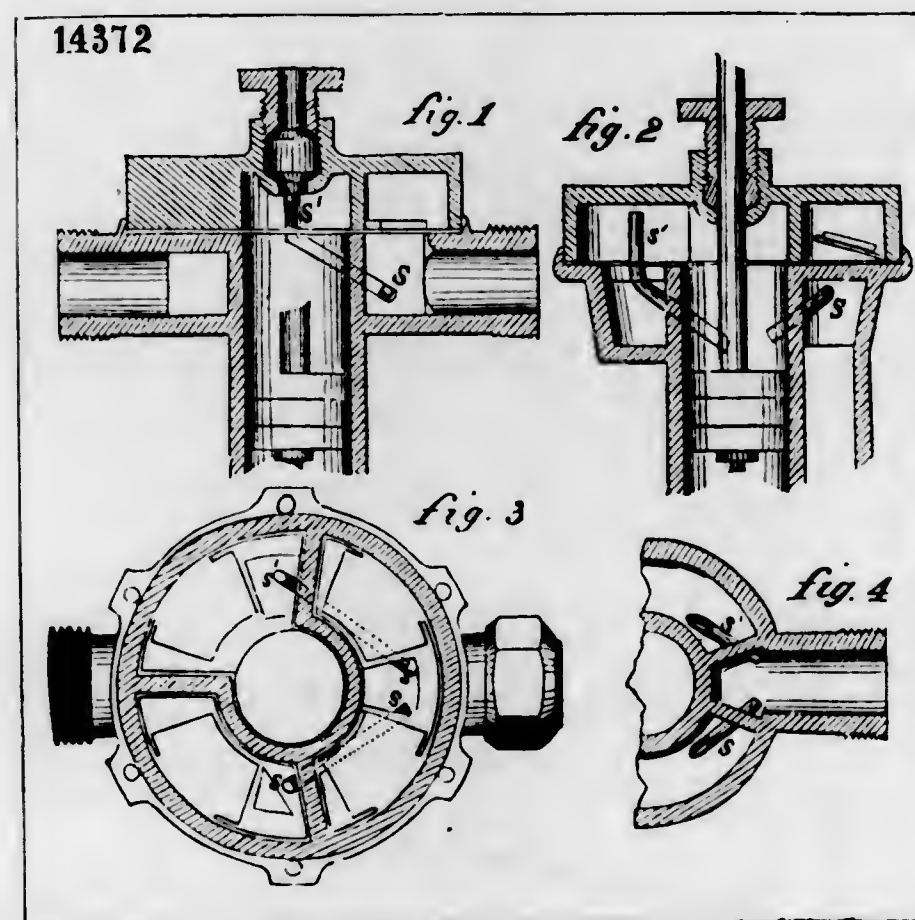
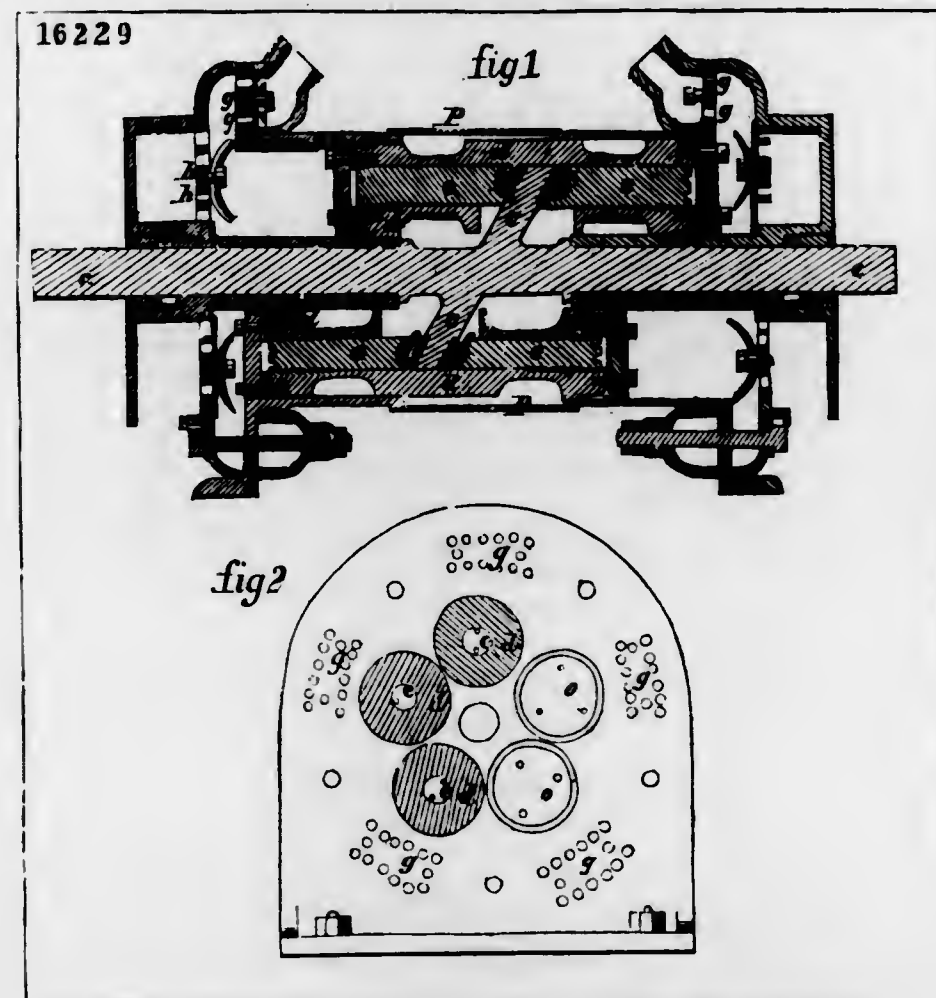
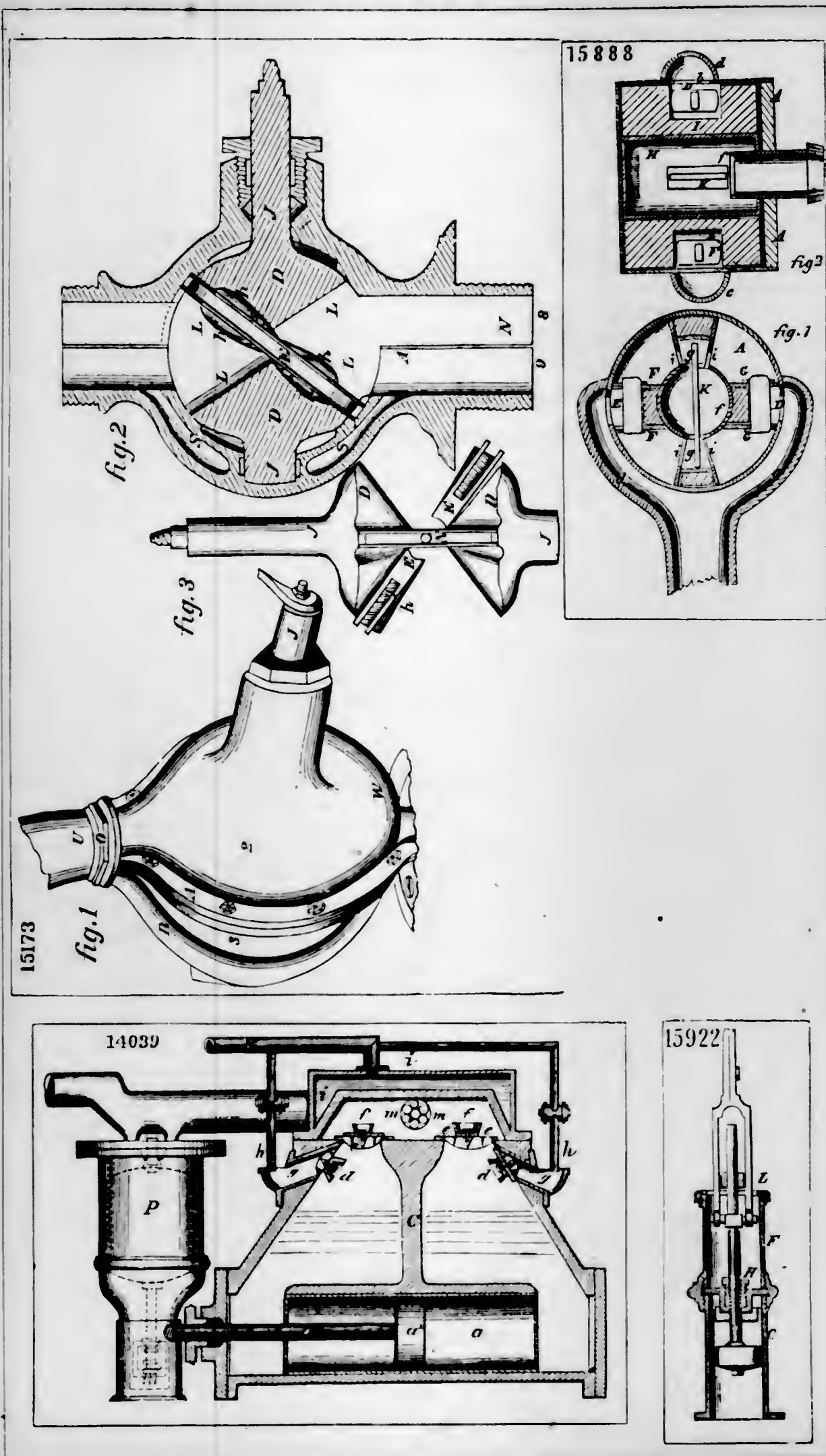


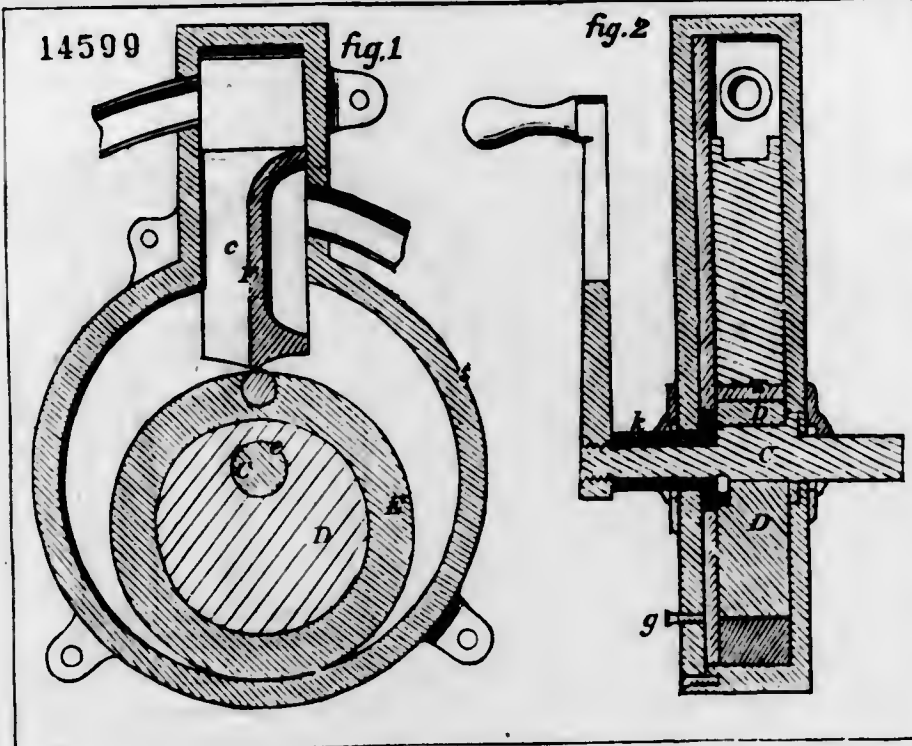
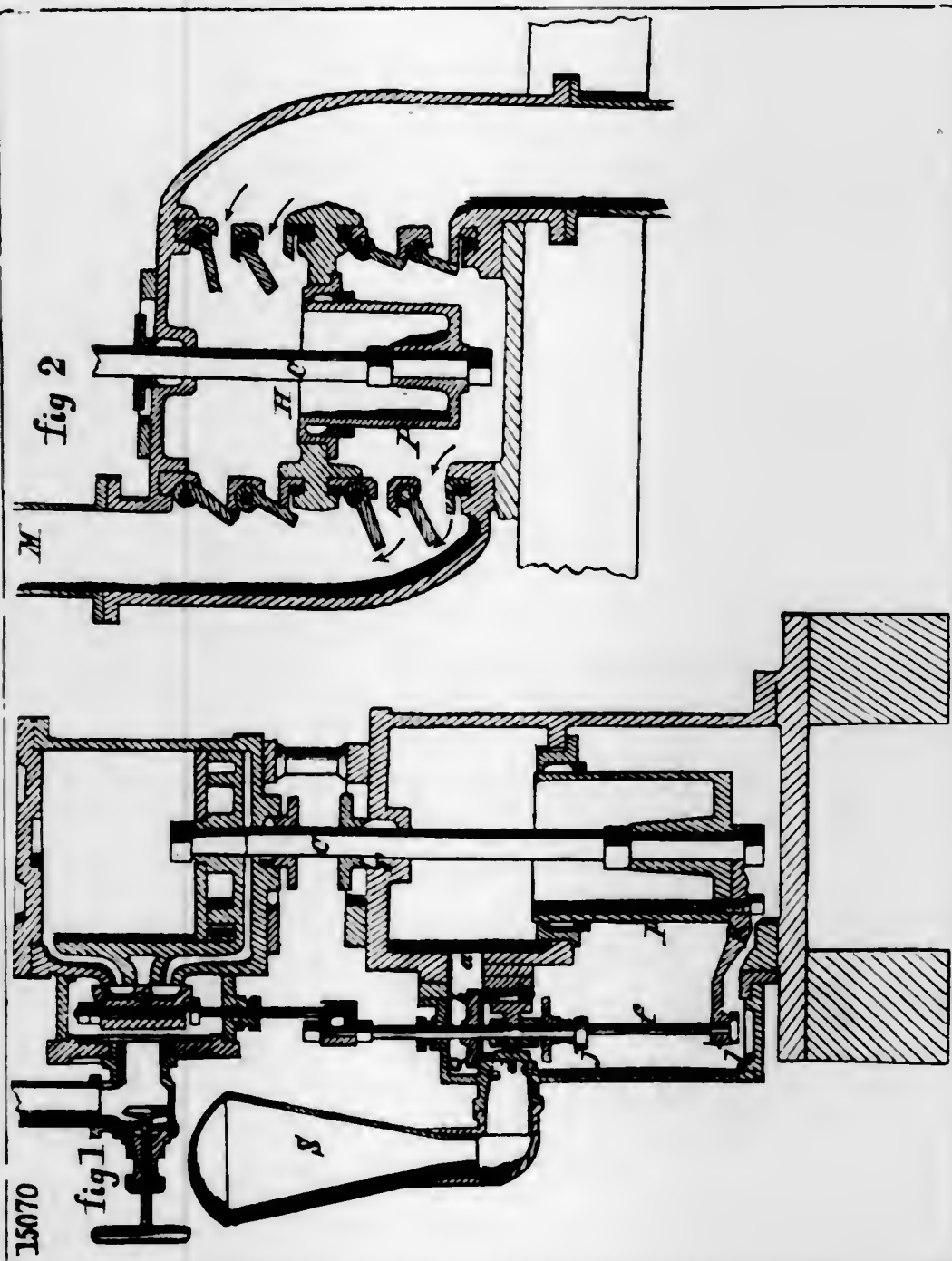
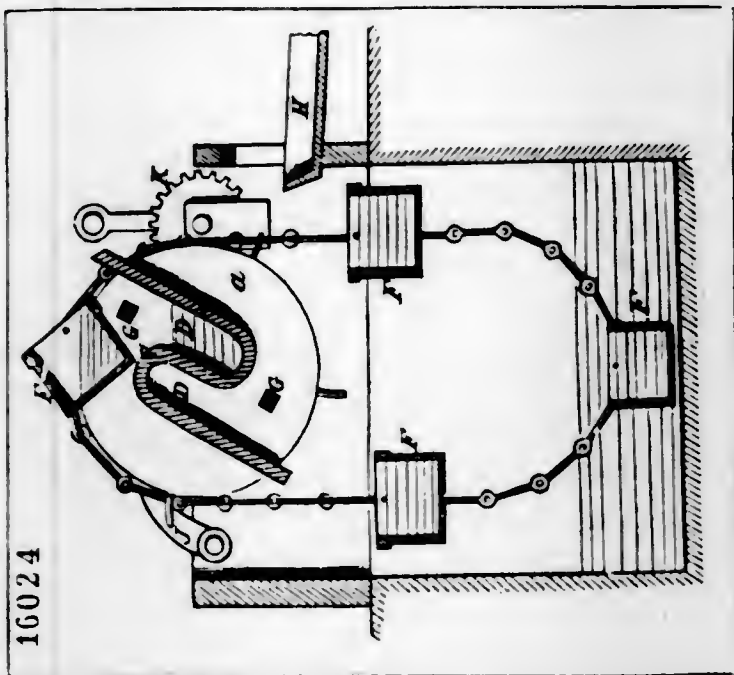
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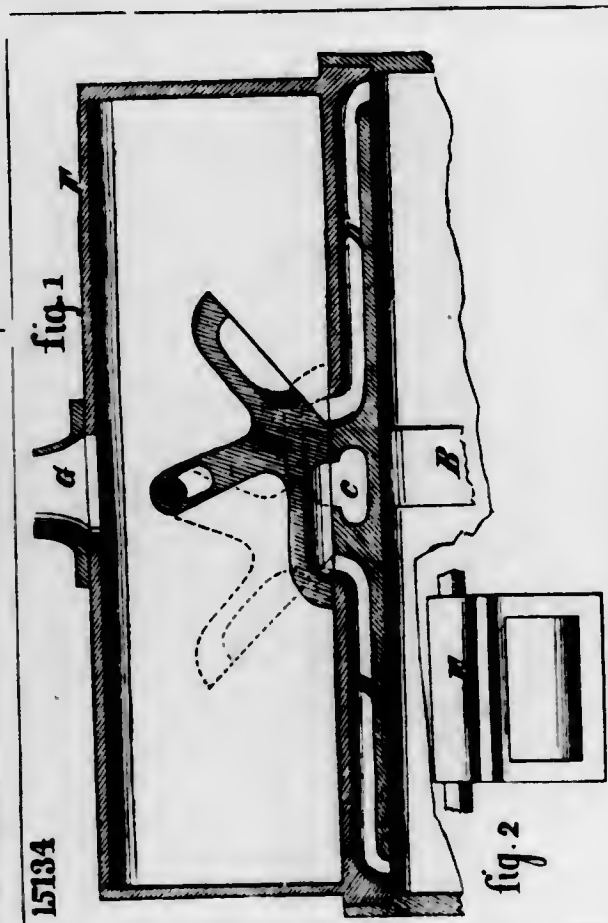
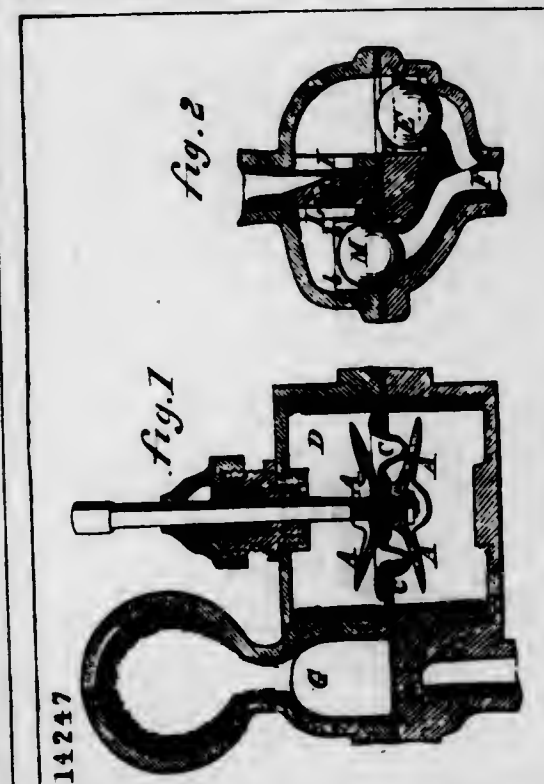
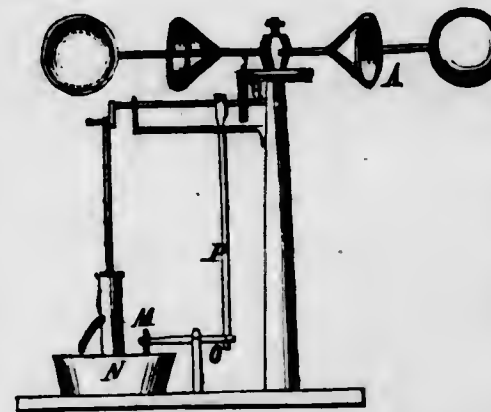
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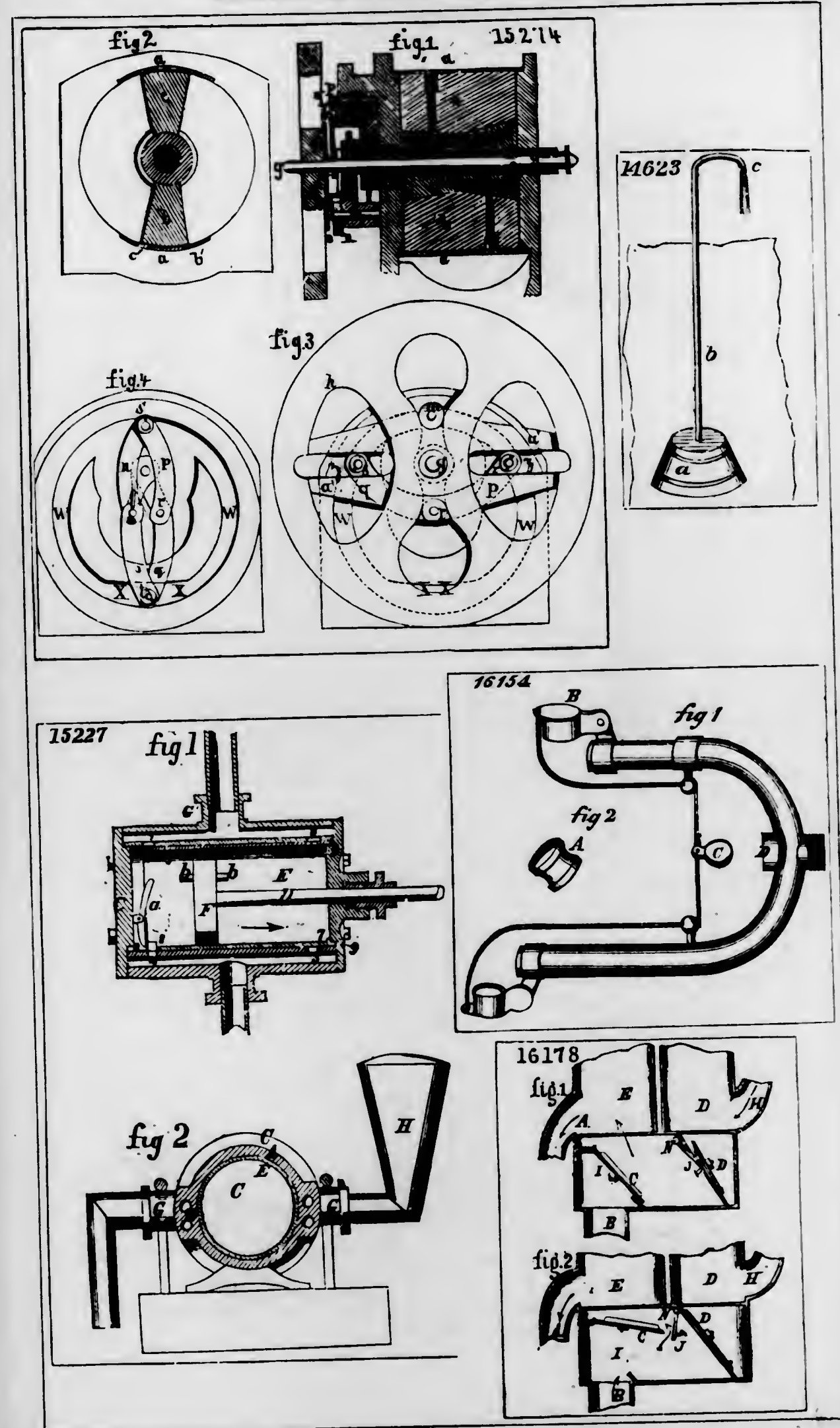
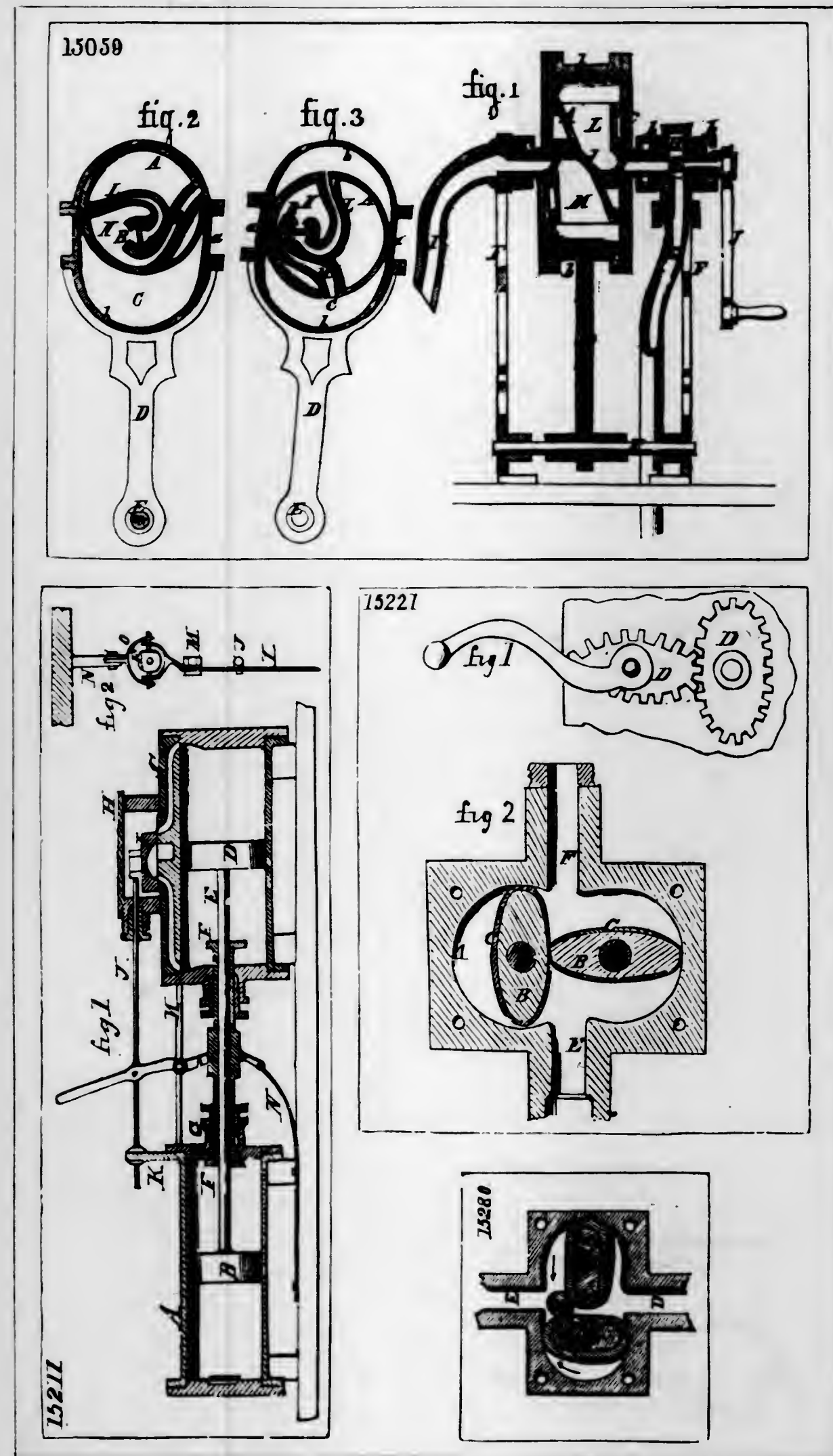


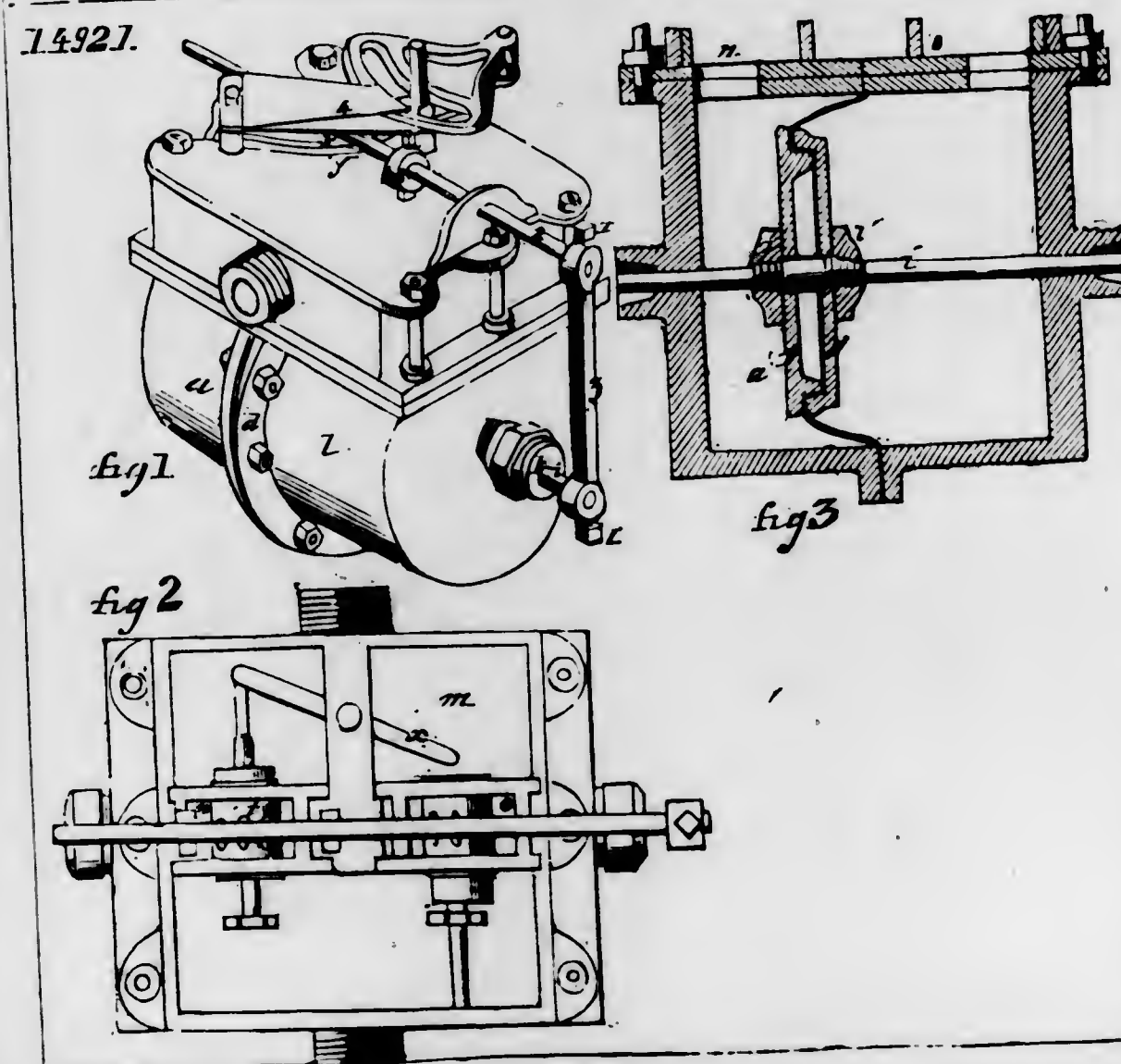
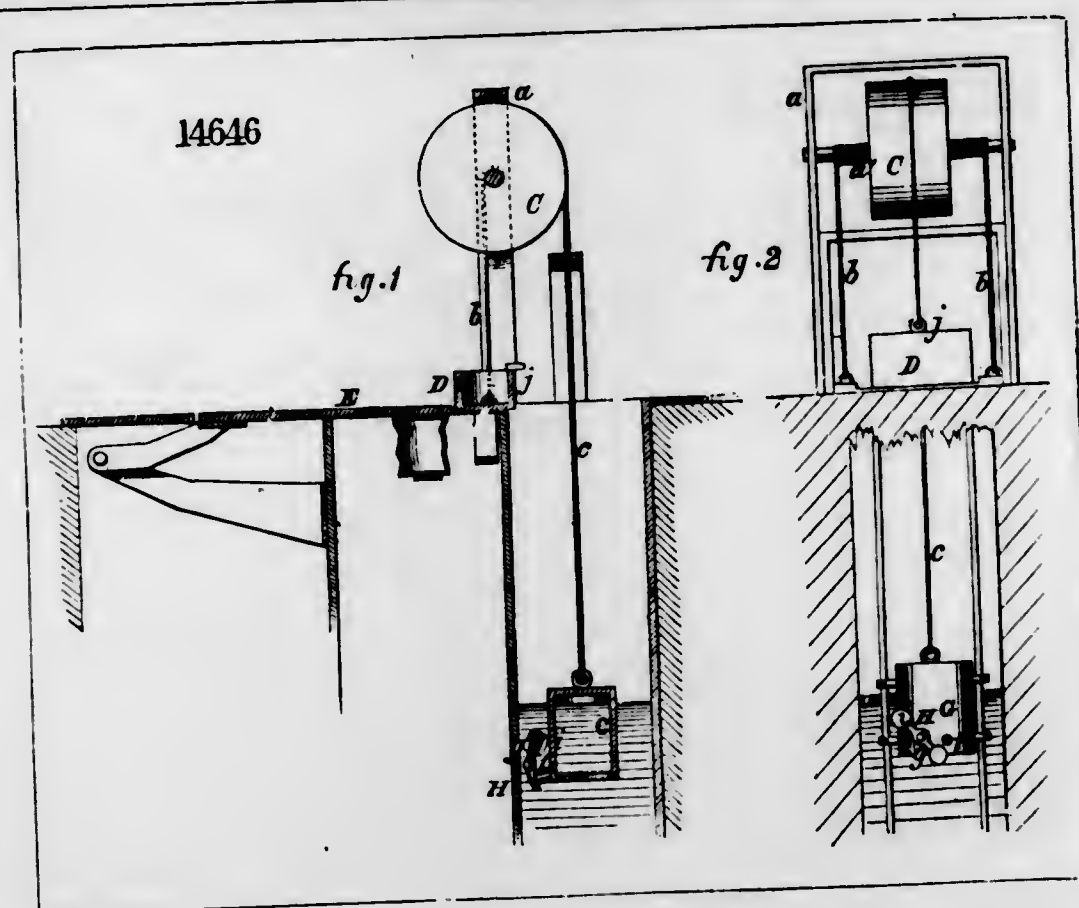
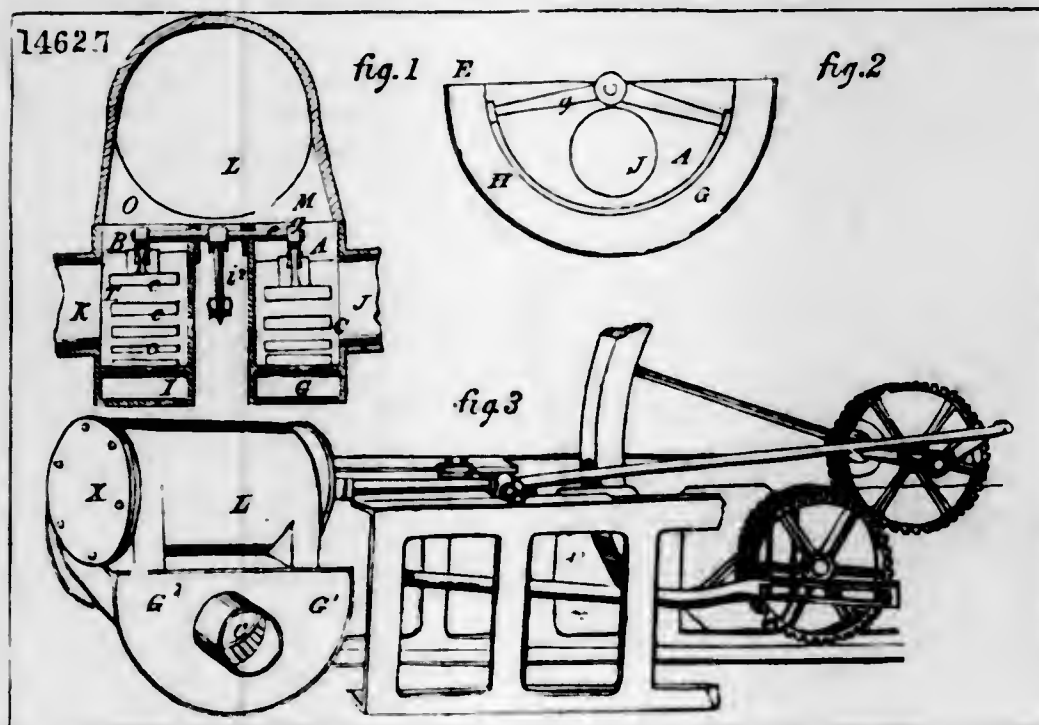
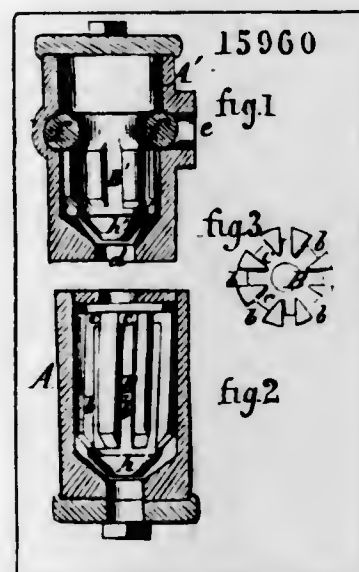
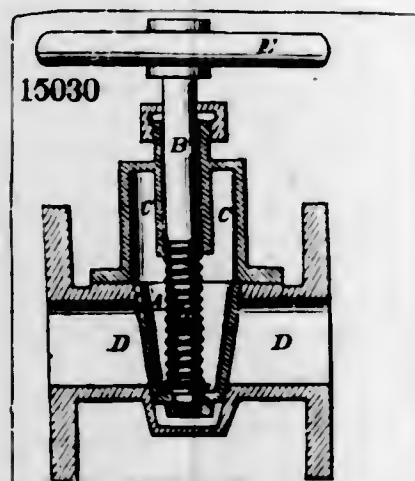
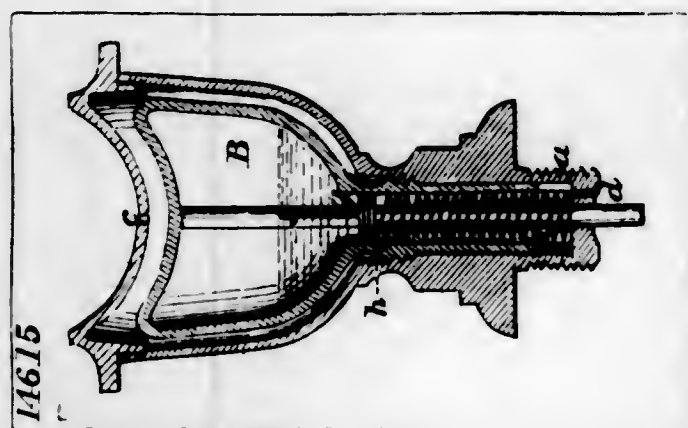
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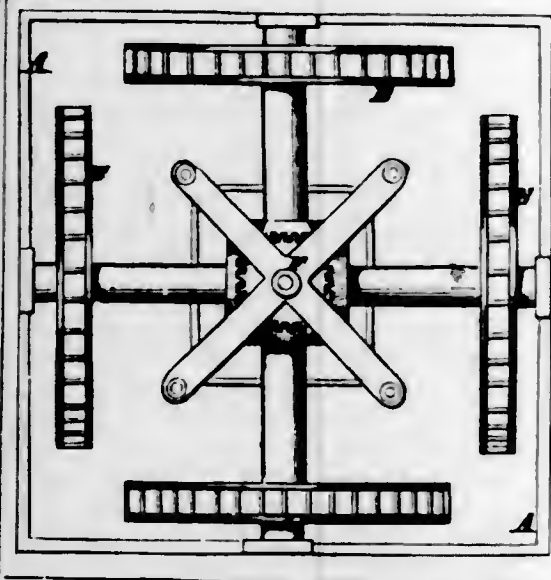
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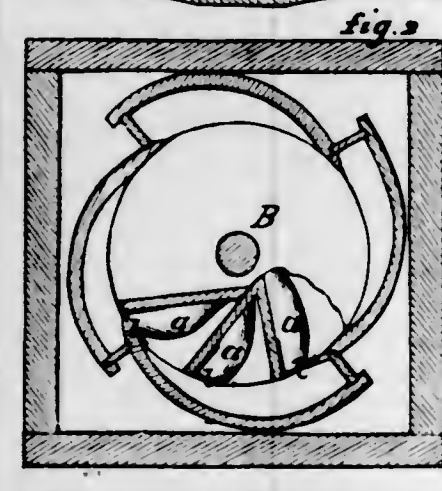




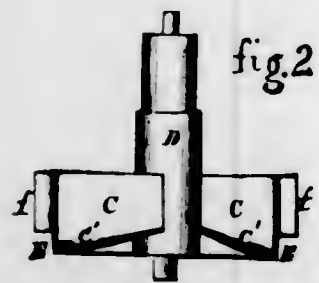
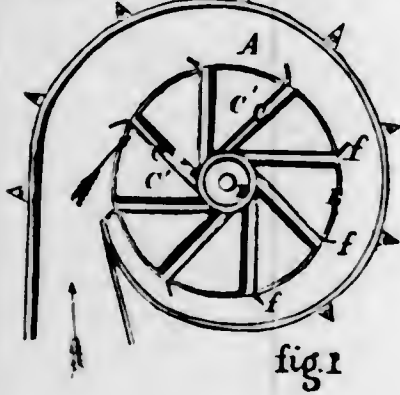
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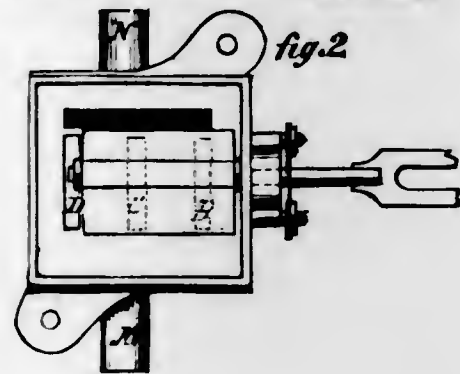
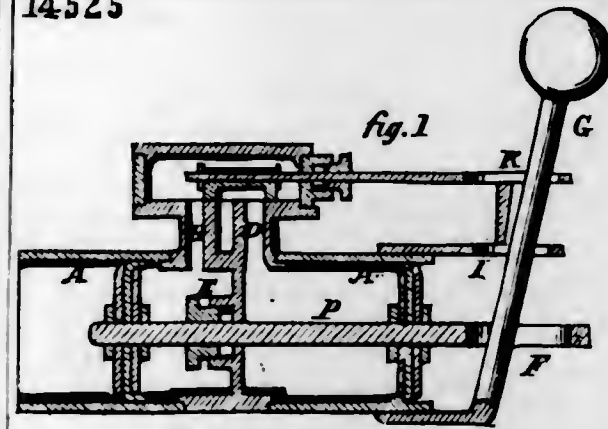
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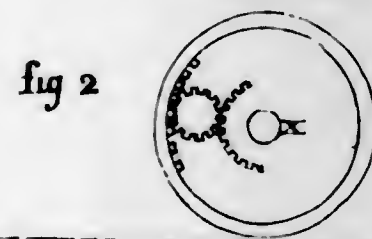
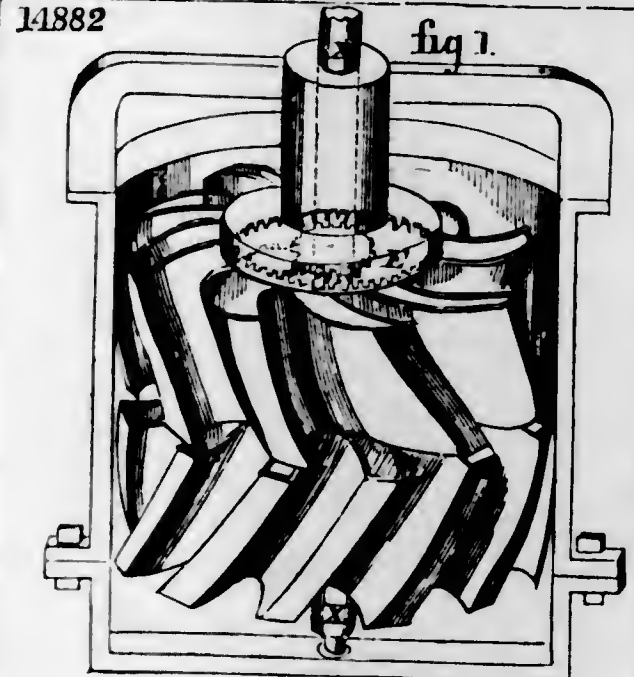
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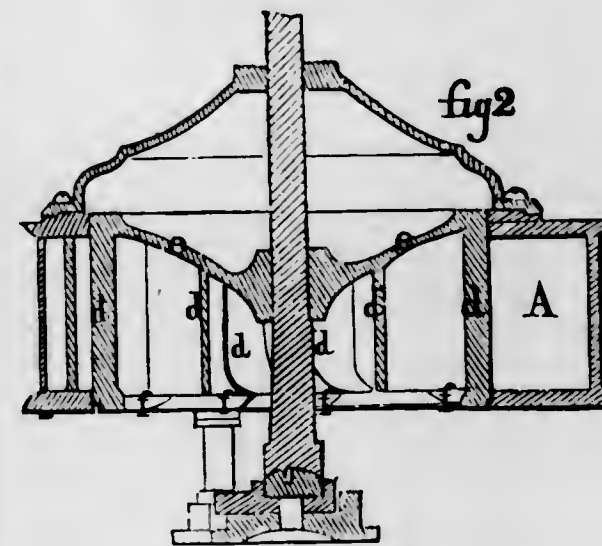
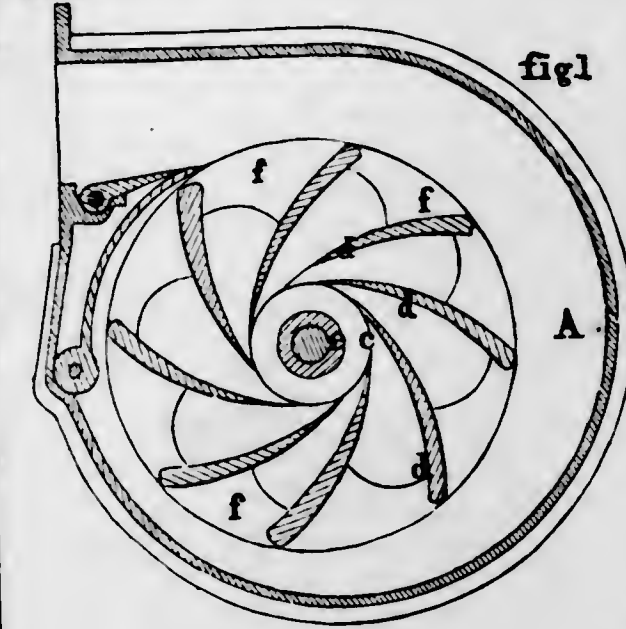
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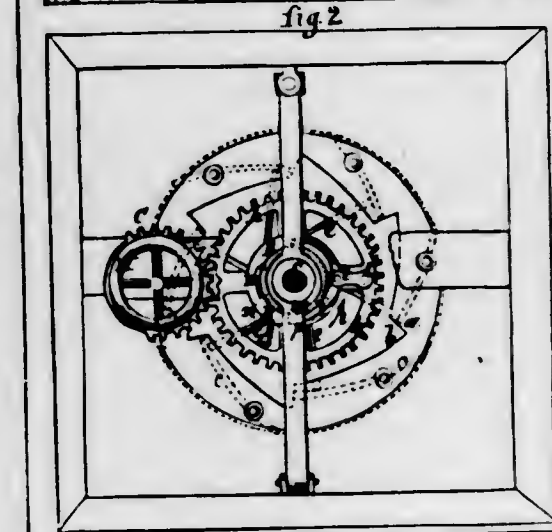
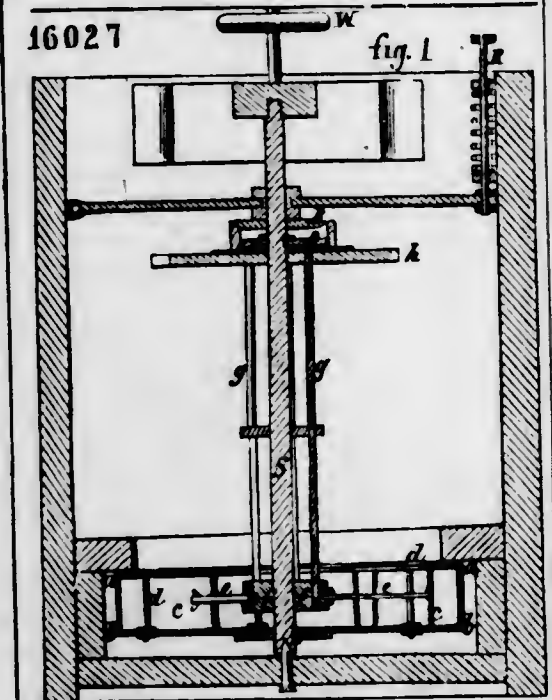
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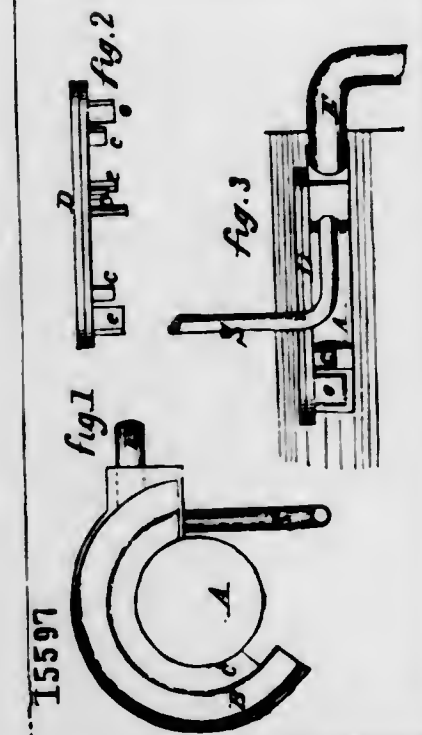
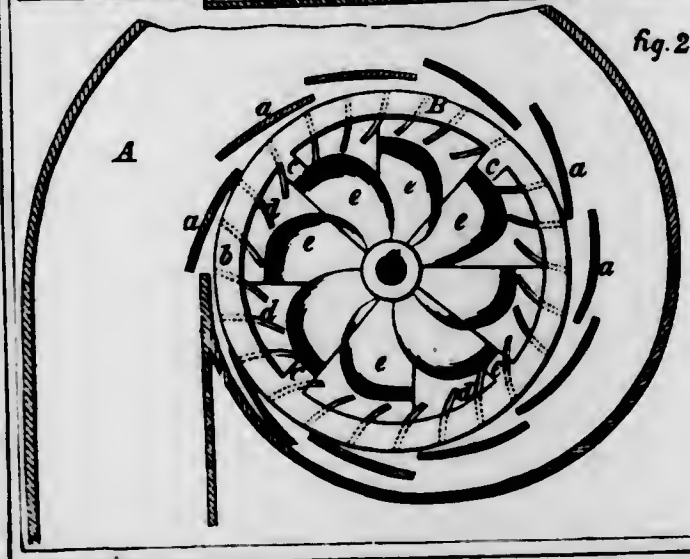
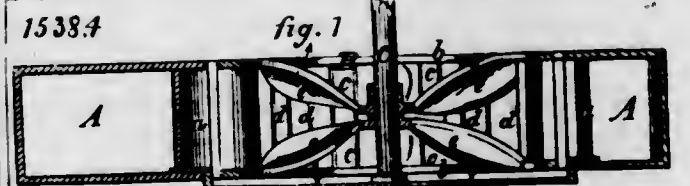
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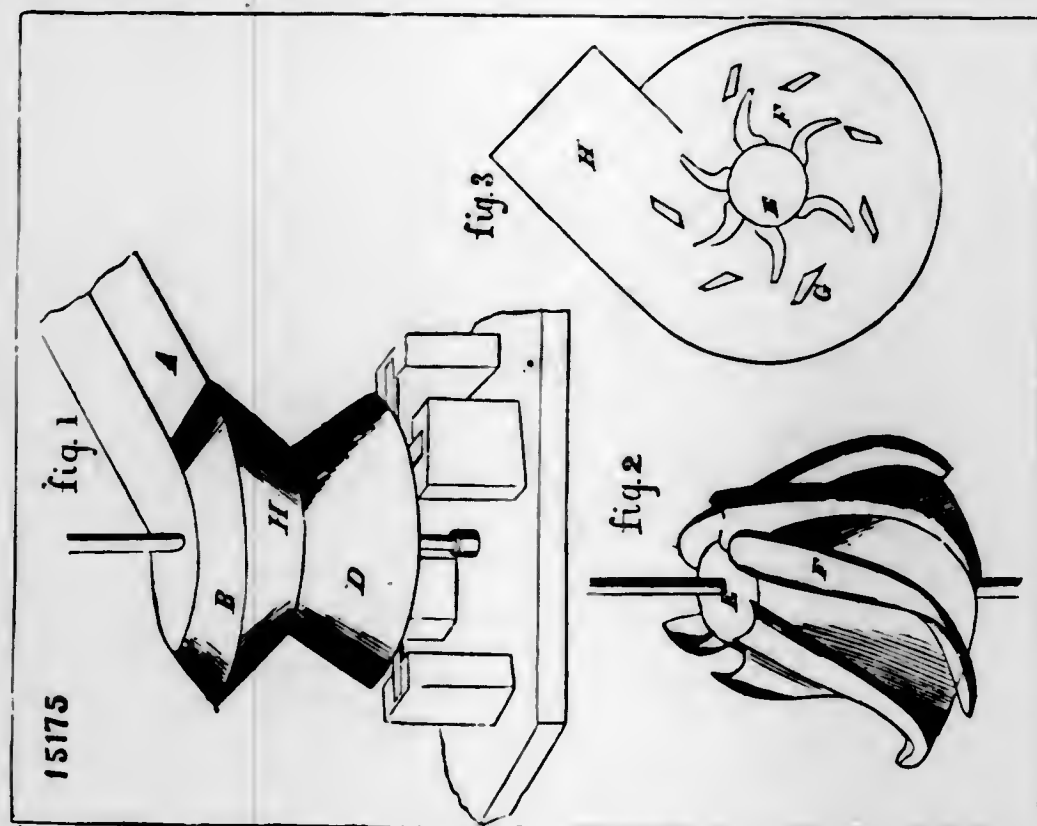


16027



15384





15463

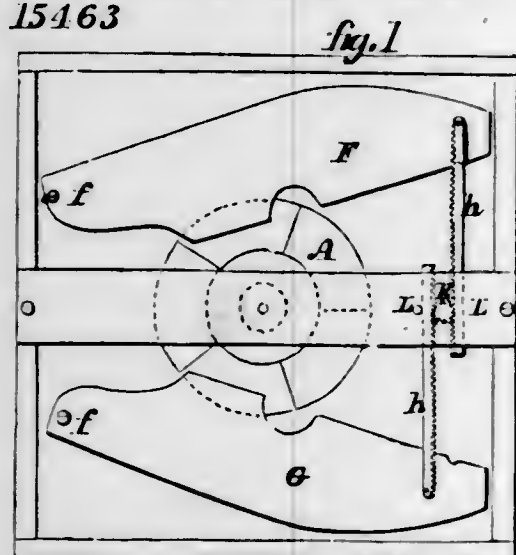
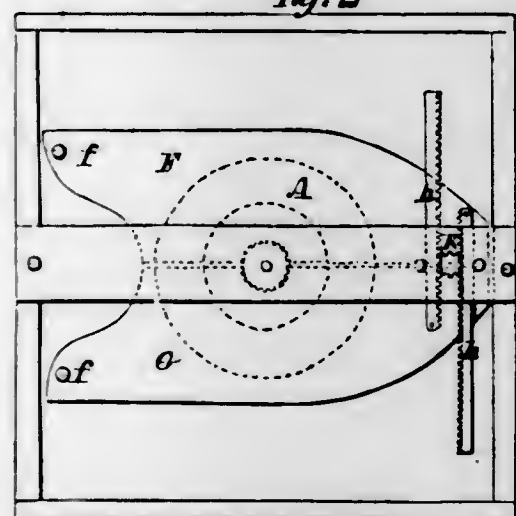


fig. 2



14703

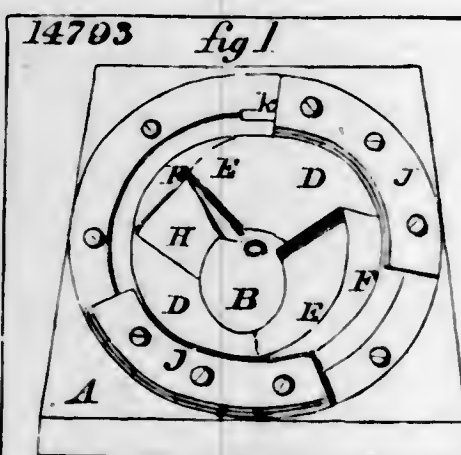
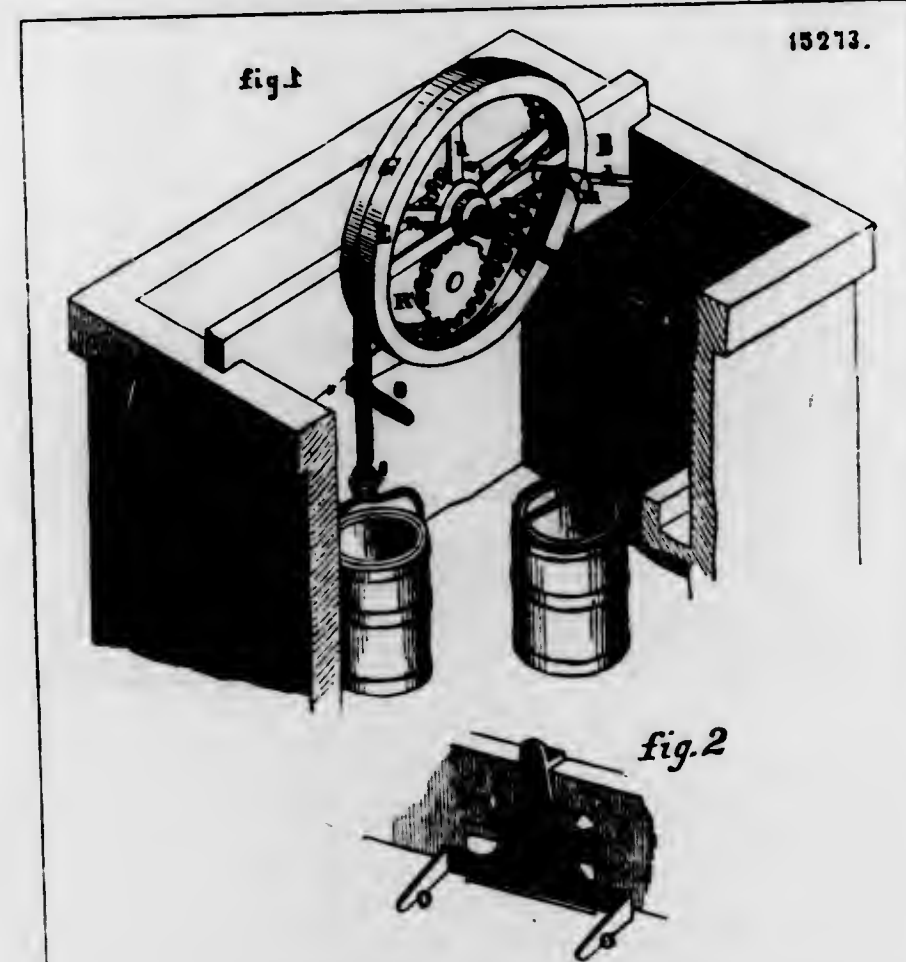
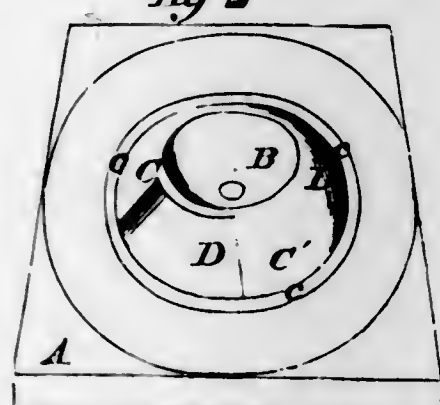
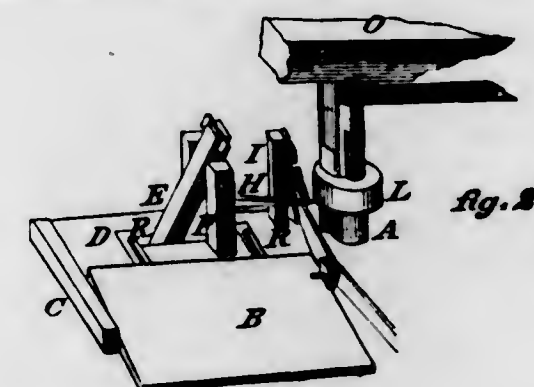
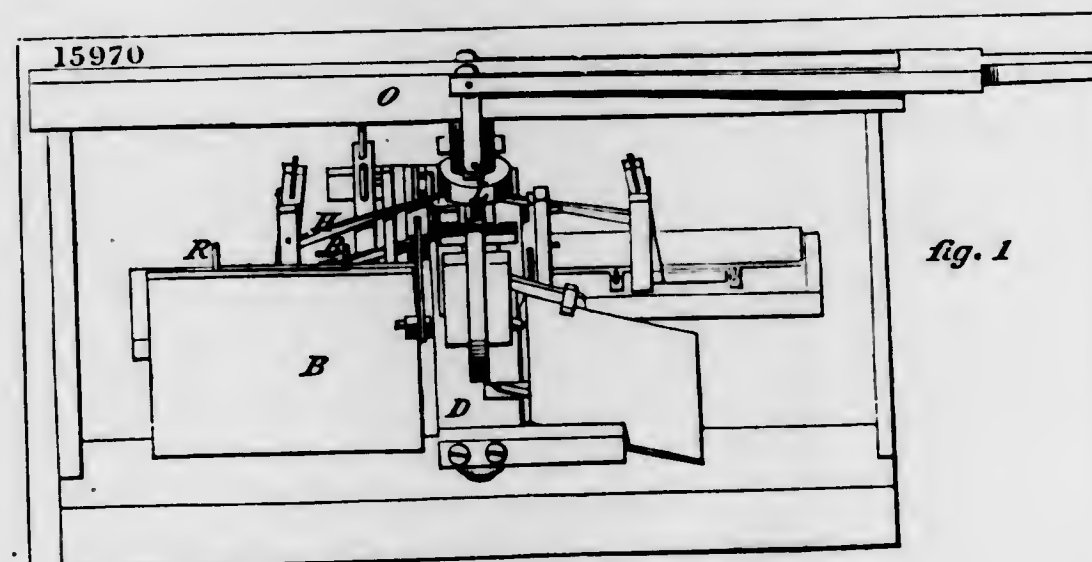
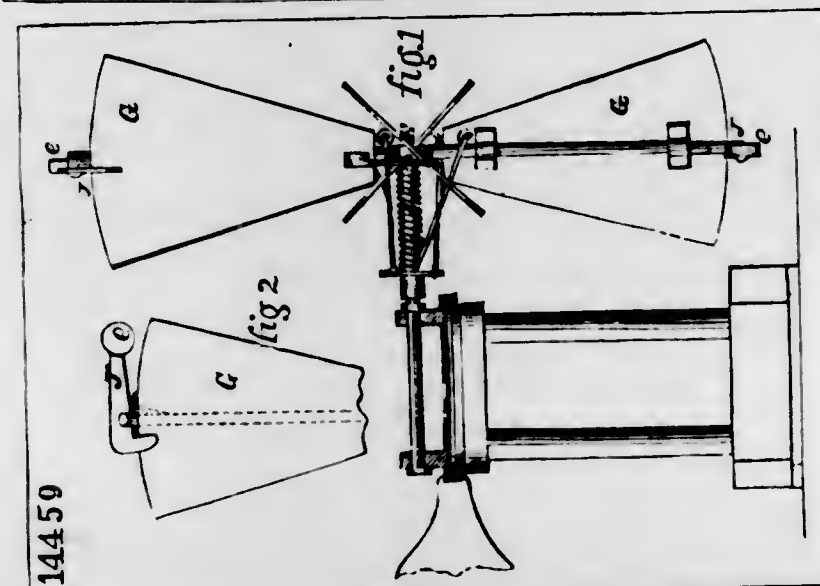
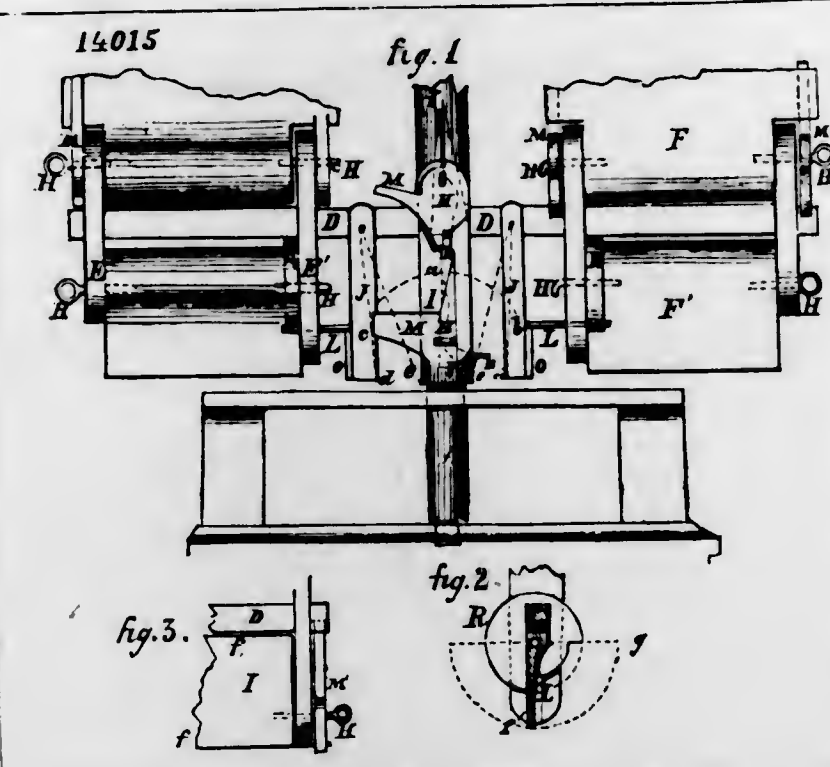
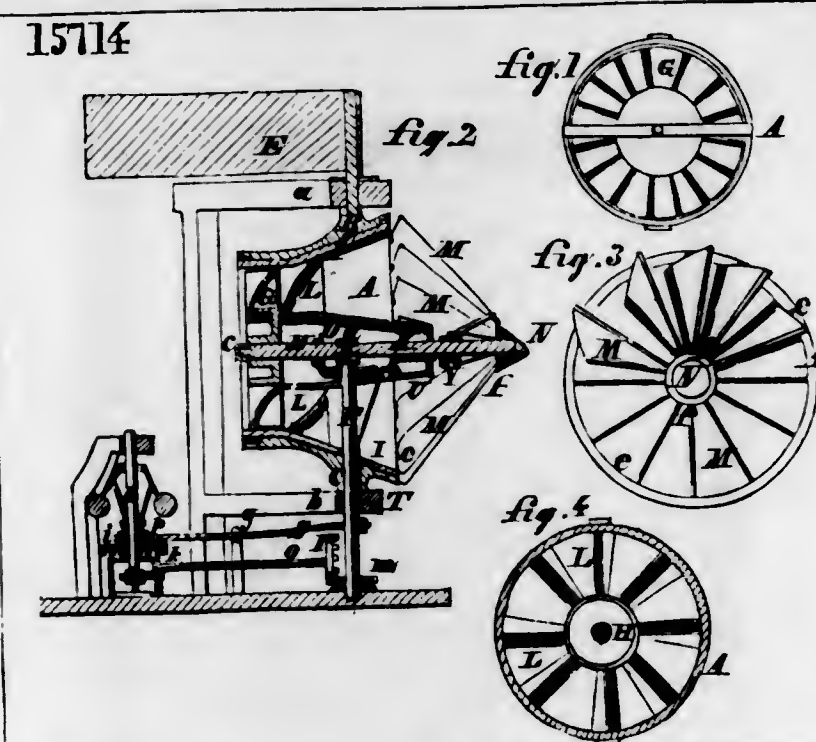
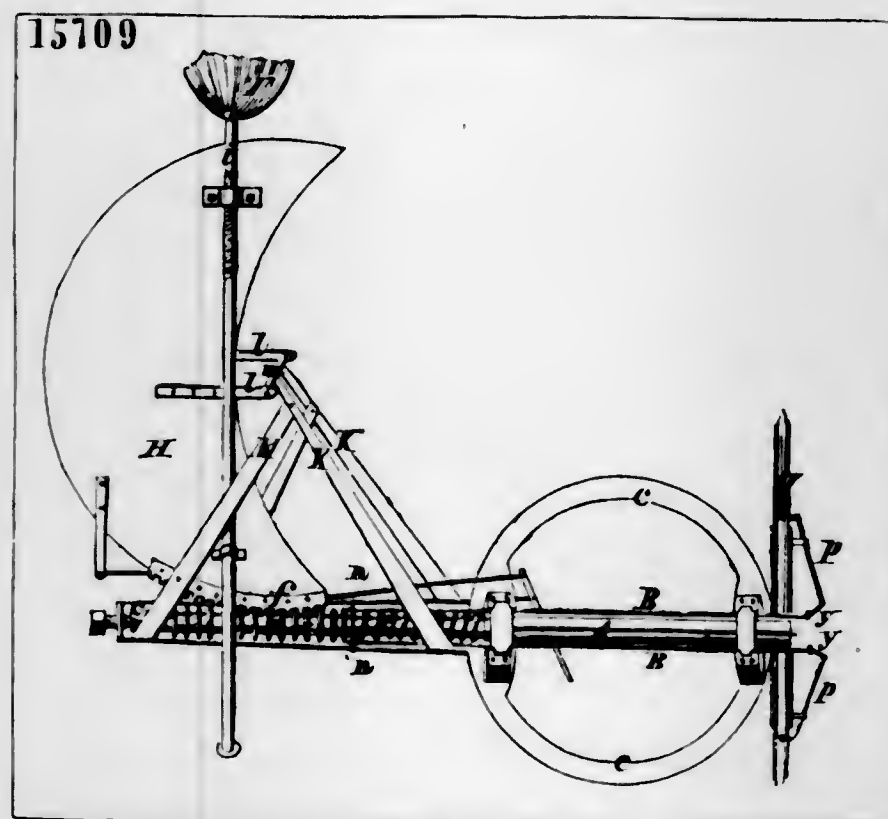
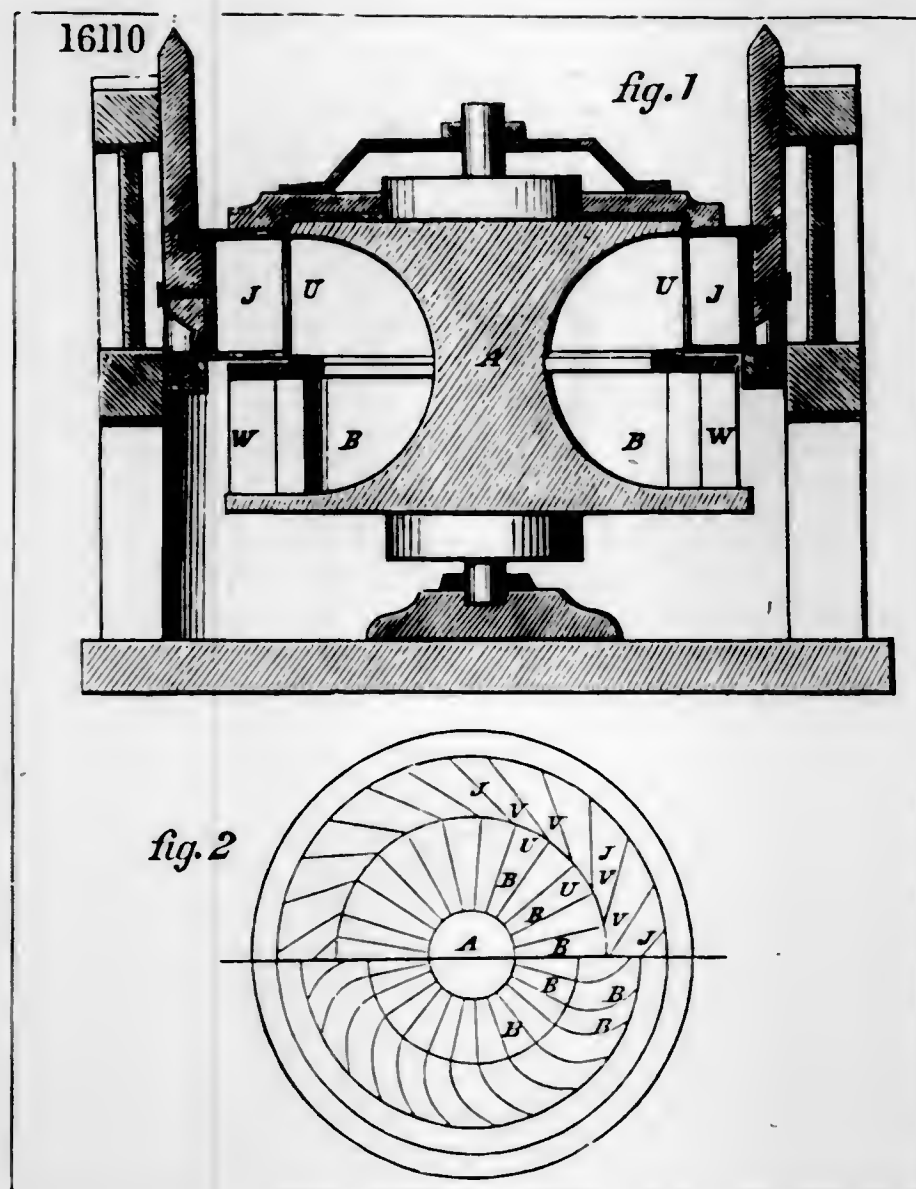


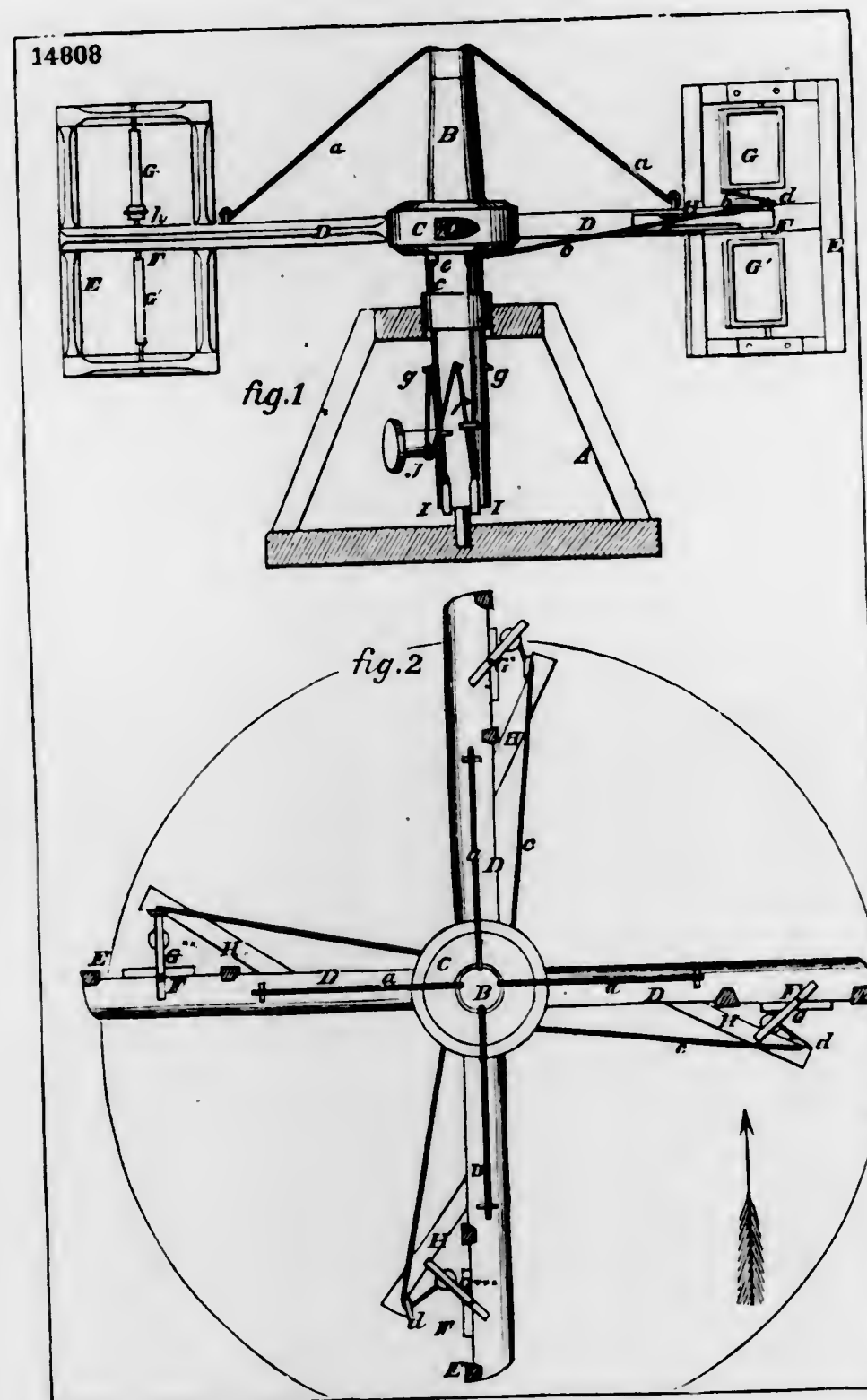
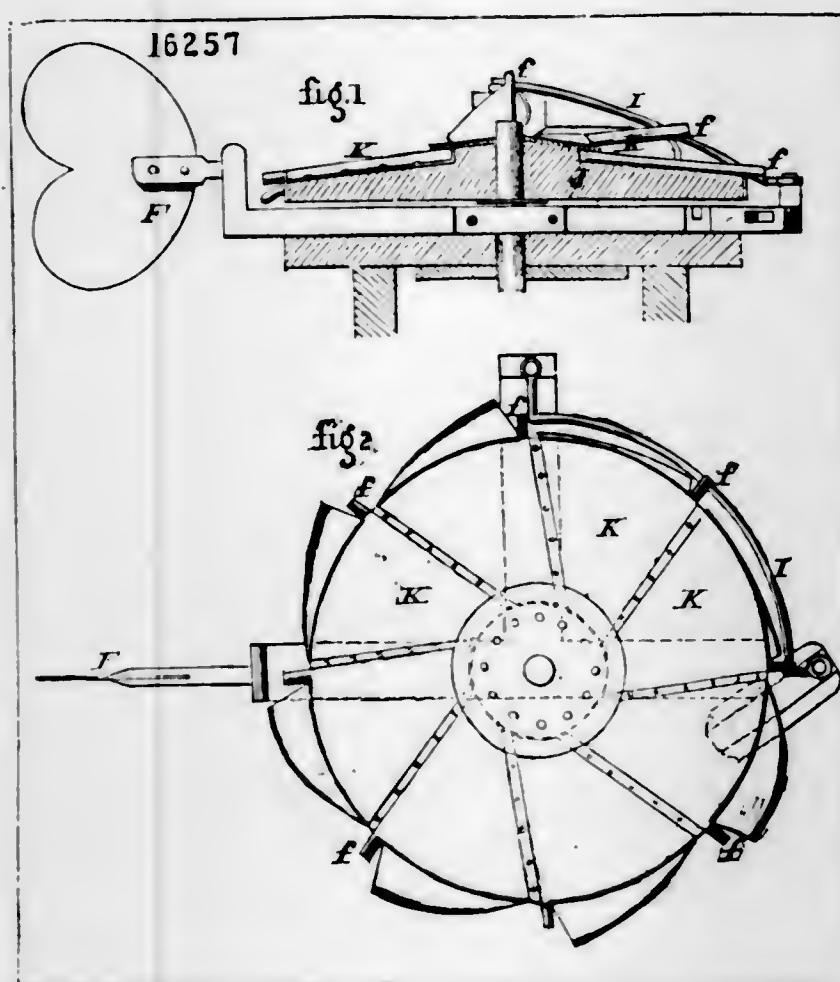
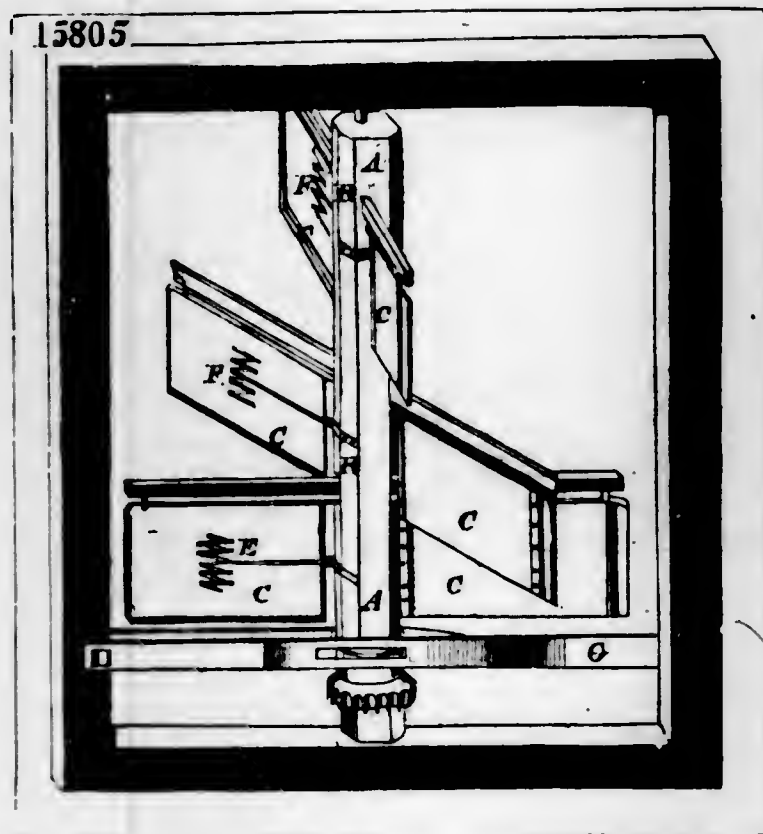
fig. 2

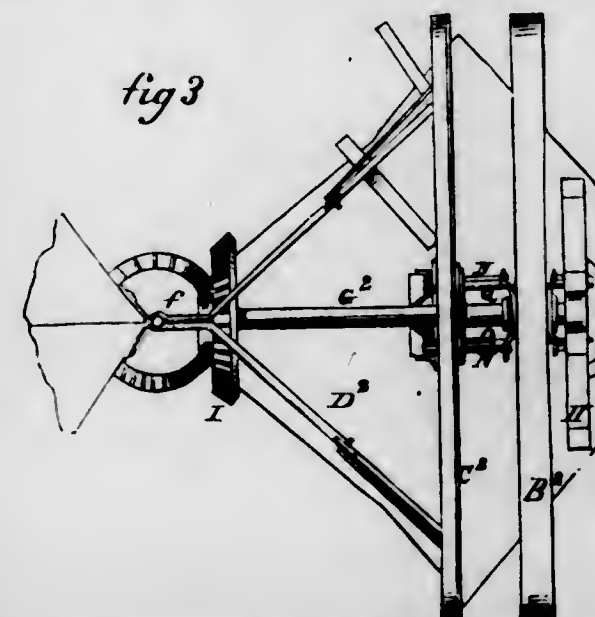
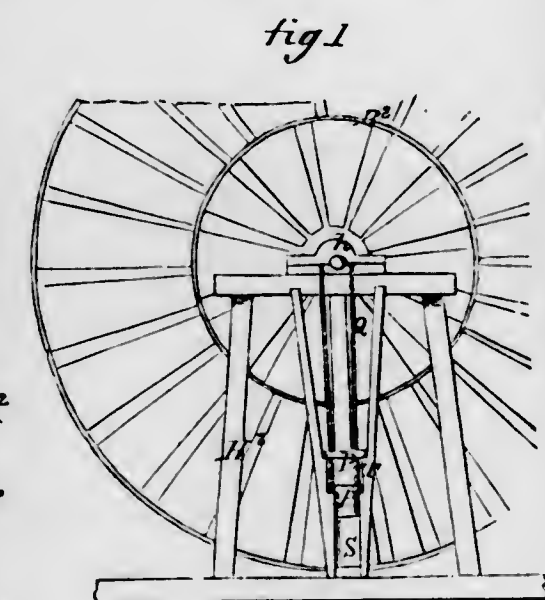
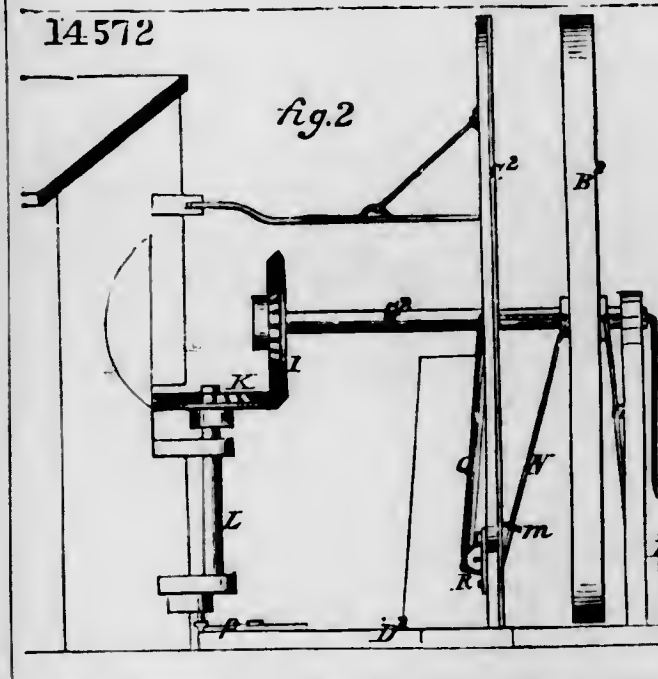
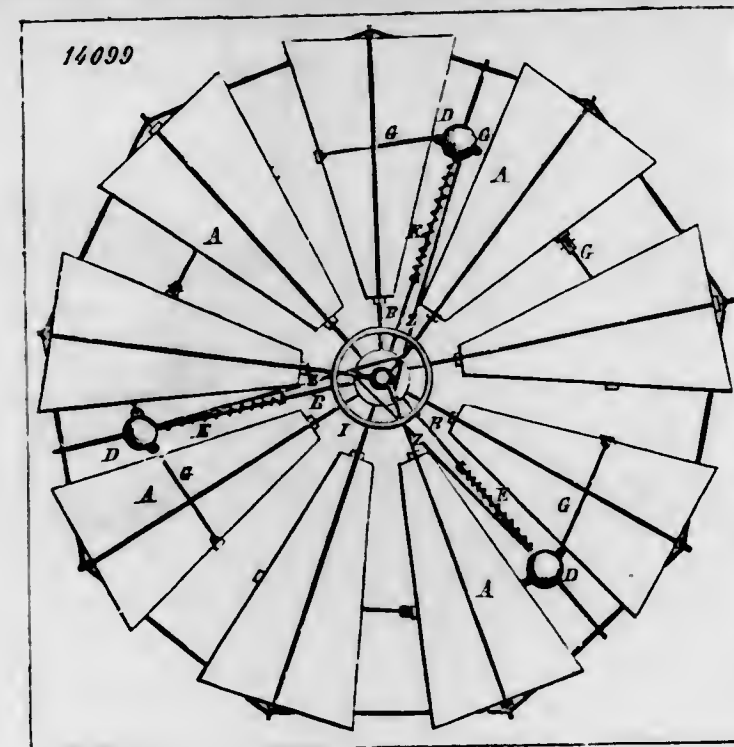
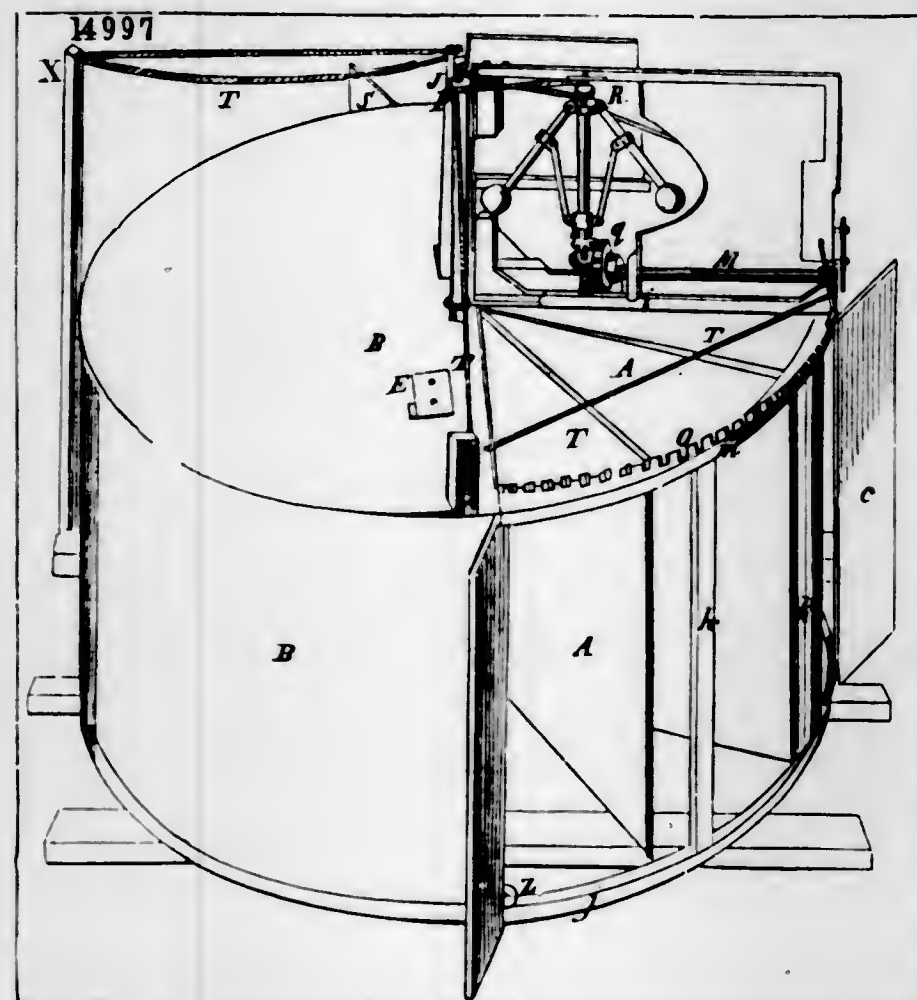
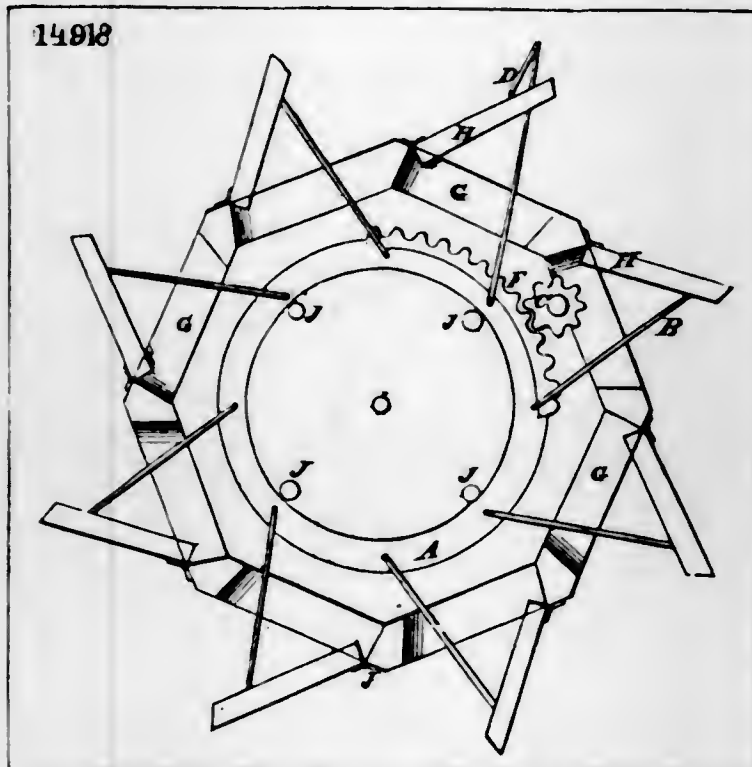


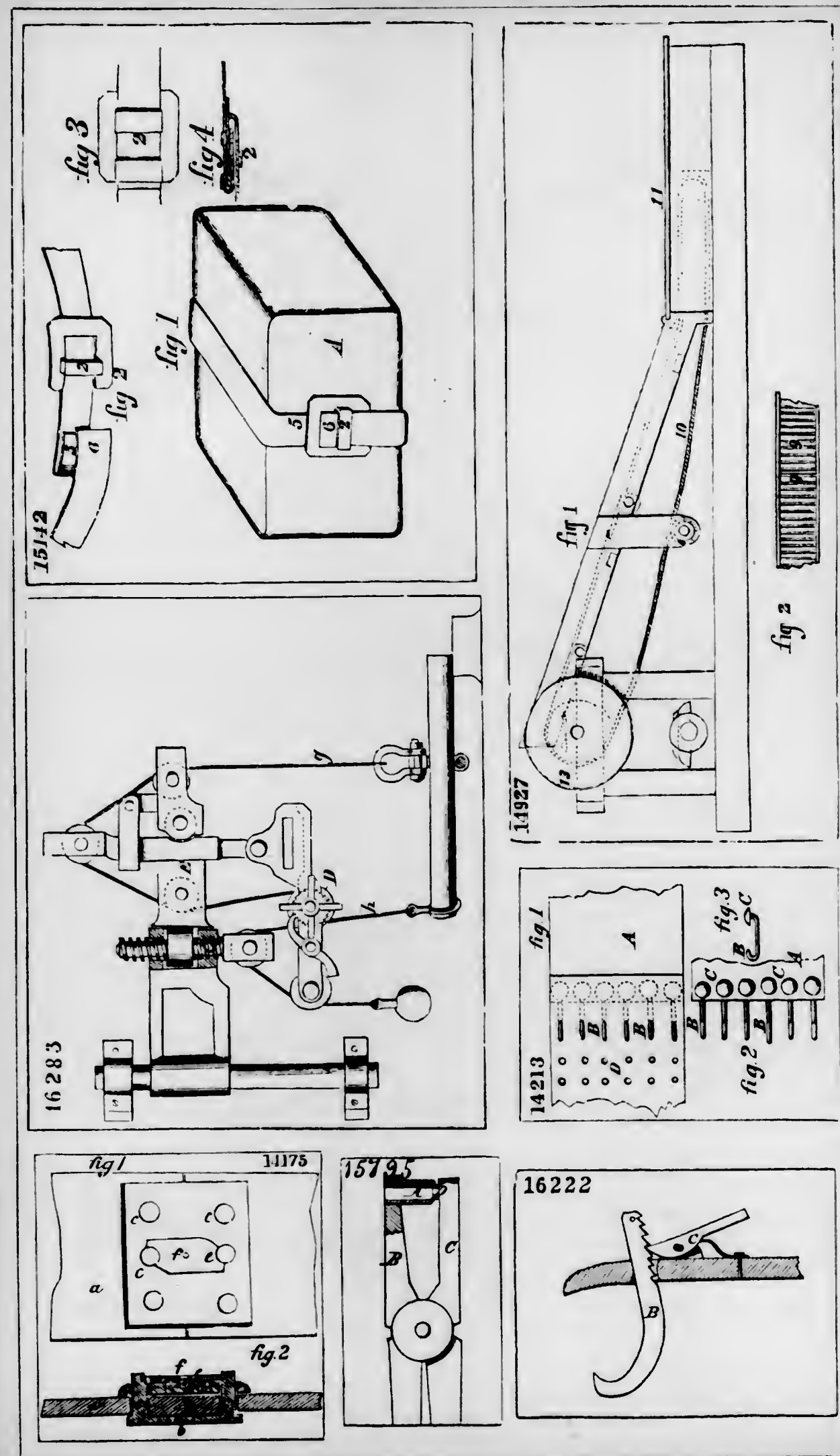
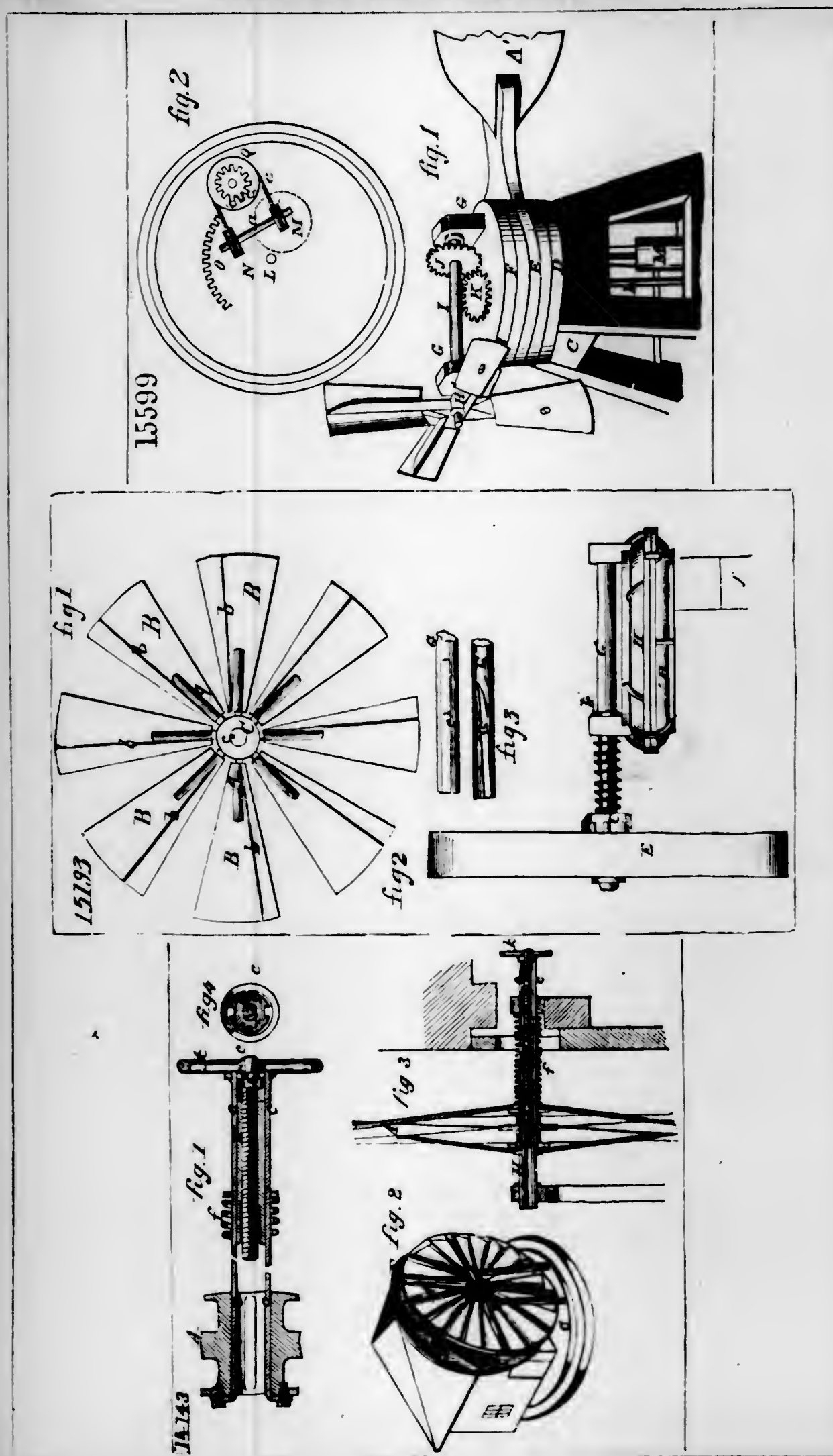
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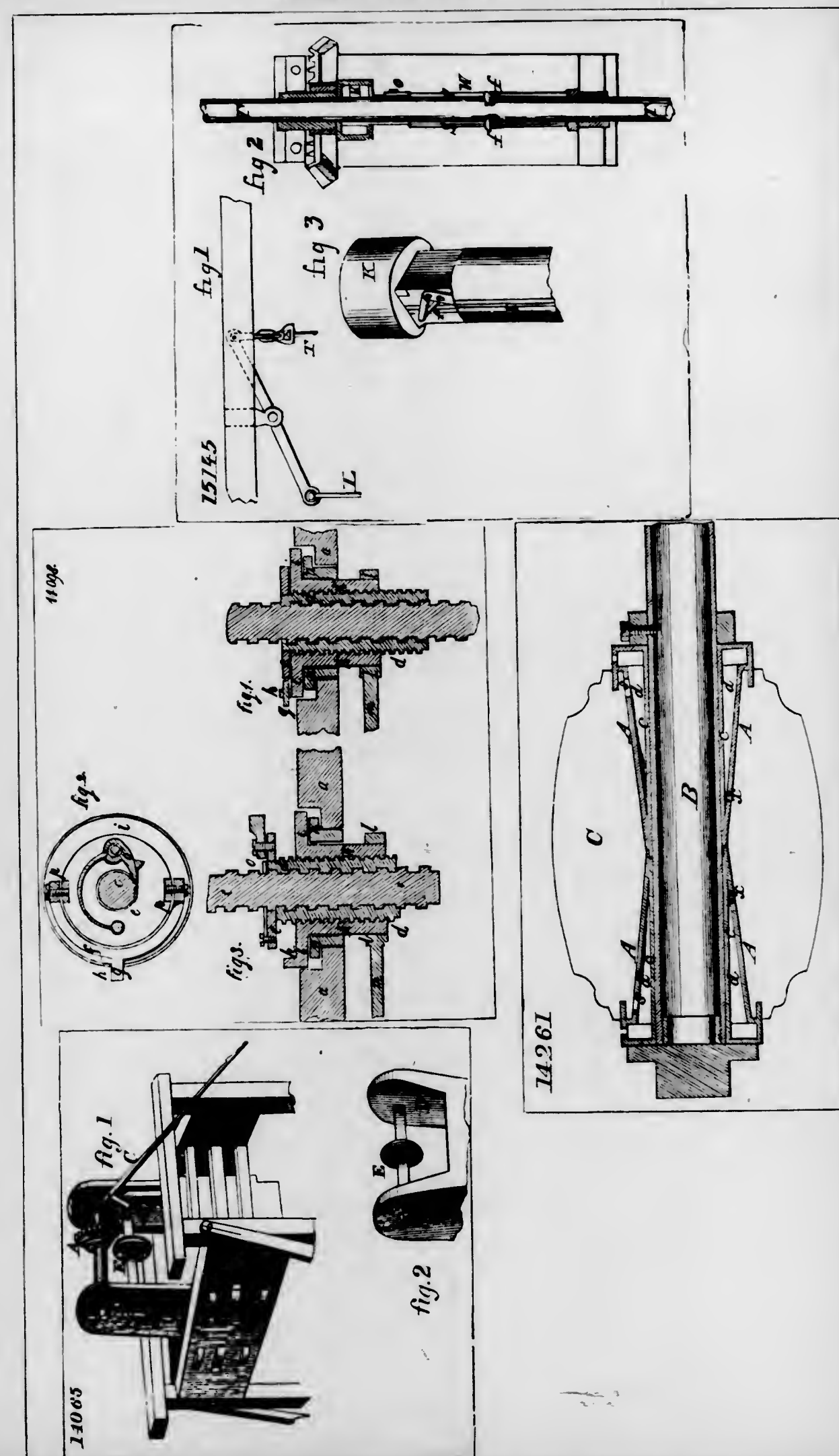
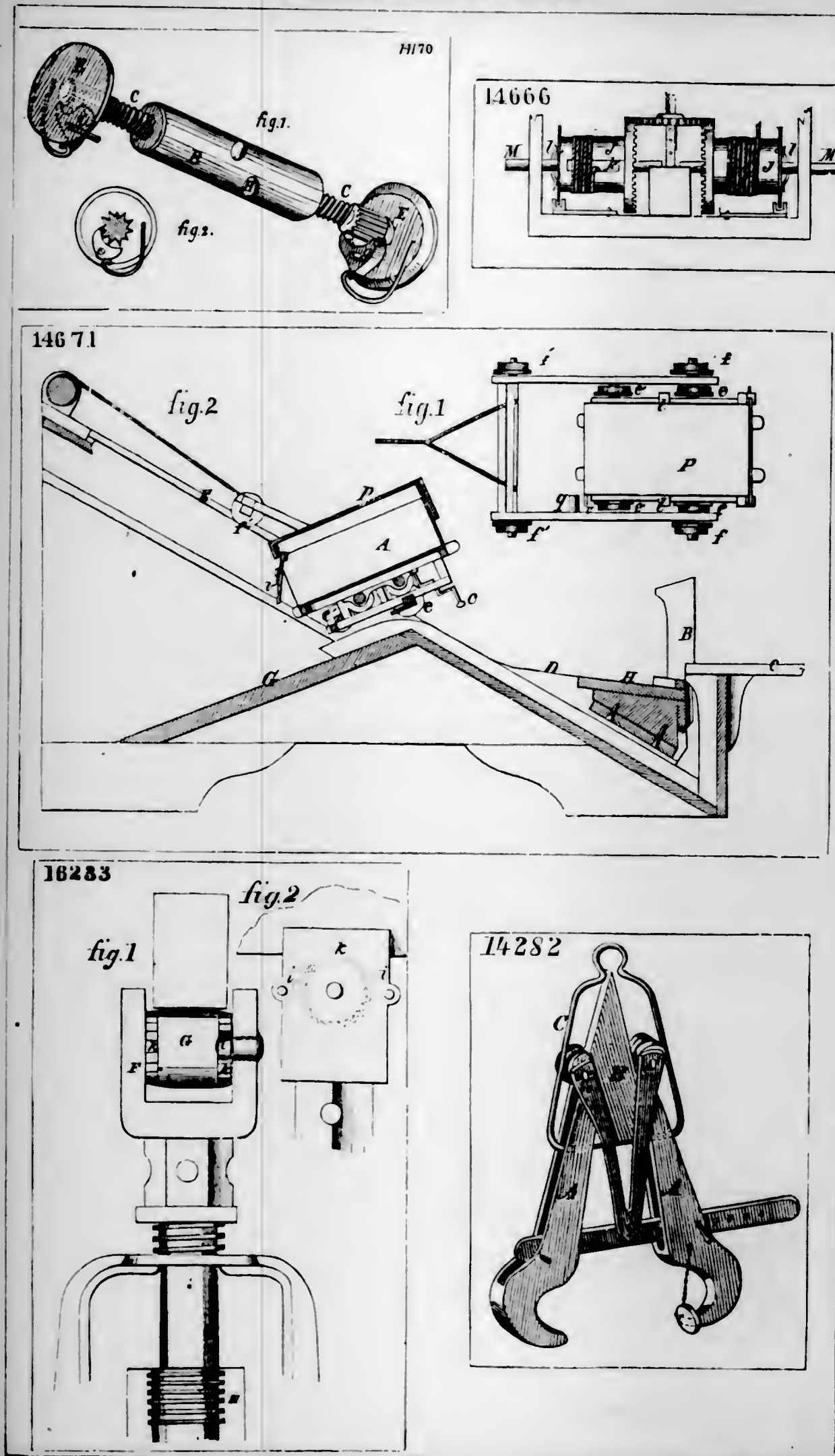


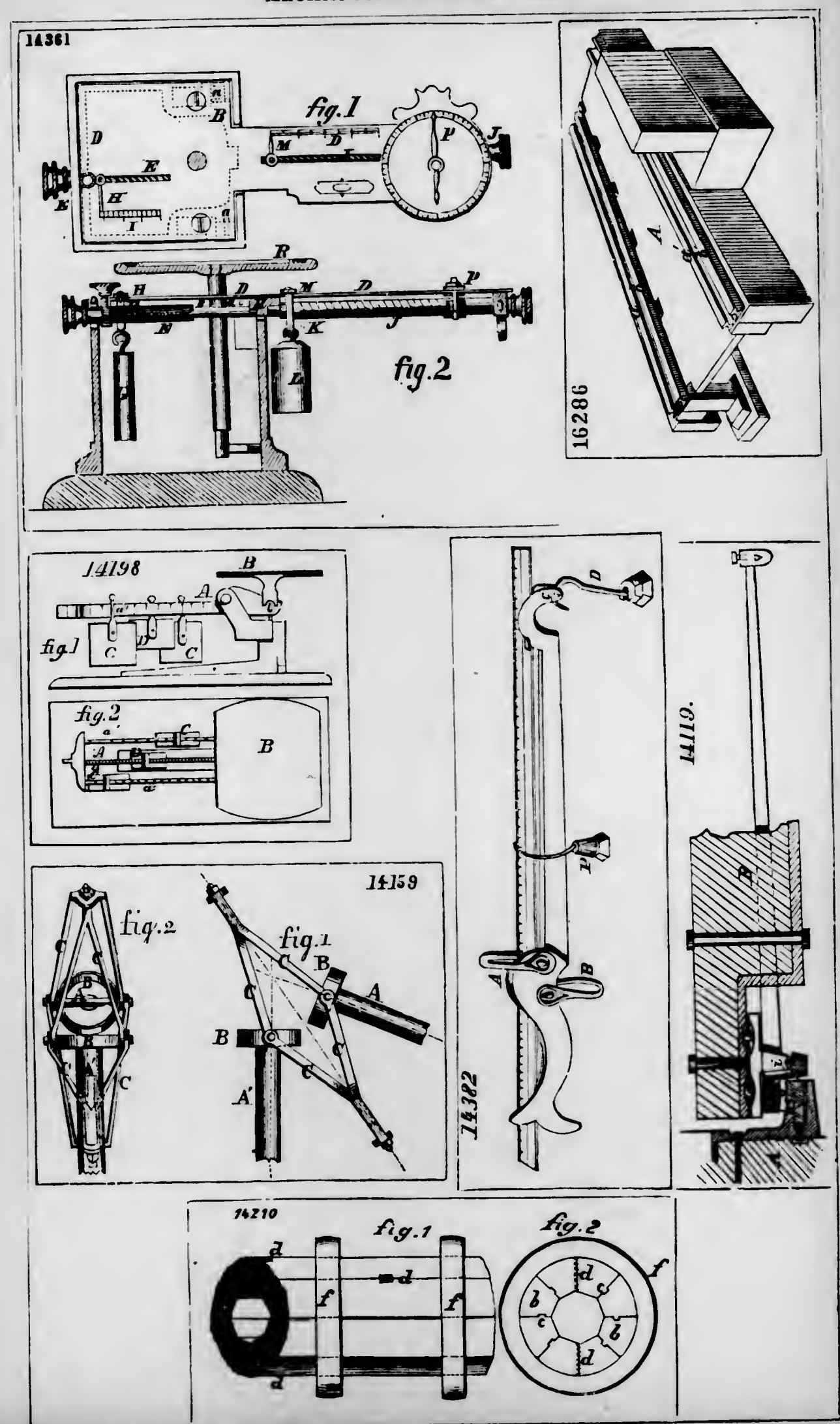
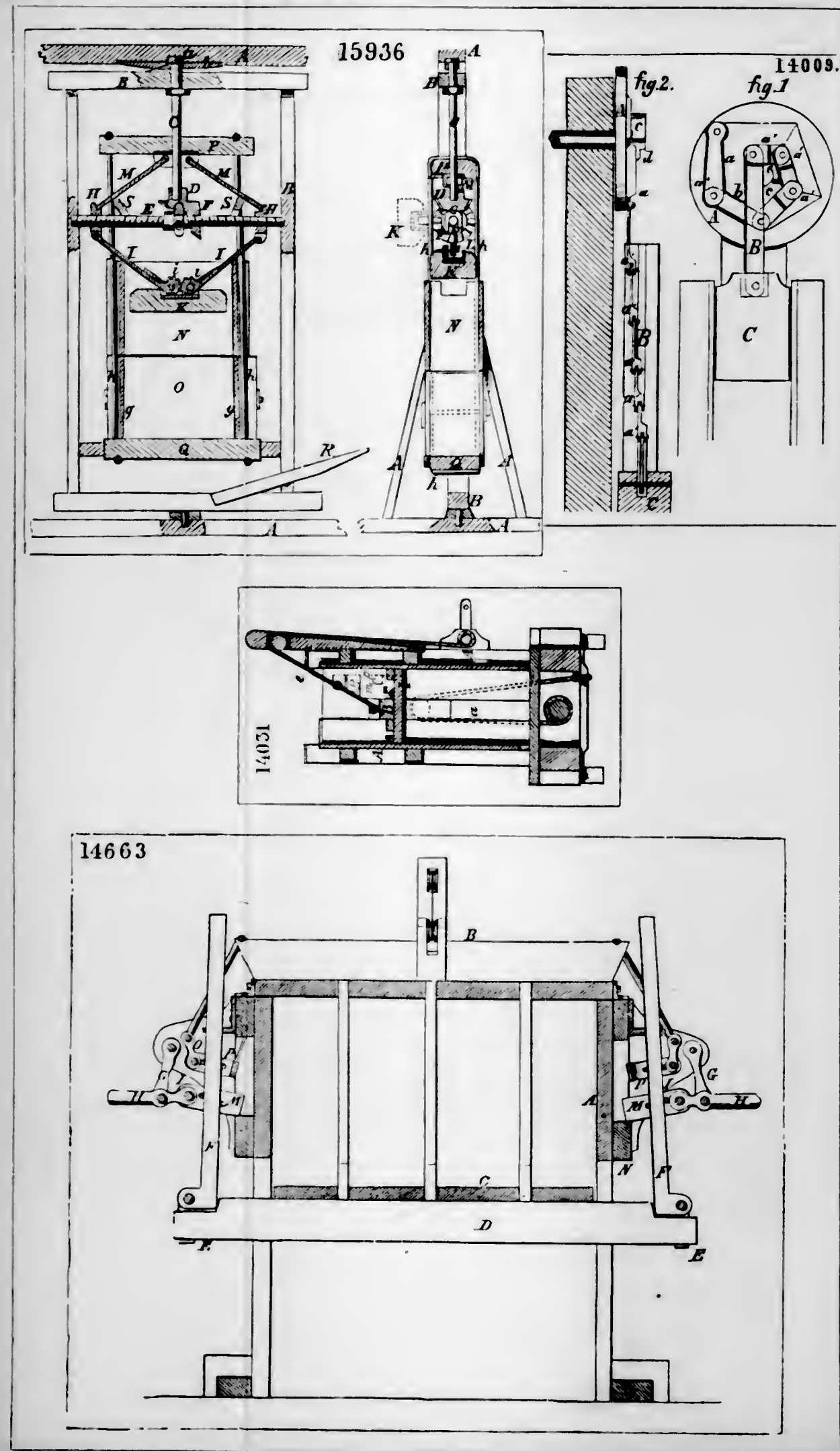












14733

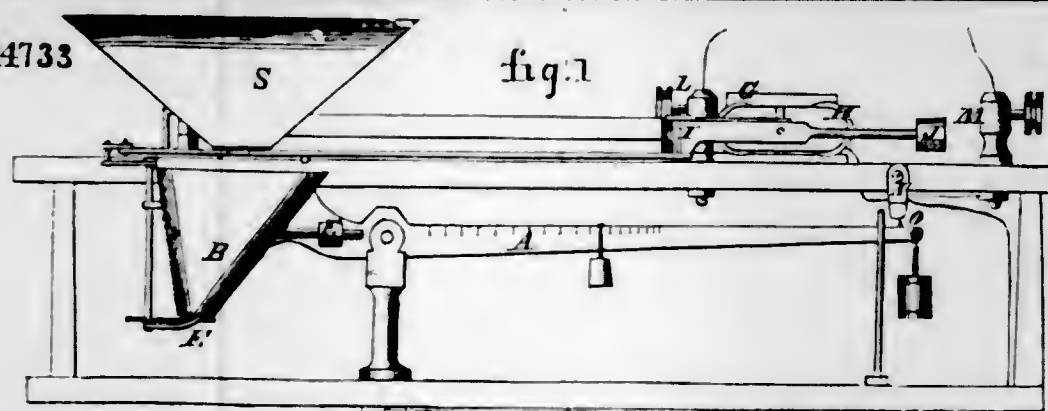
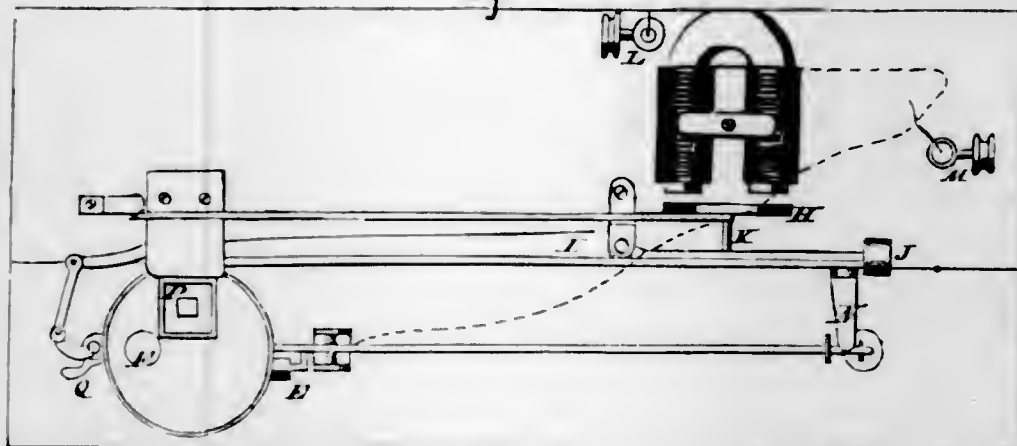


fig. 1

fig. 2



14493

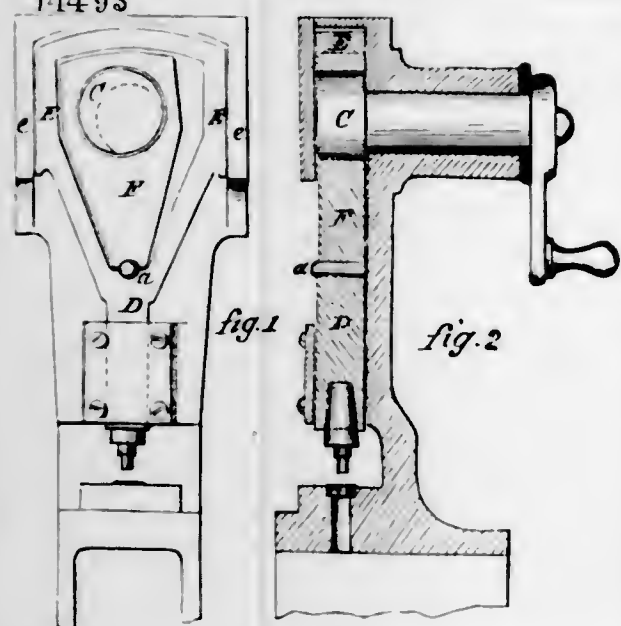


fig. 1

fig. 2

11702

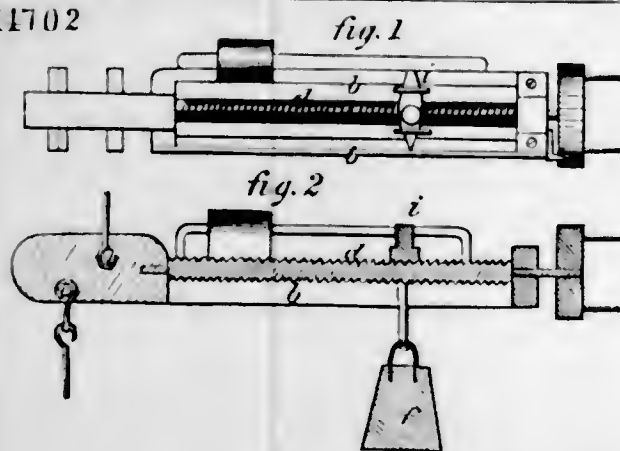


fig. 1

fig. 2

16302

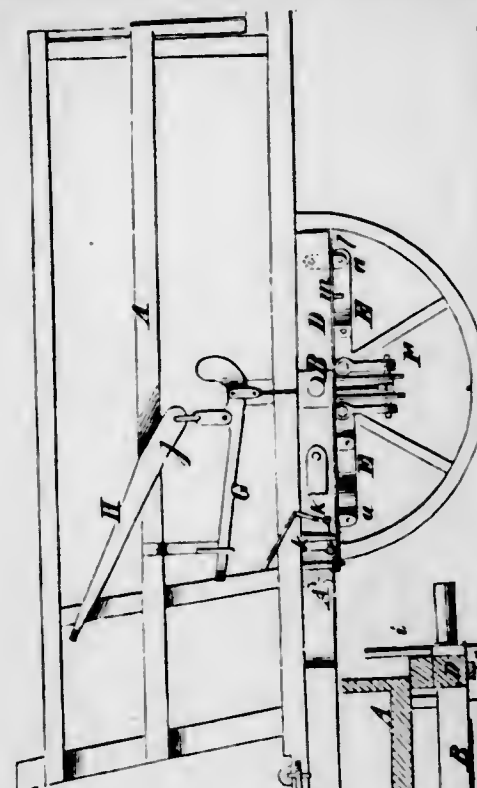
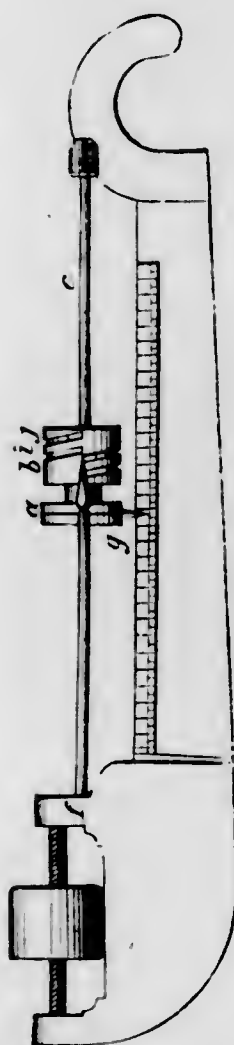


fig. 1

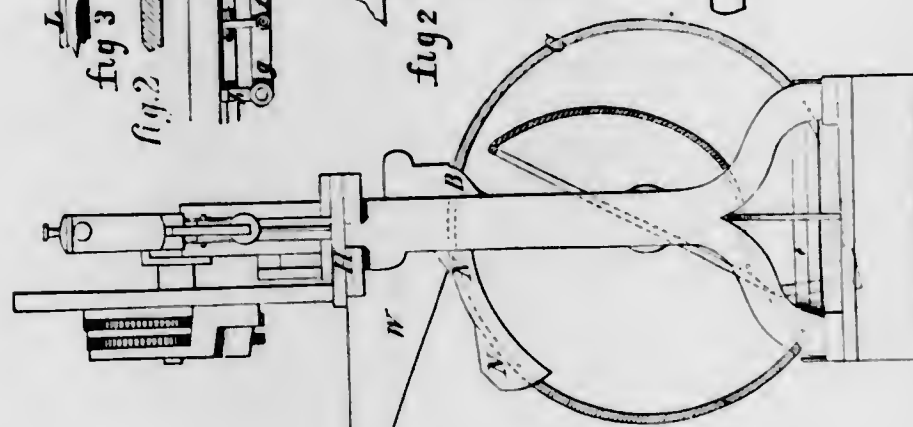


fig. 2

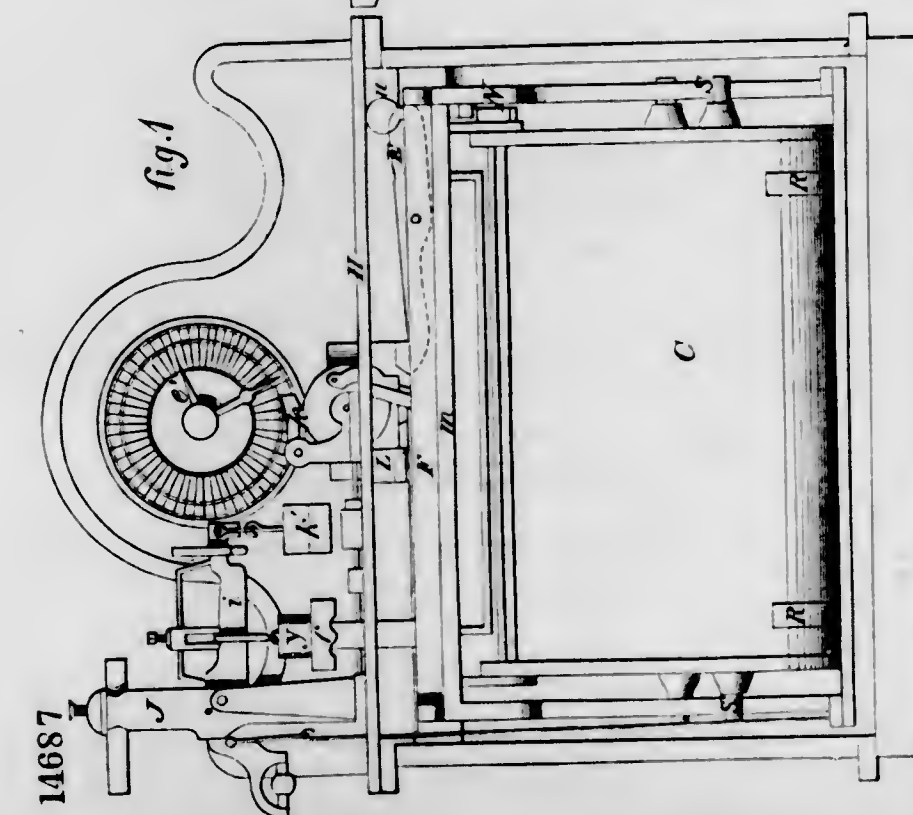
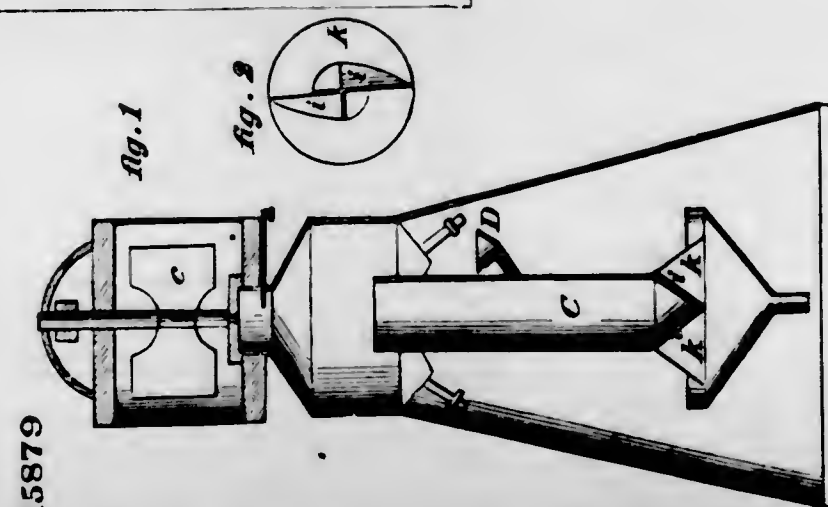
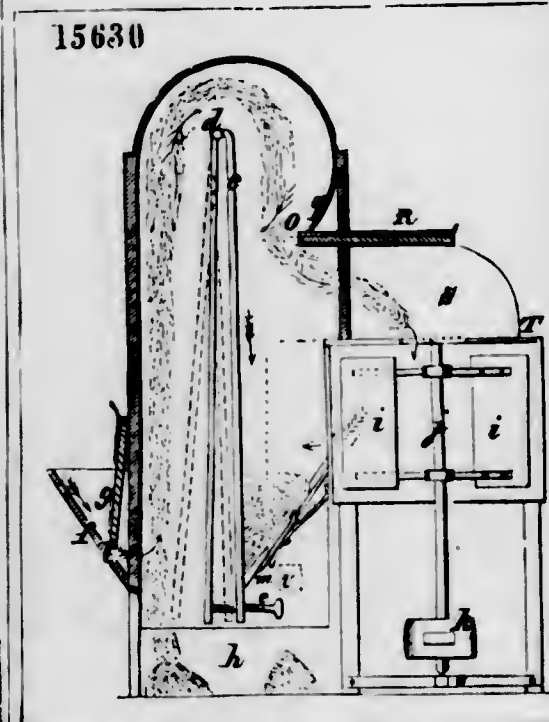
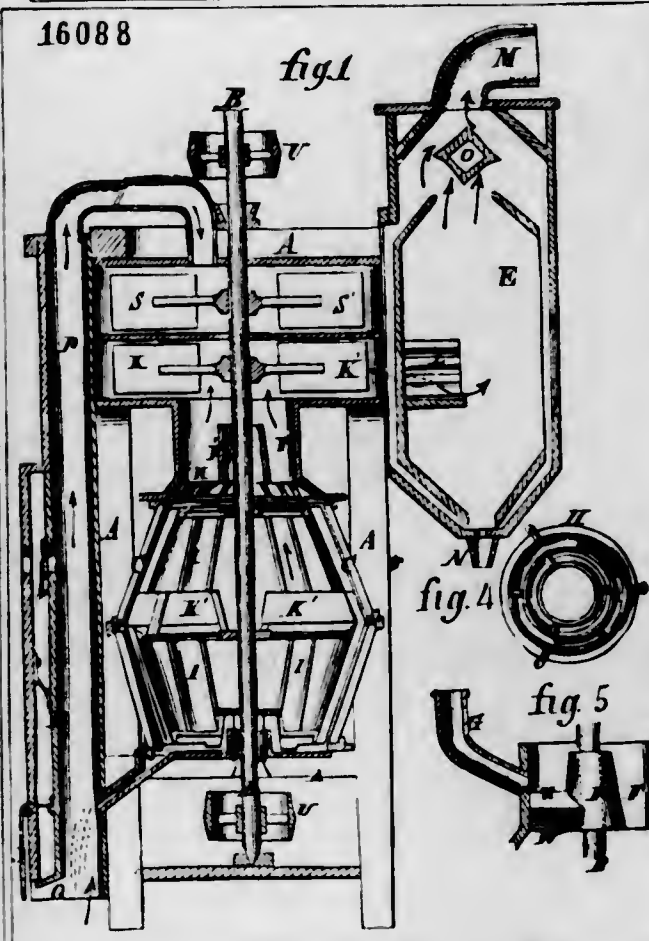
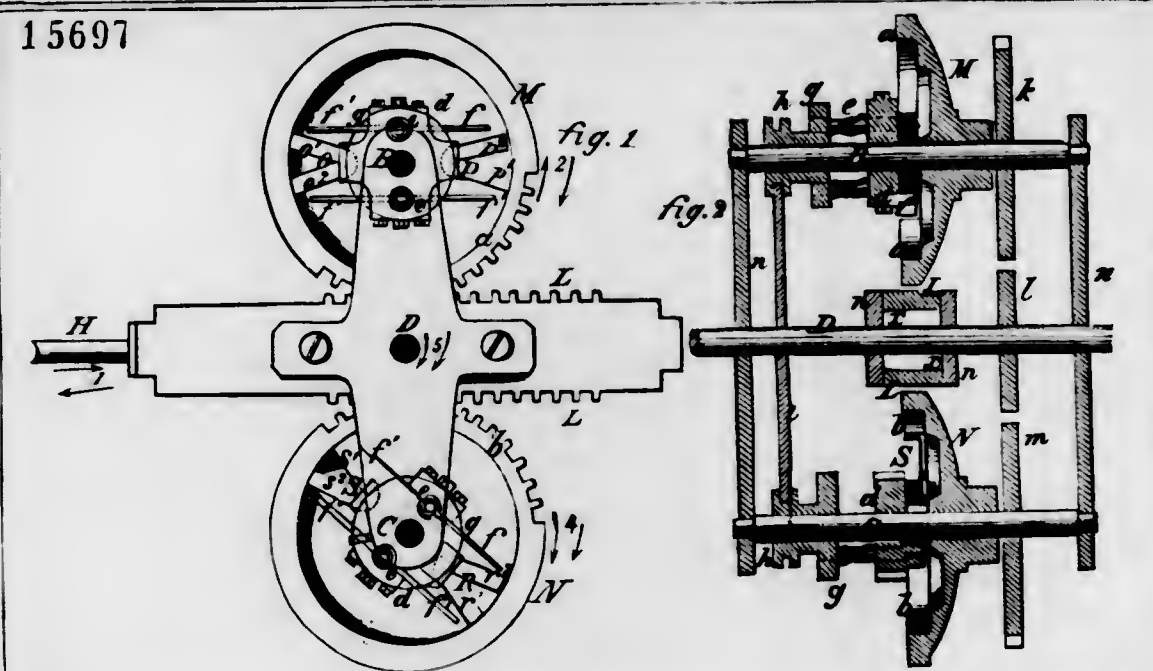
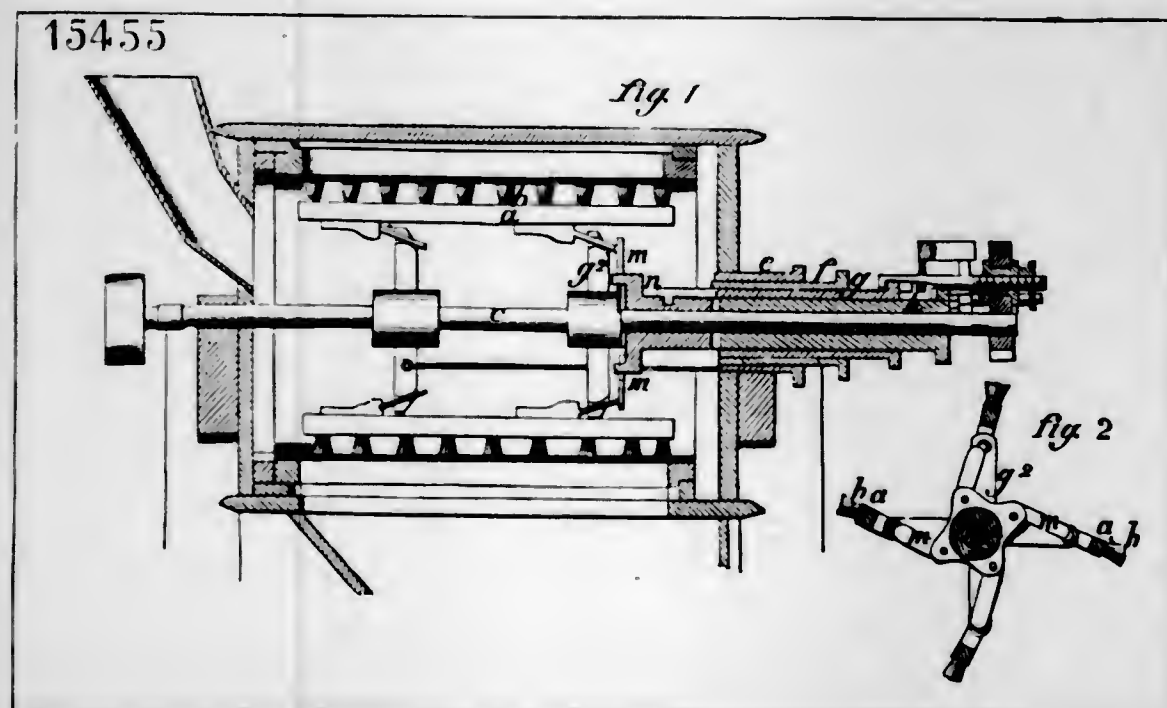
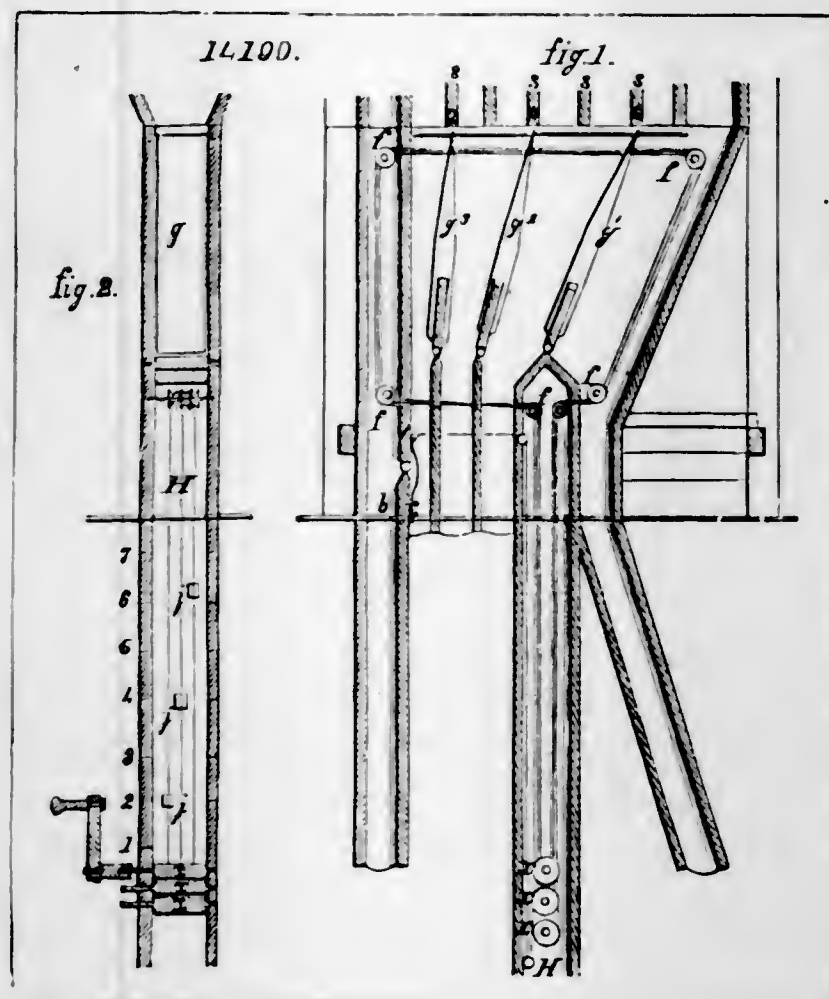
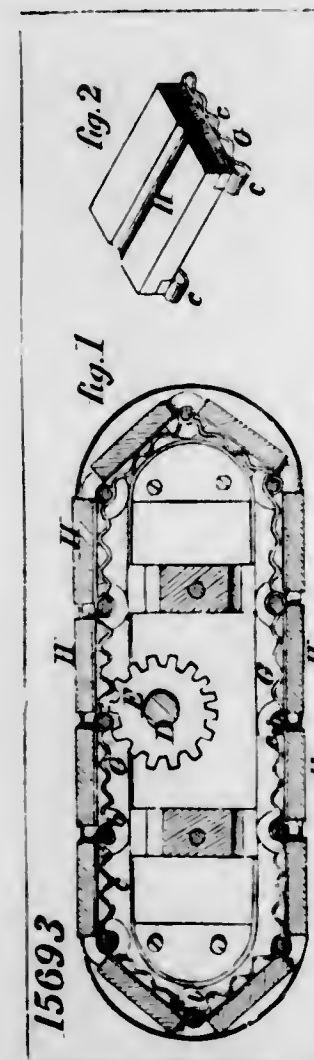
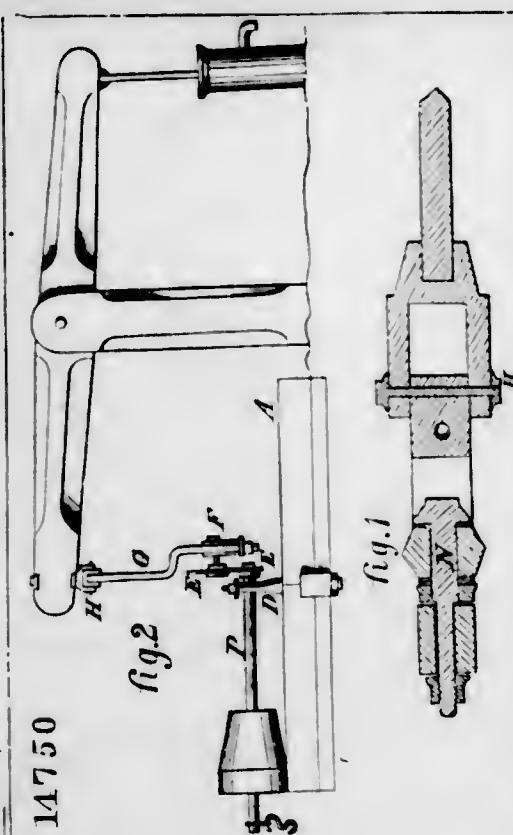
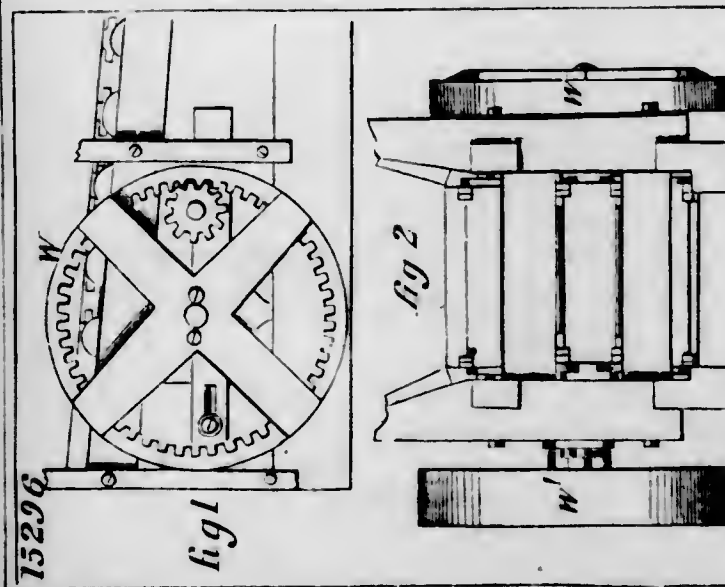
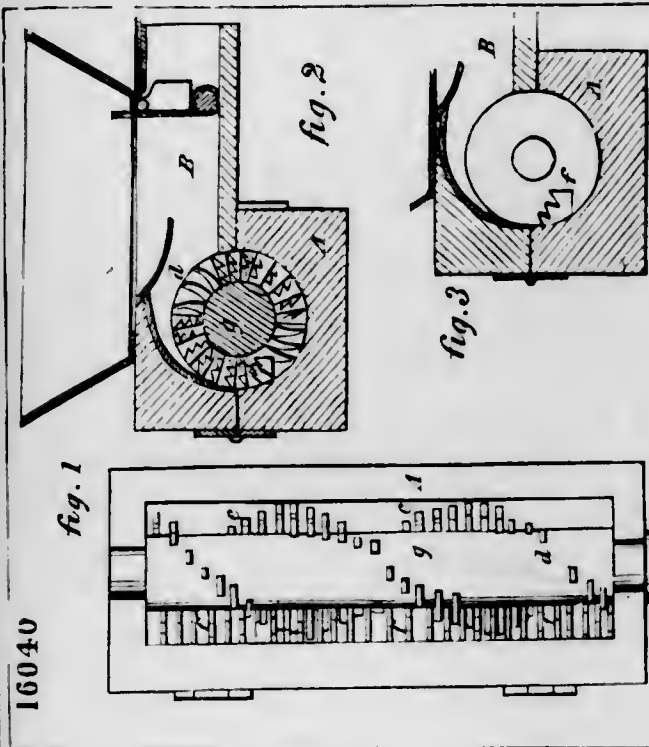
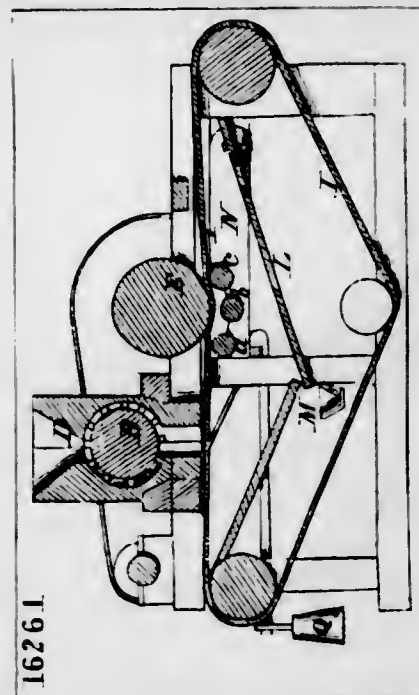
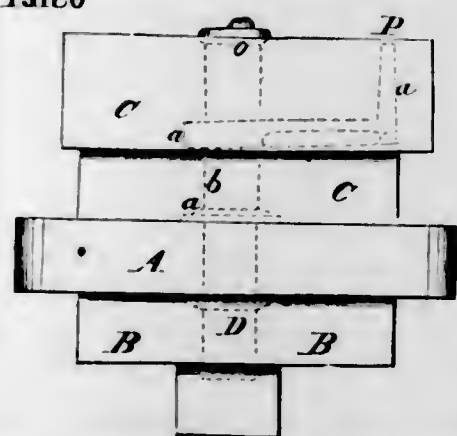
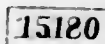
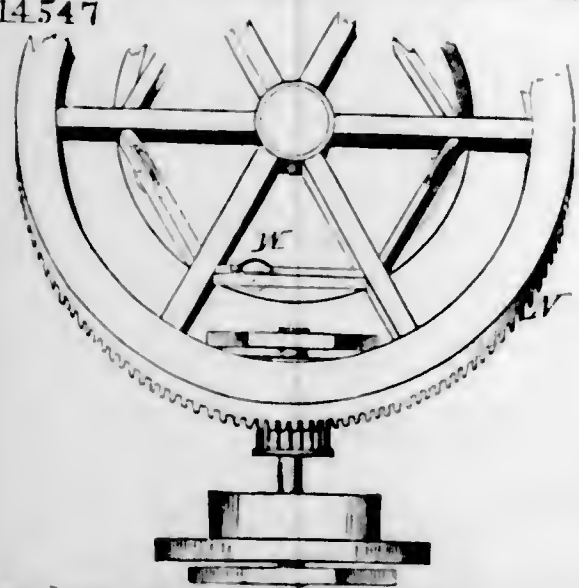
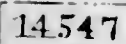
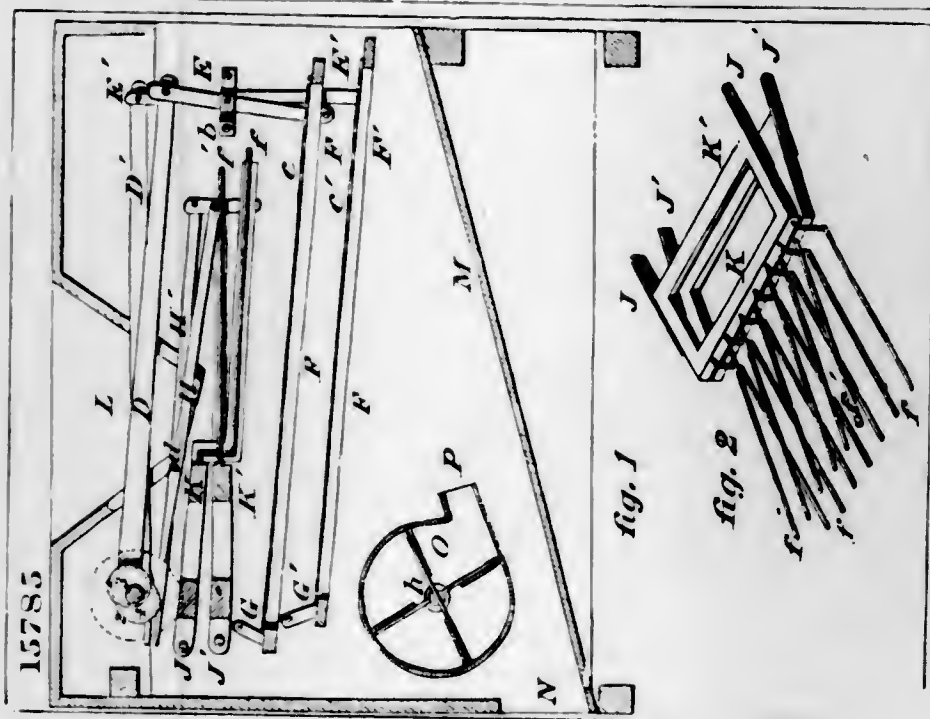
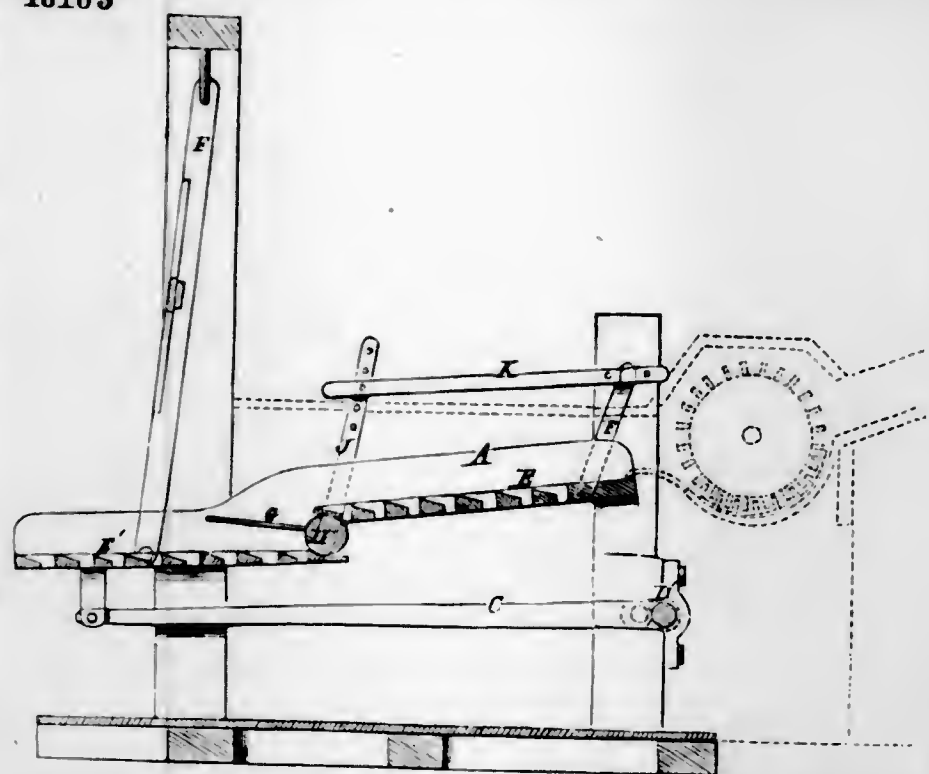
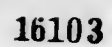
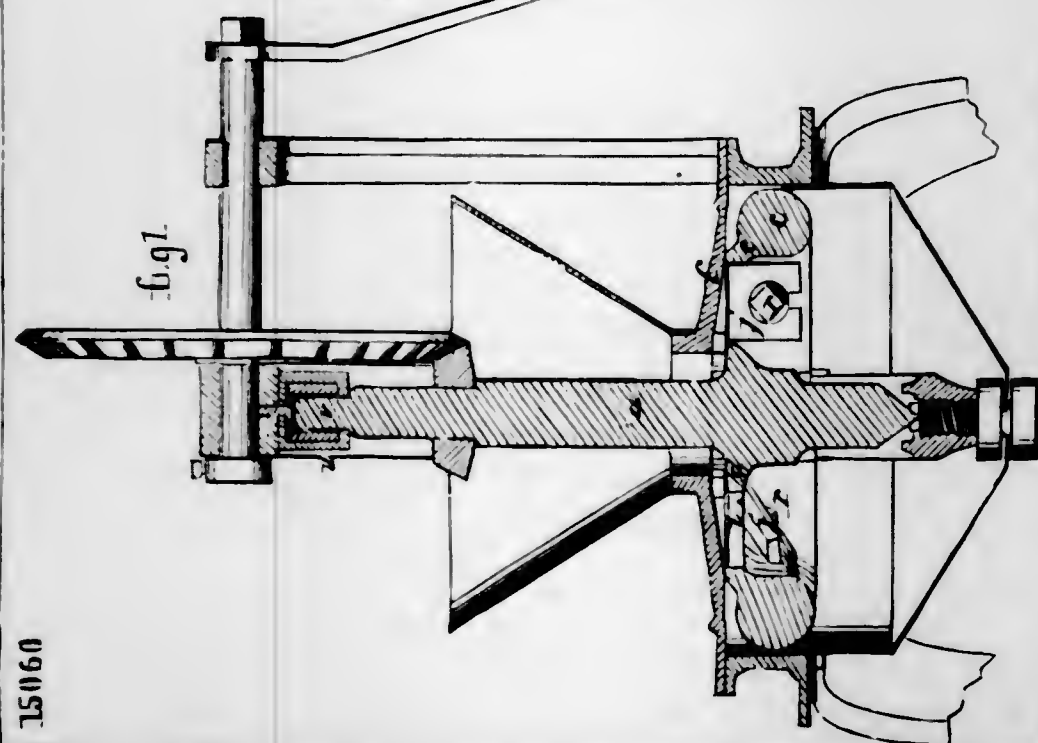
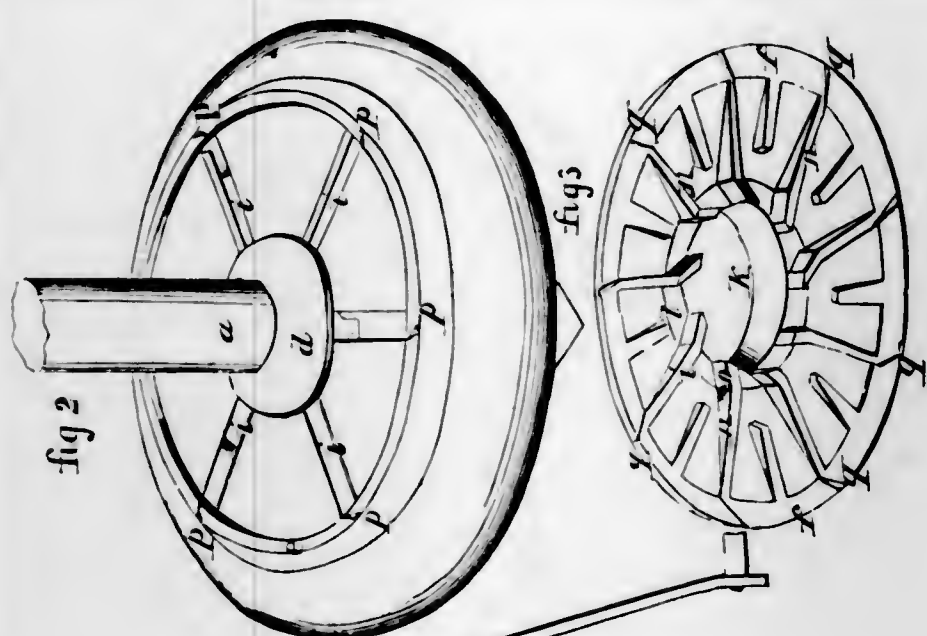
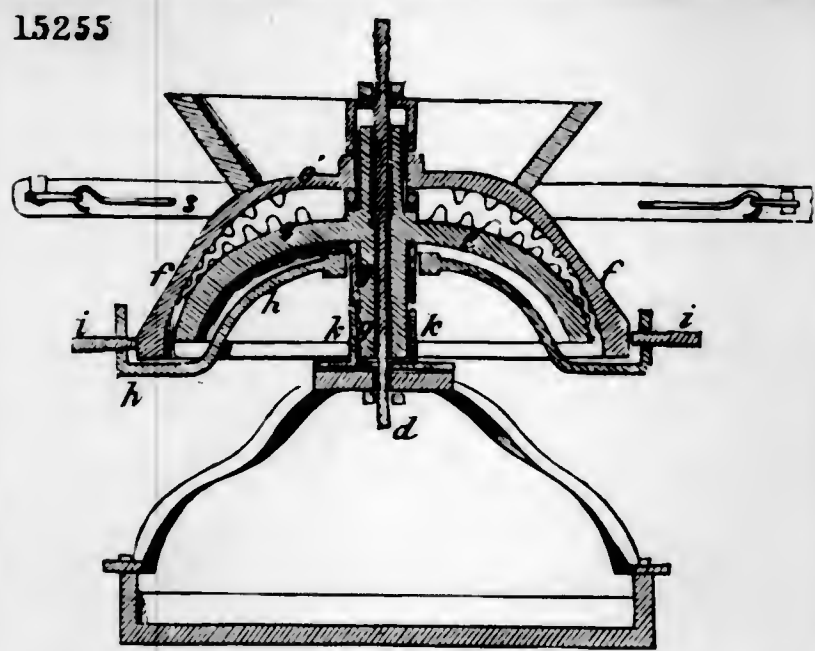


fig. 1



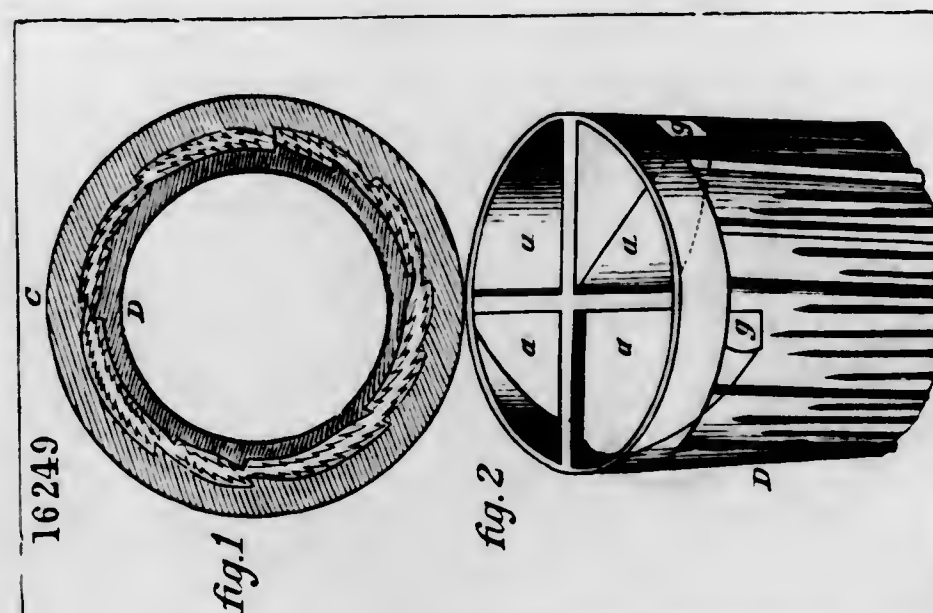
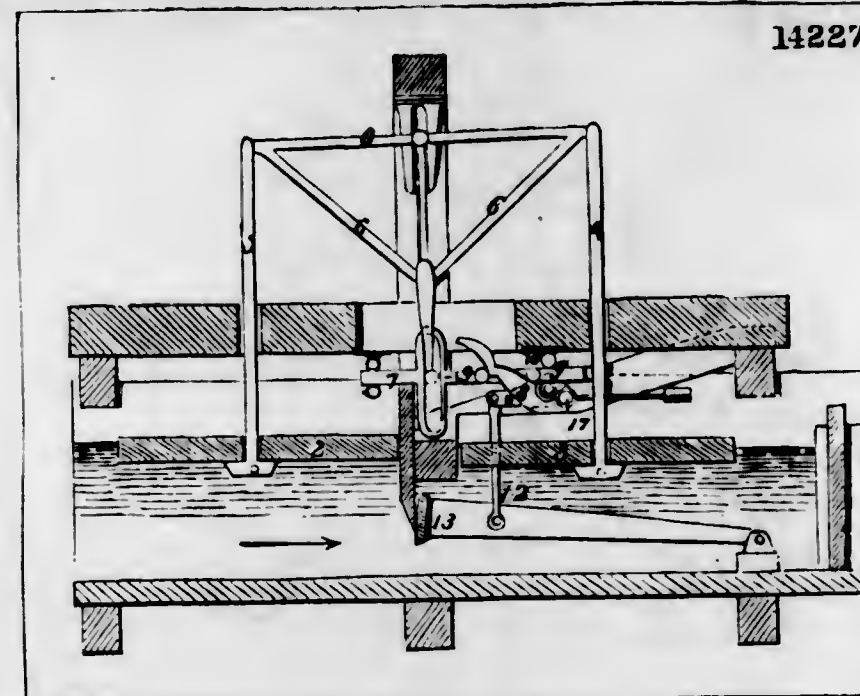


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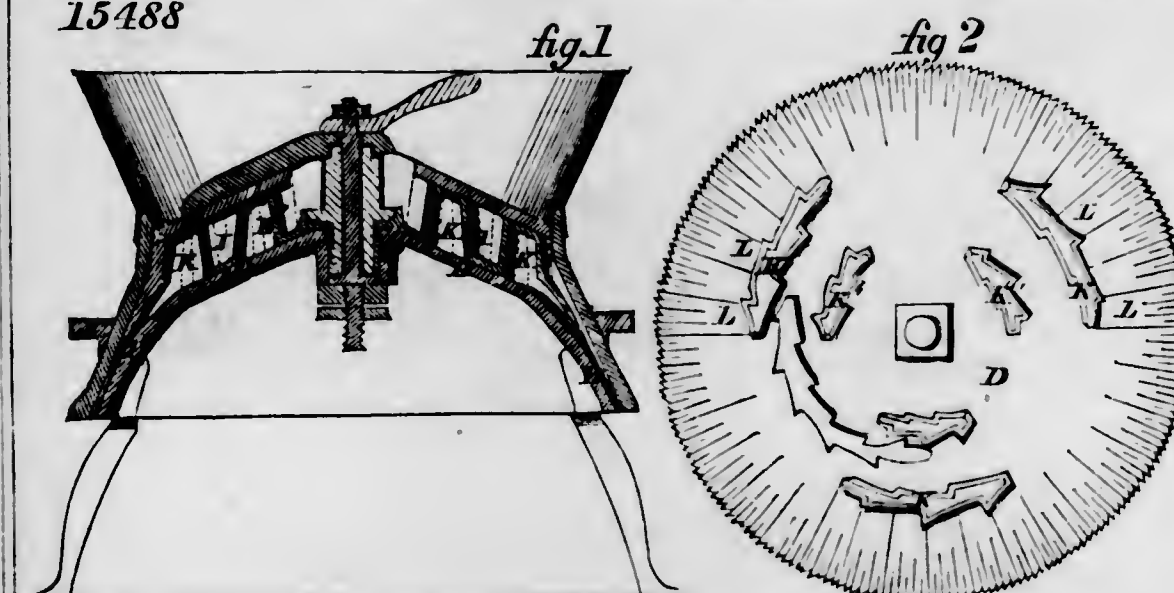
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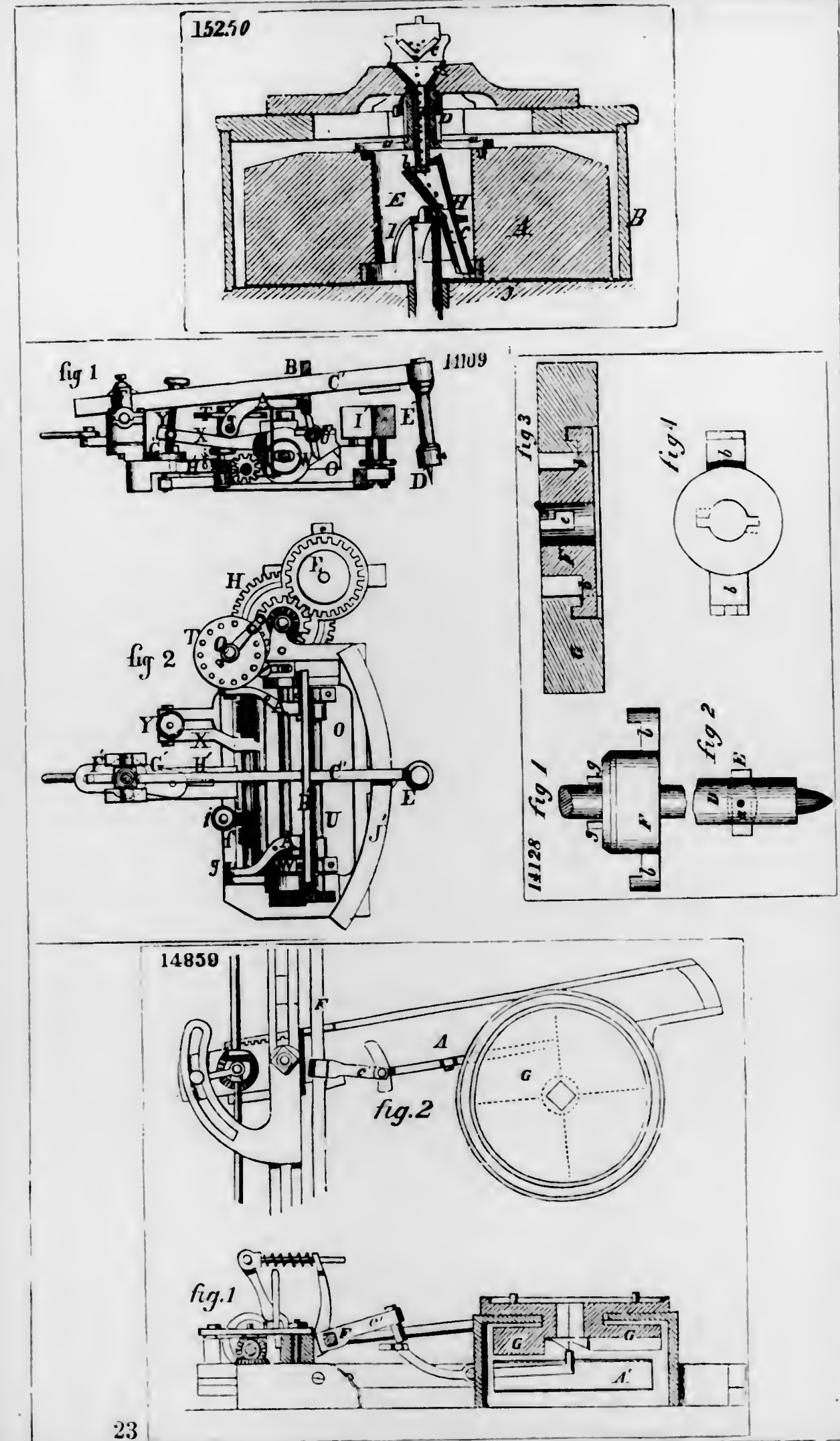
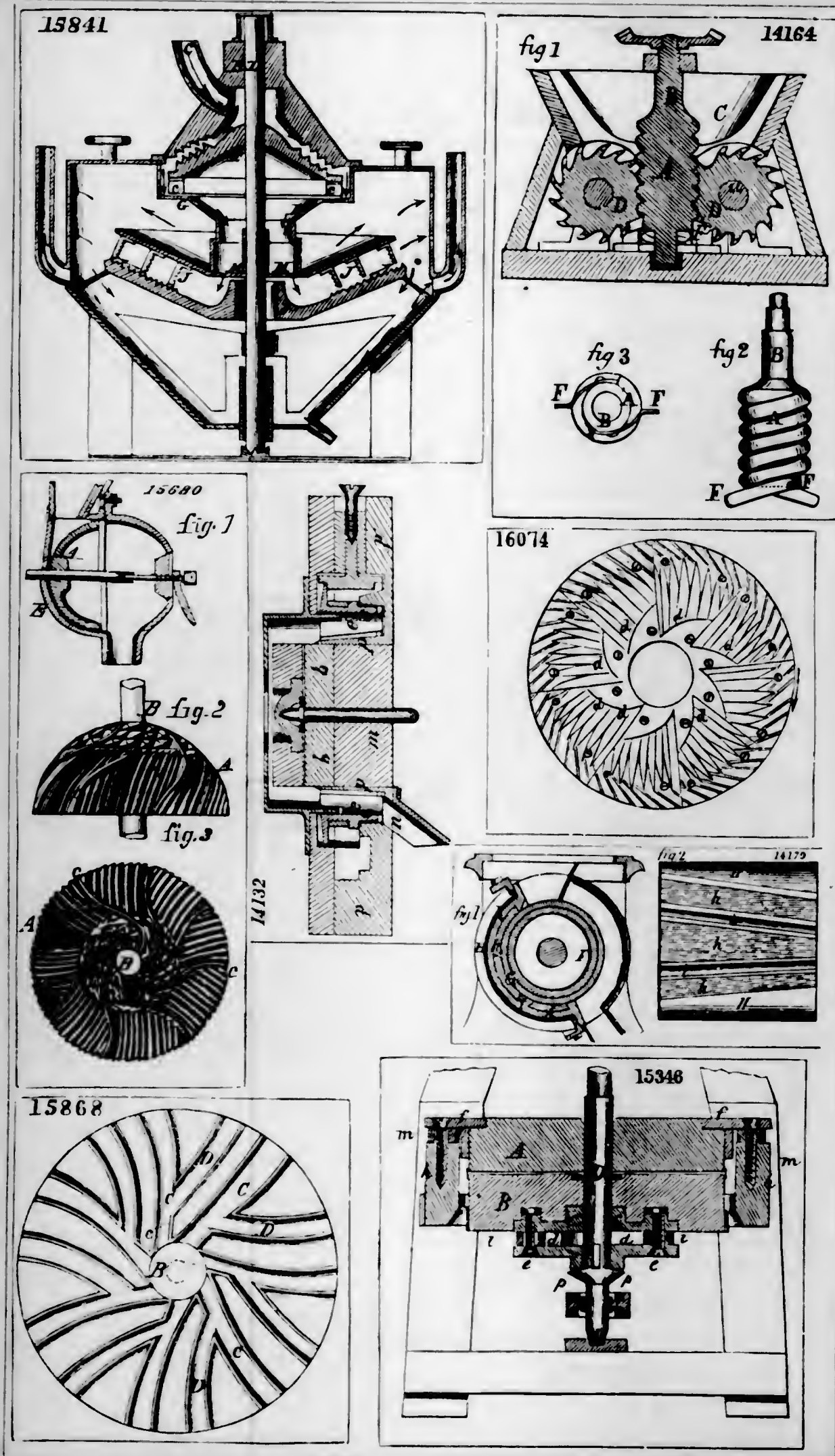
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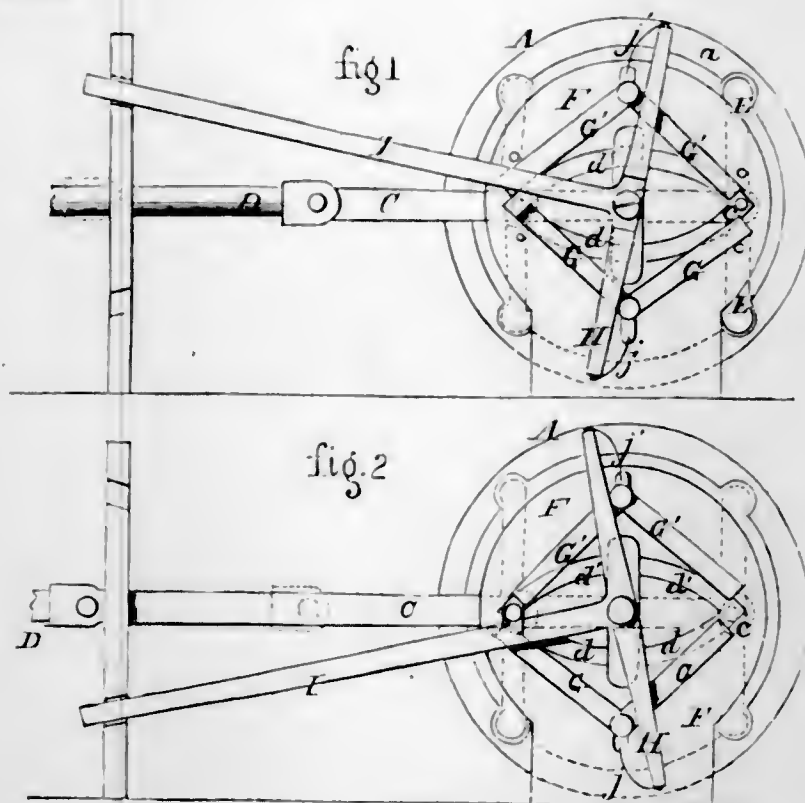
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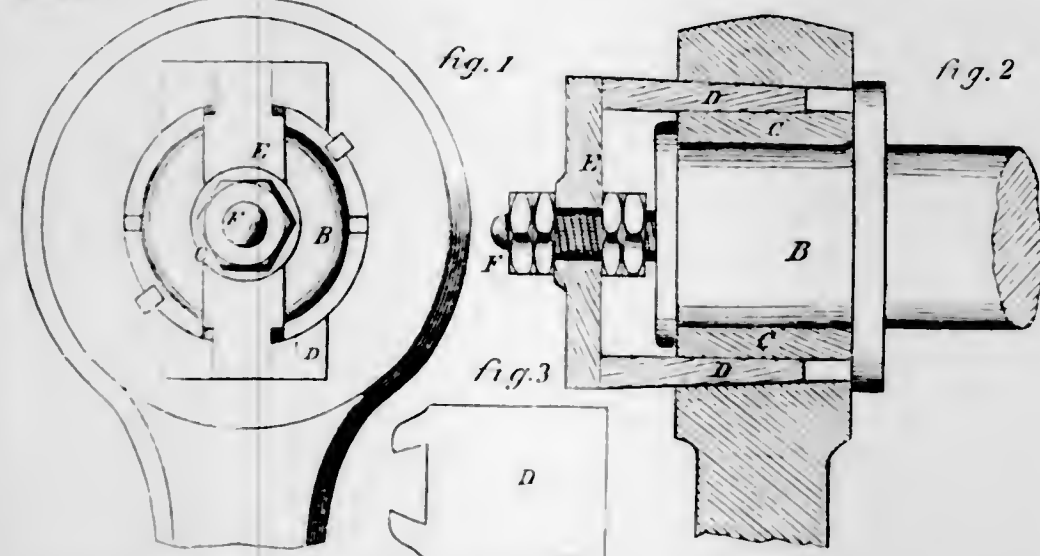




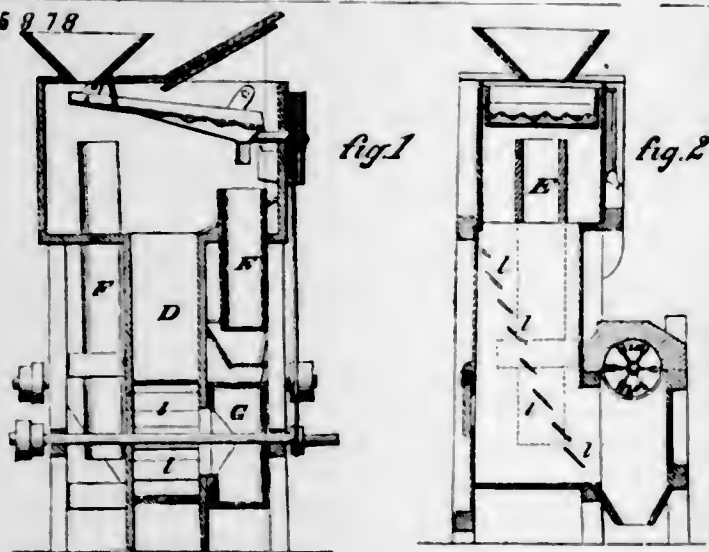
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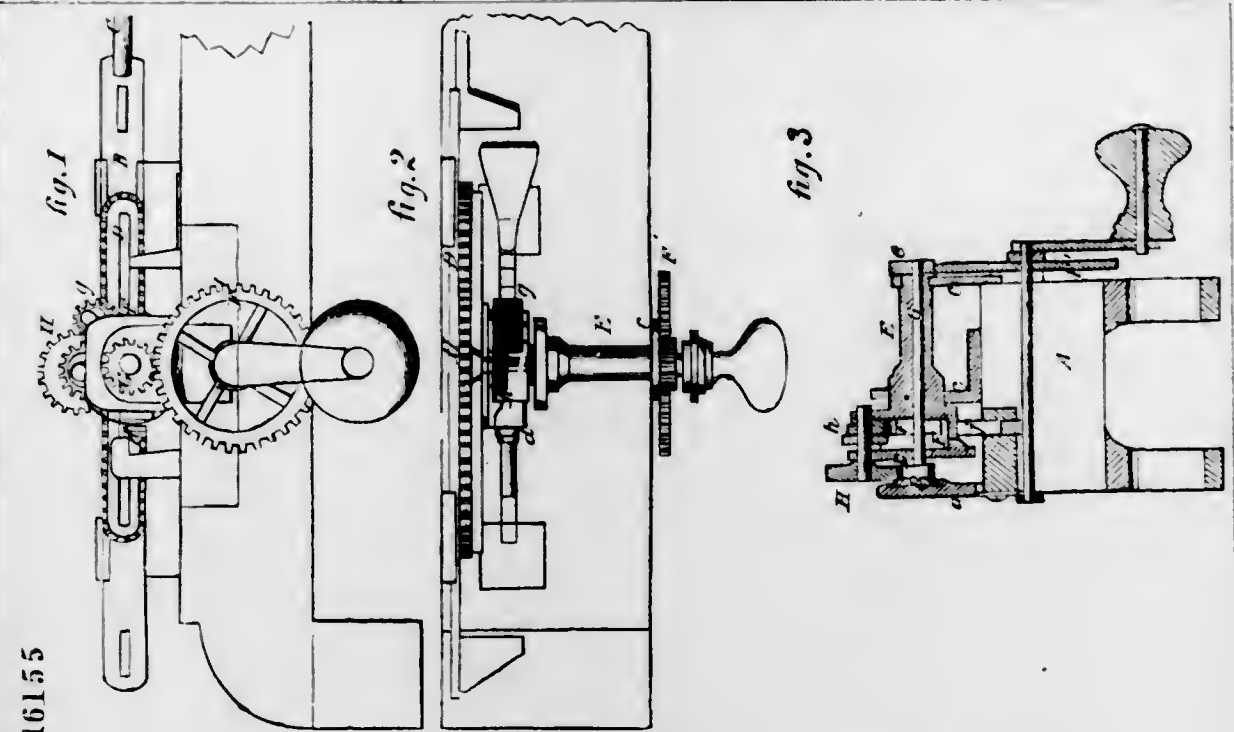
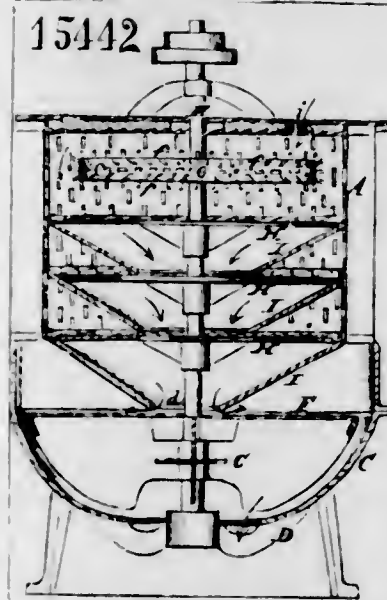
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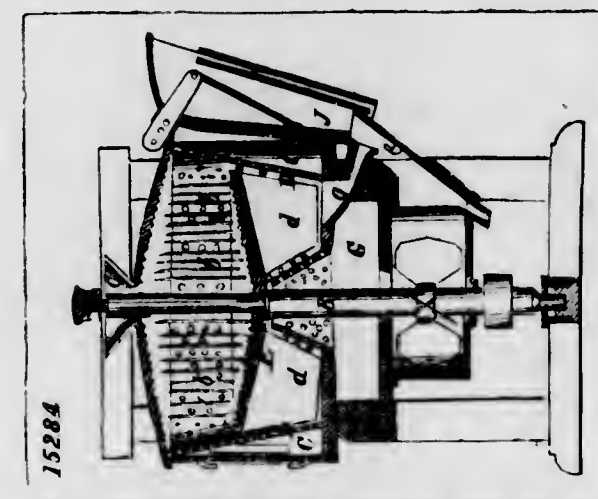
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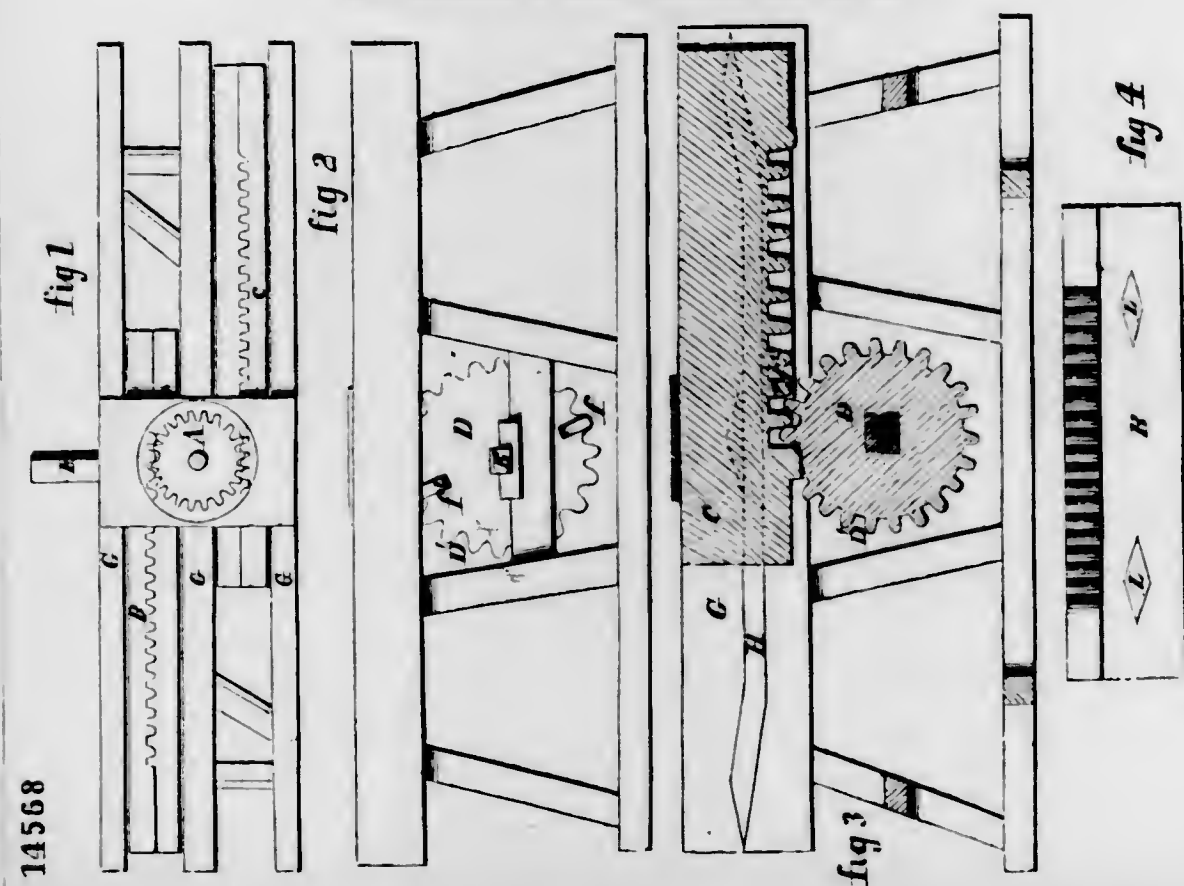
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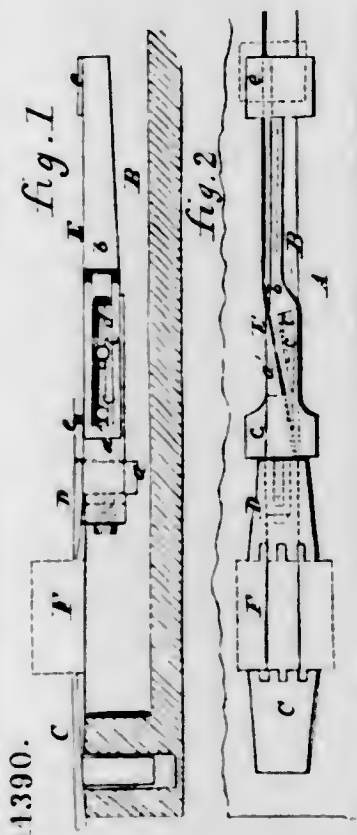
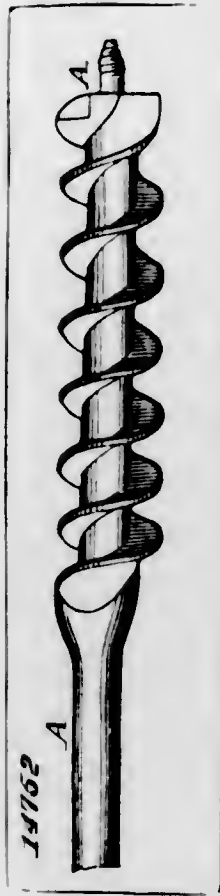
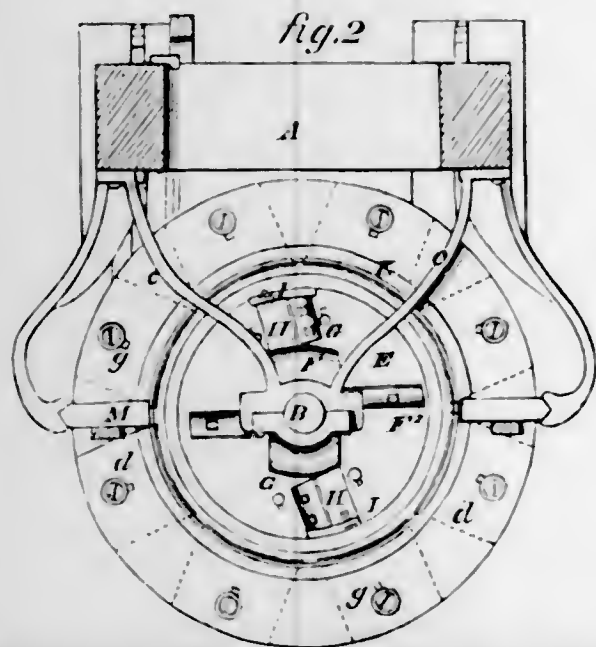
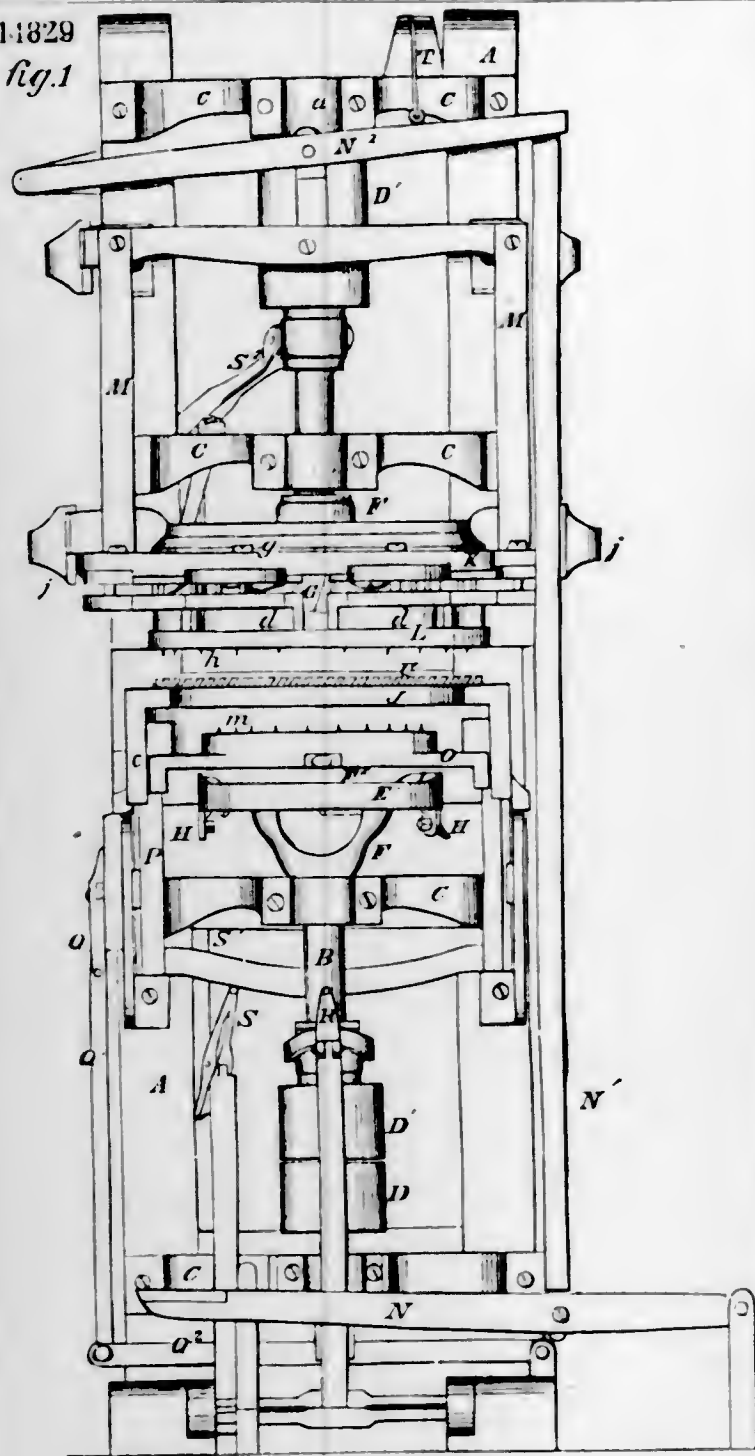
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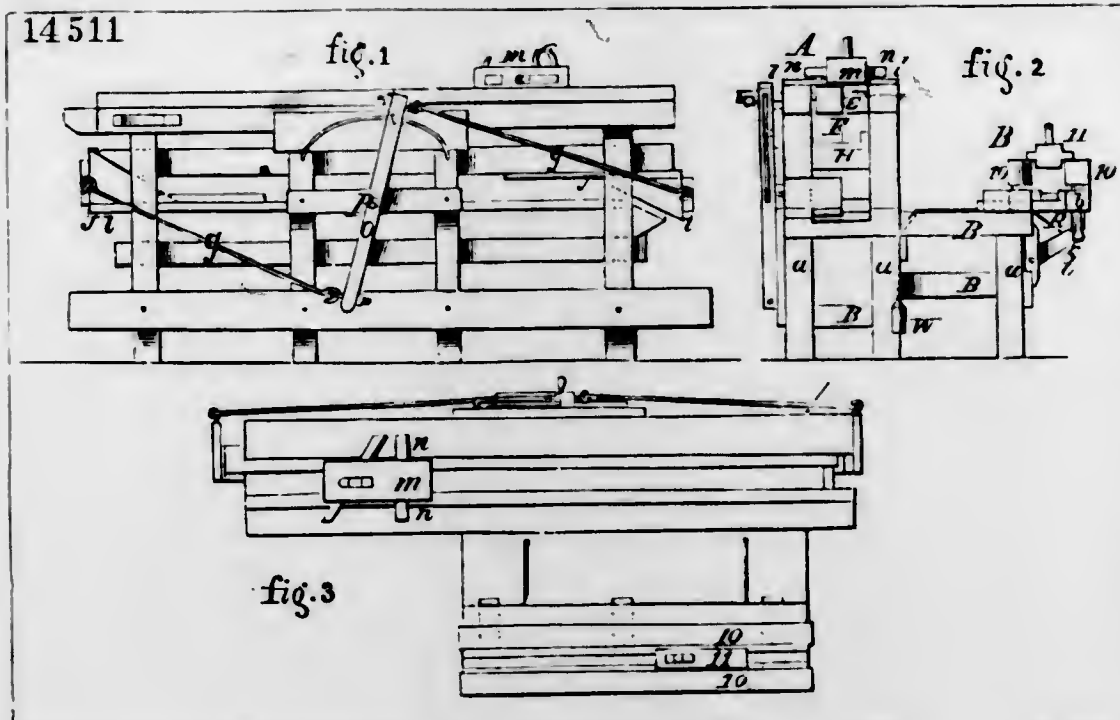


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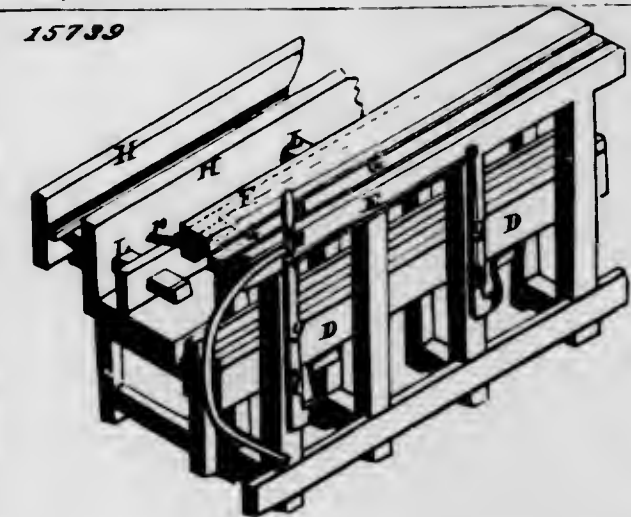
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fig.1

14390.

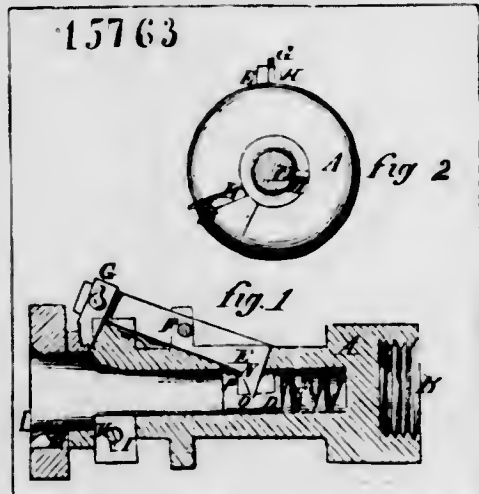
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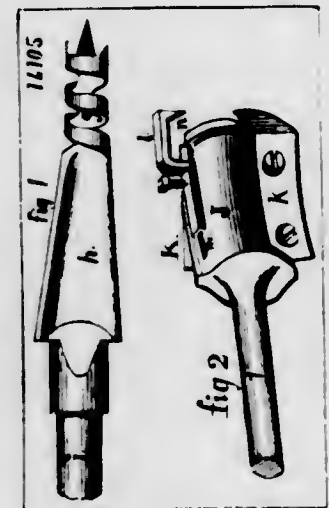
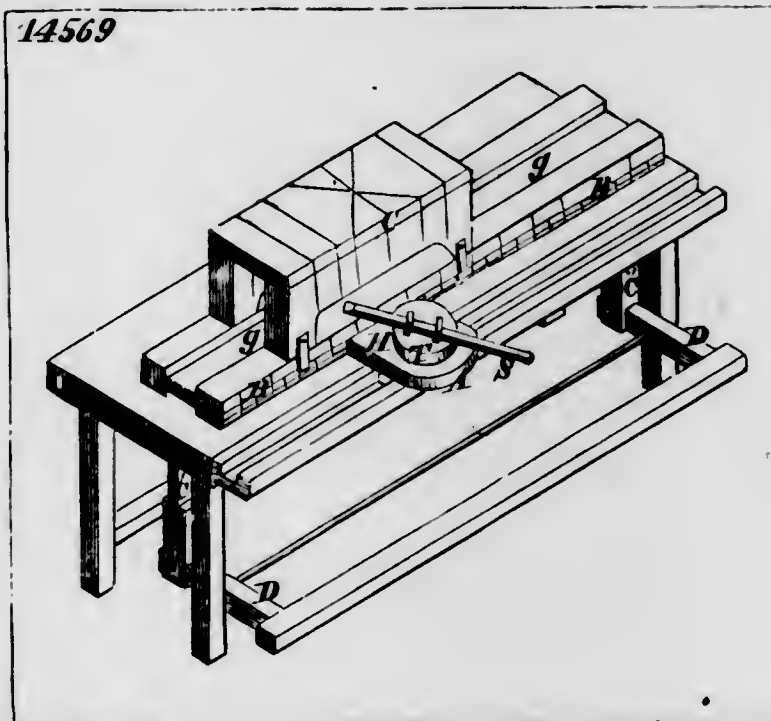
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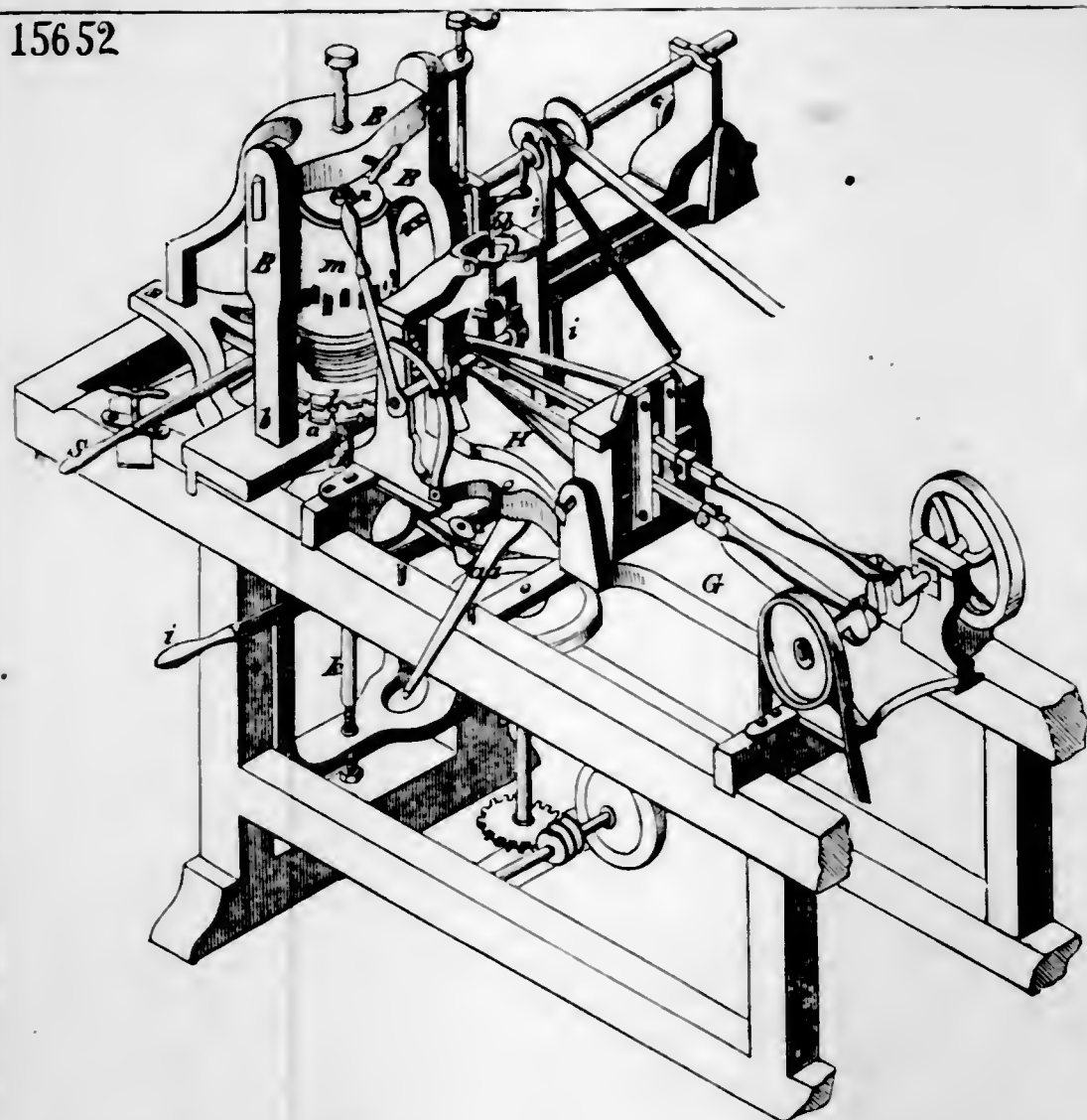
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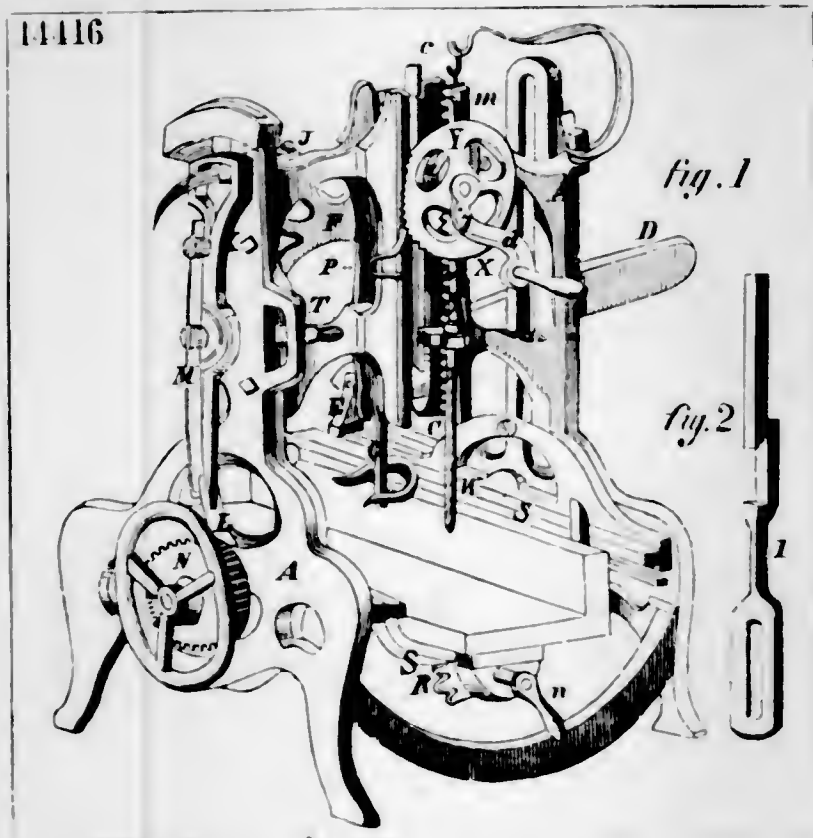
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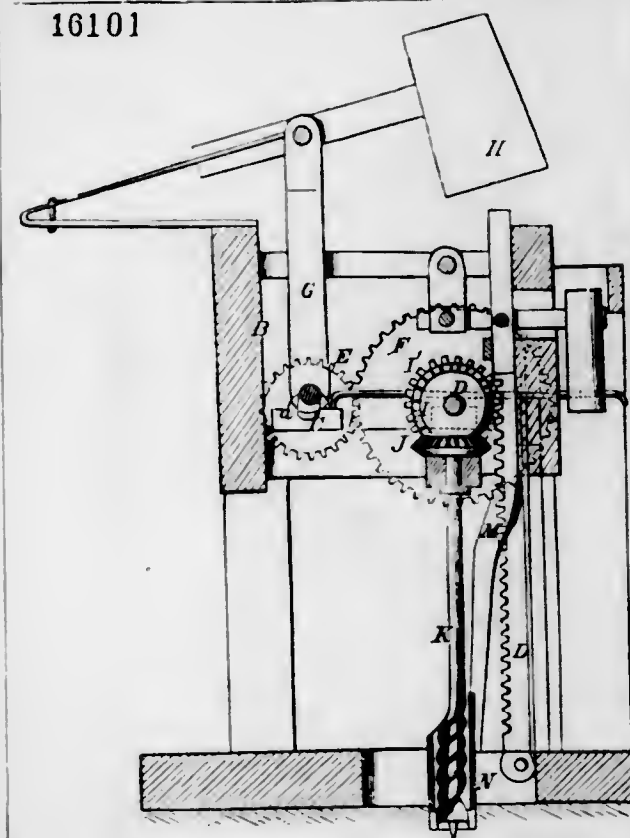
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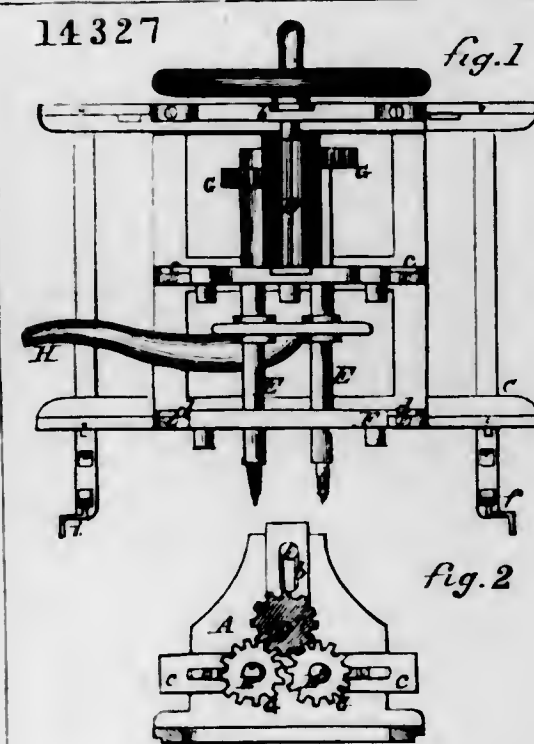
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16101



14327



14223

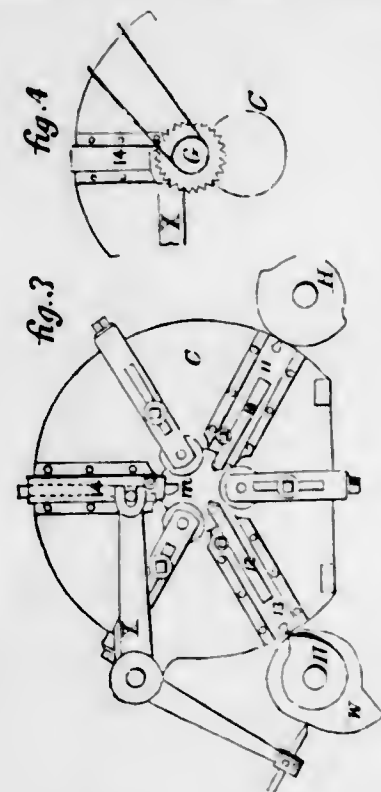


fig. 1

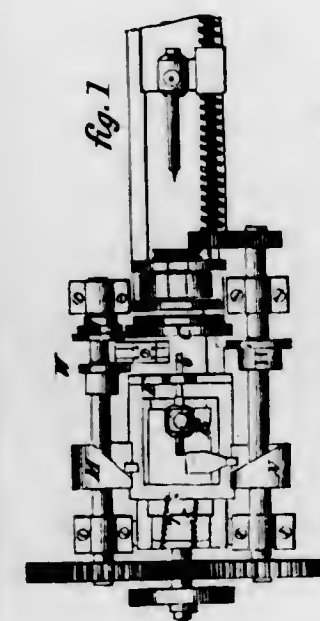
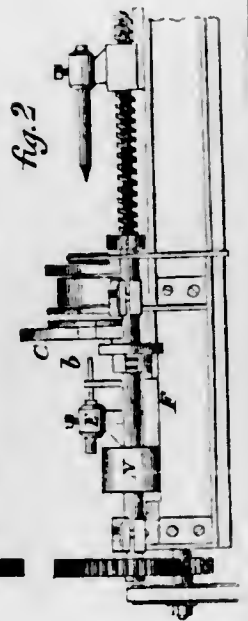
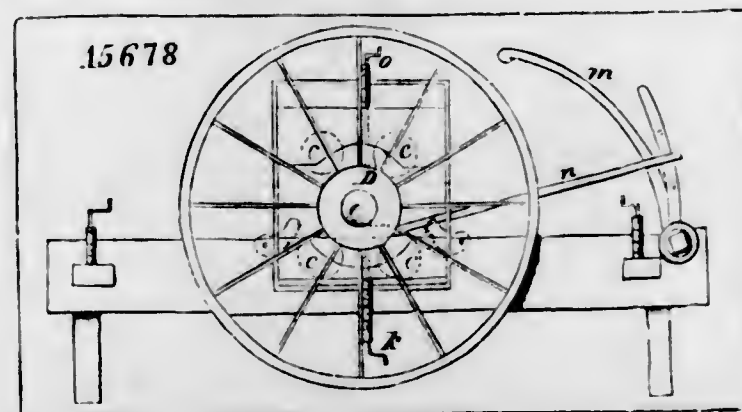
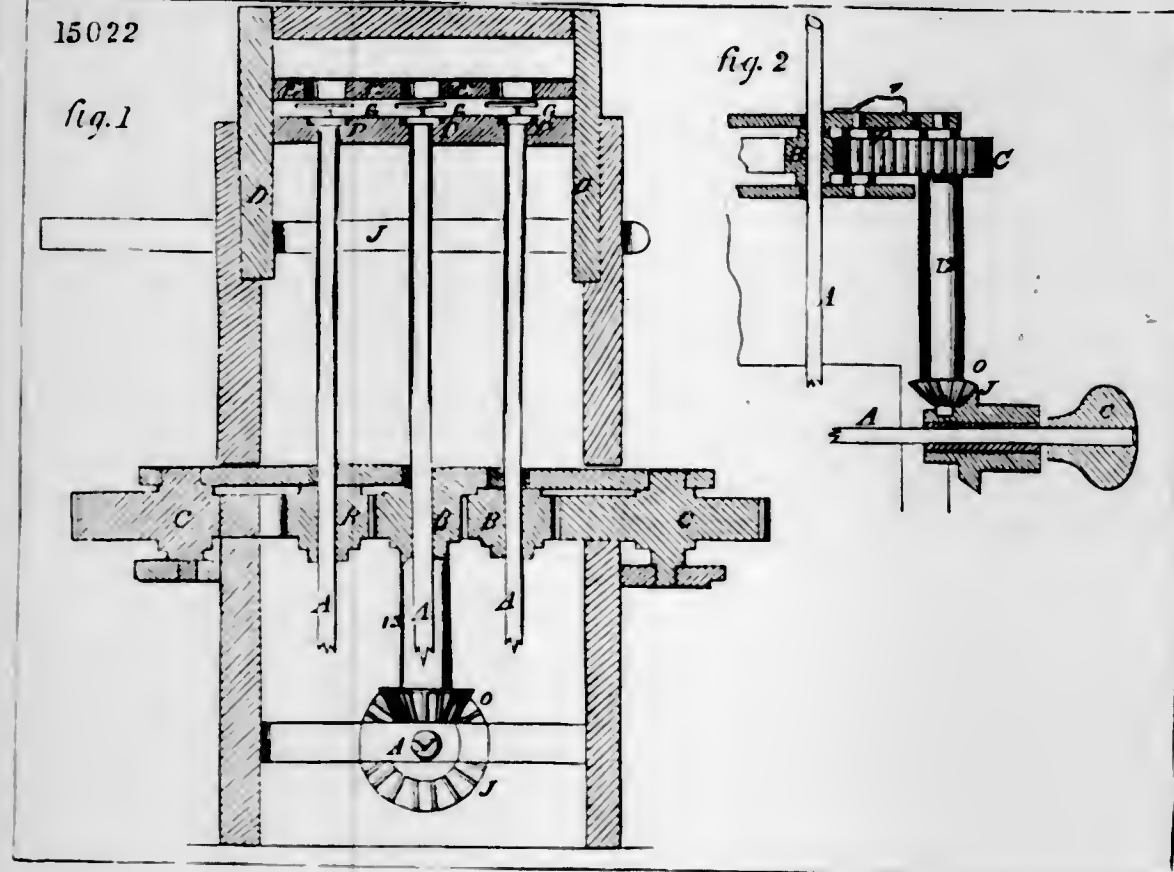
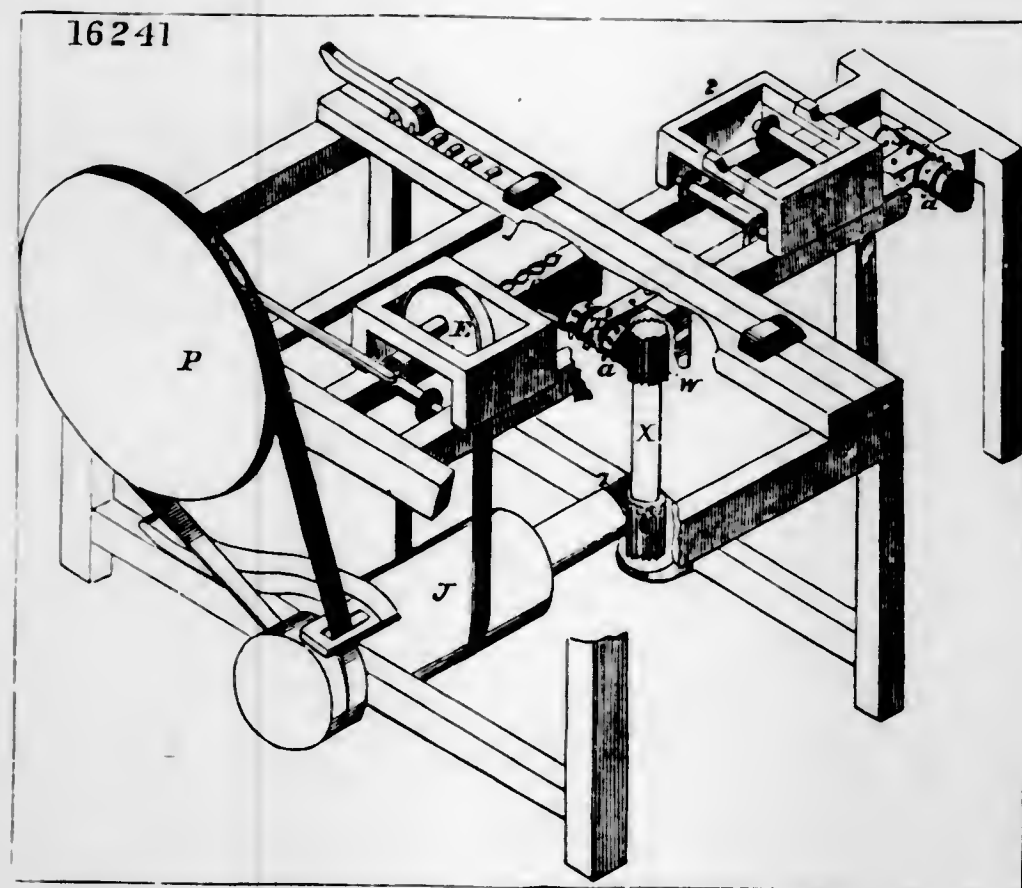


fig. 2

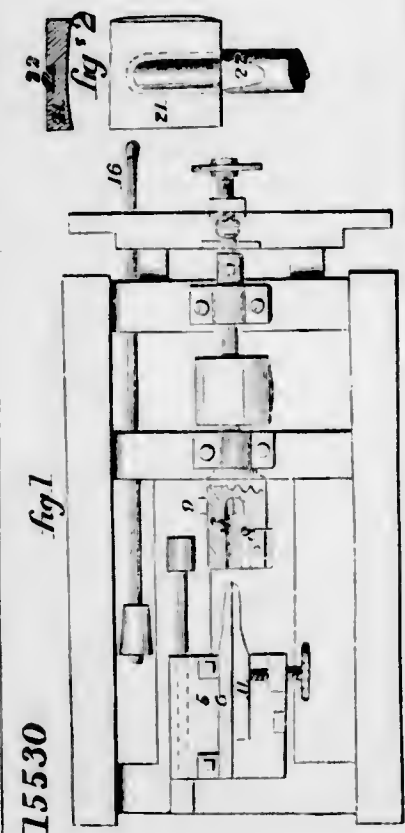
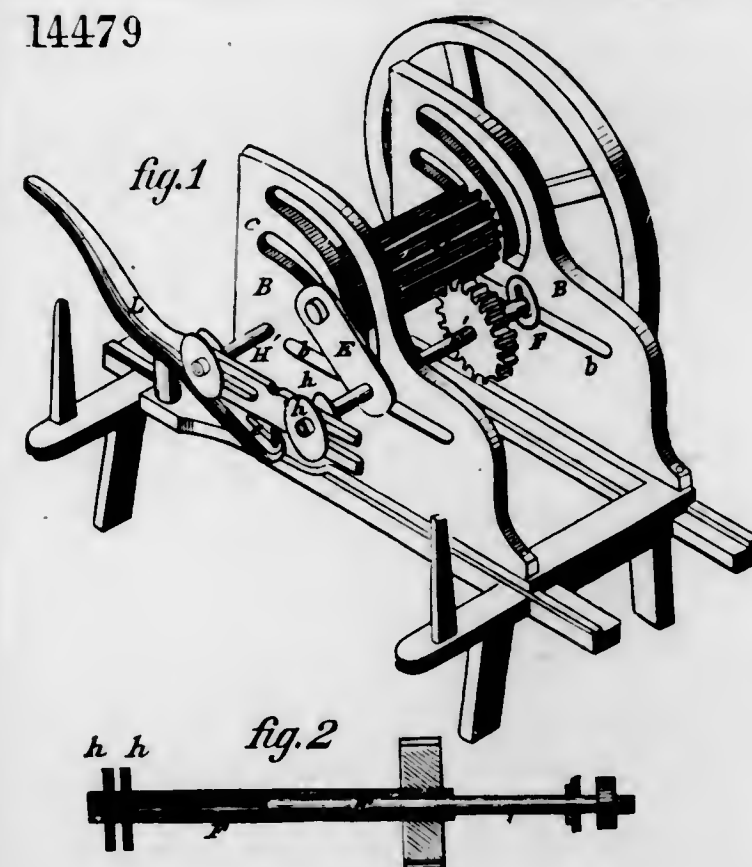


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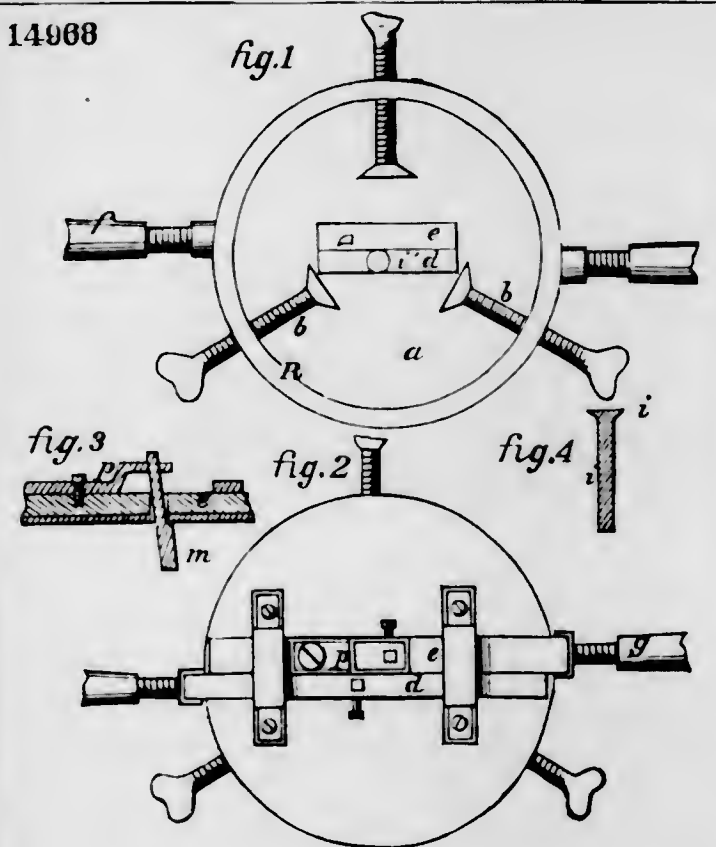




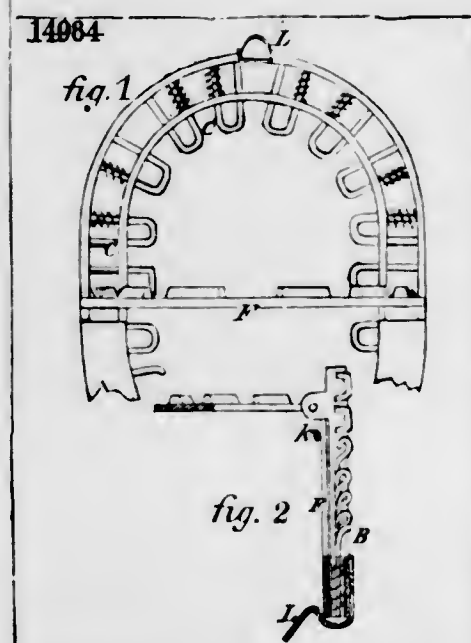
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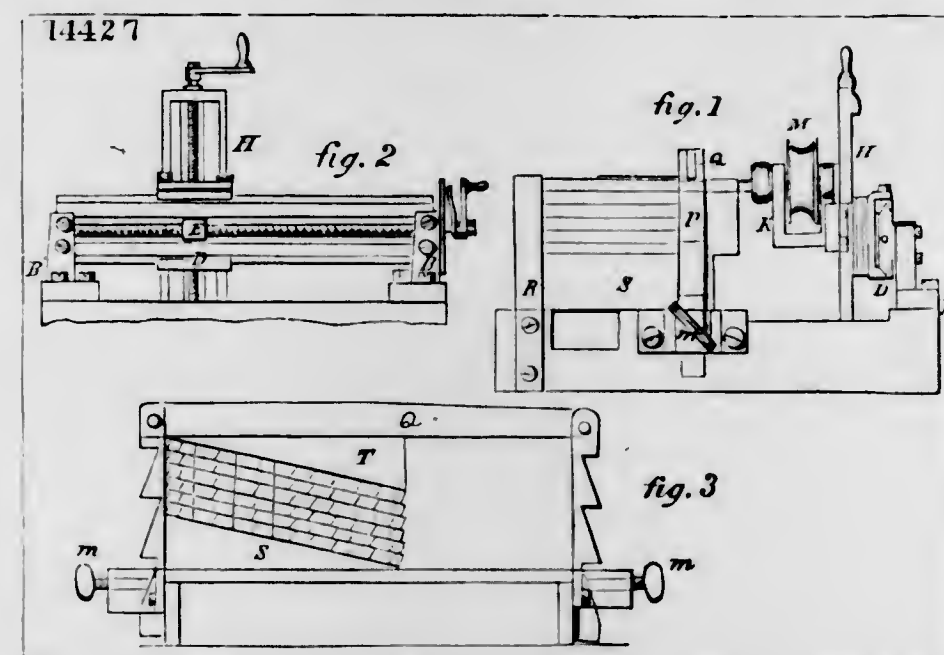
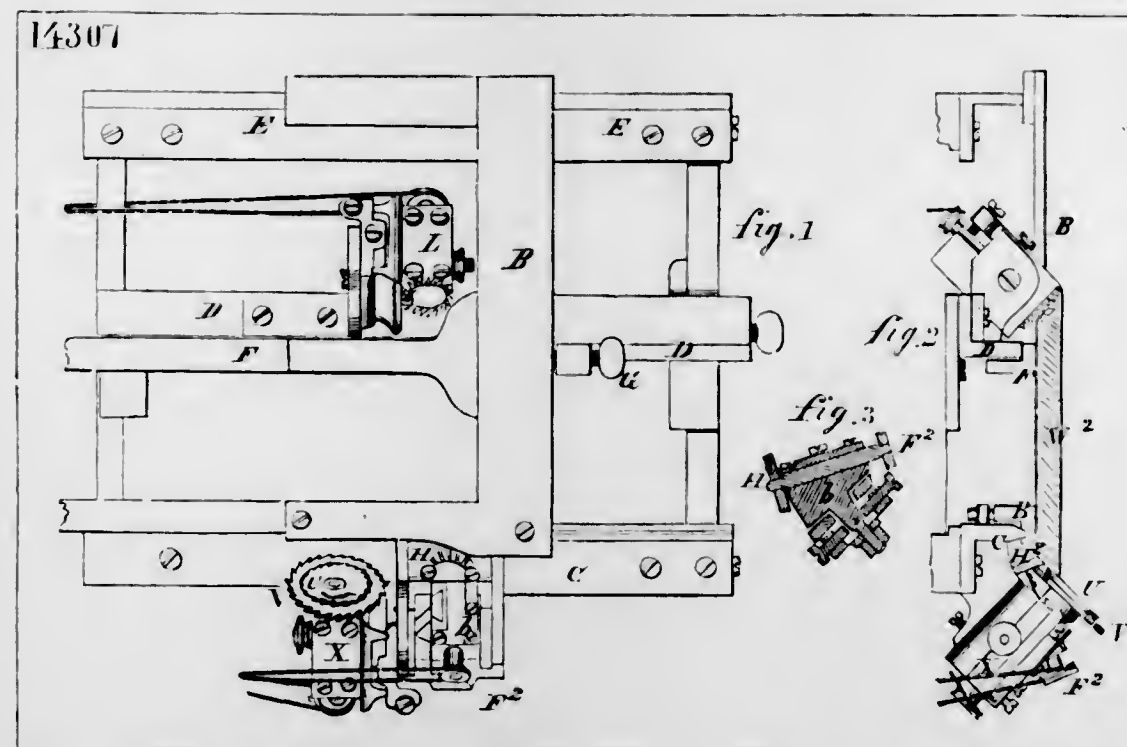
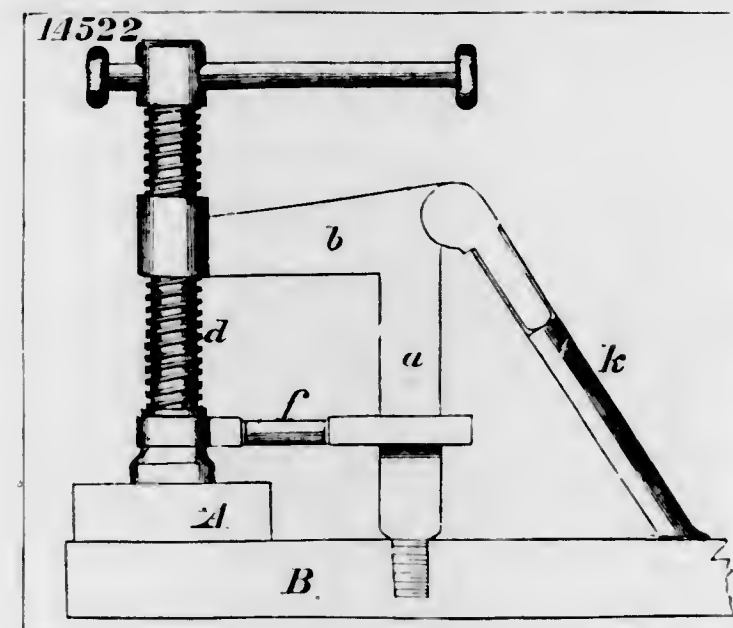
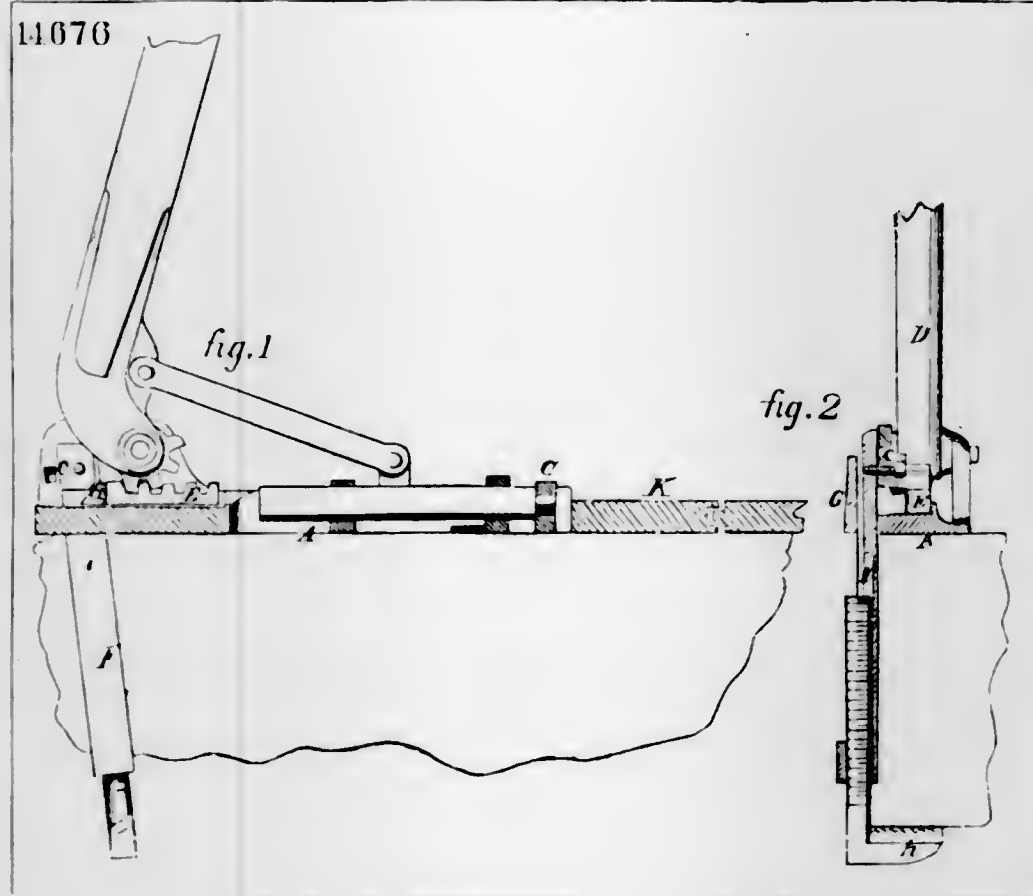
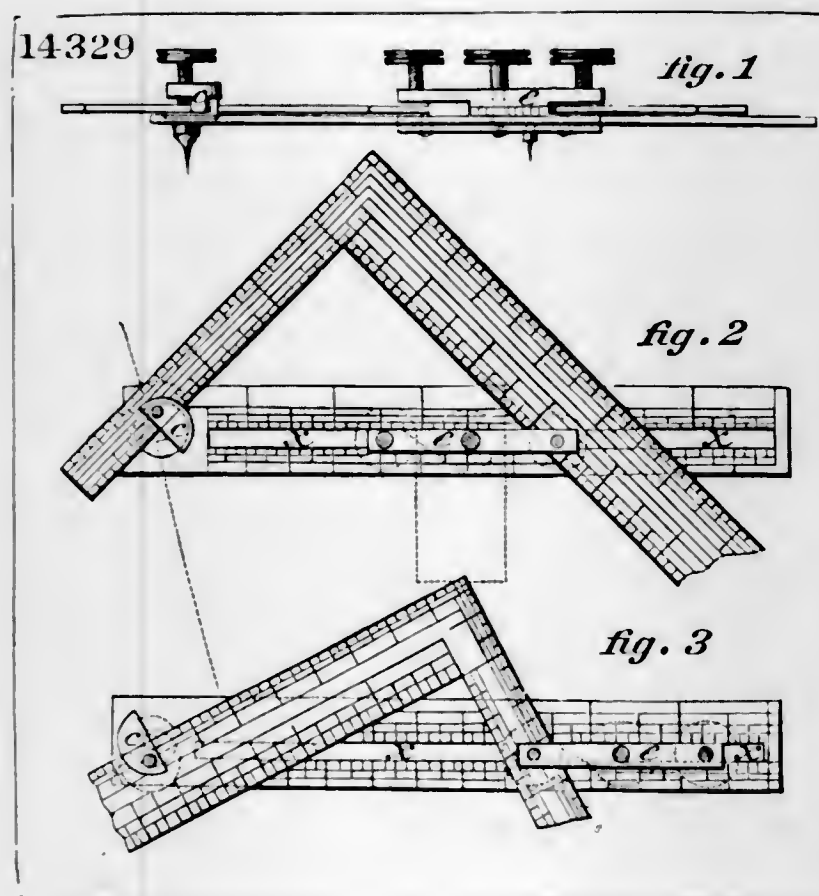
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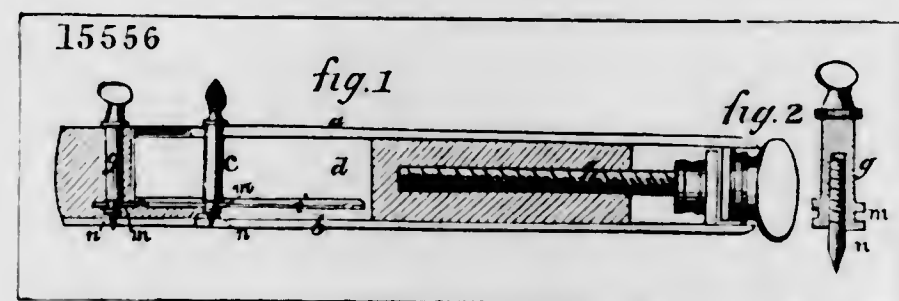
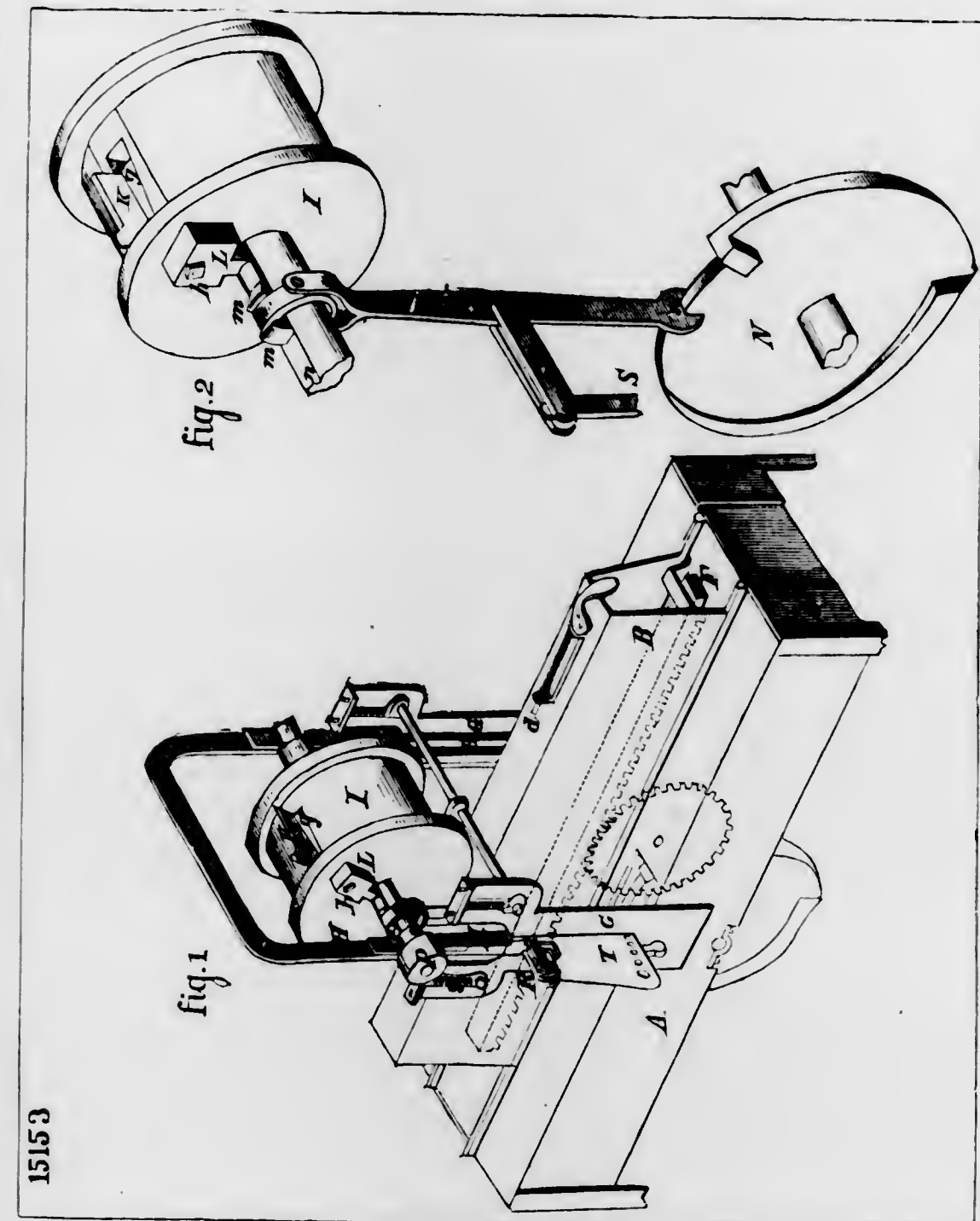
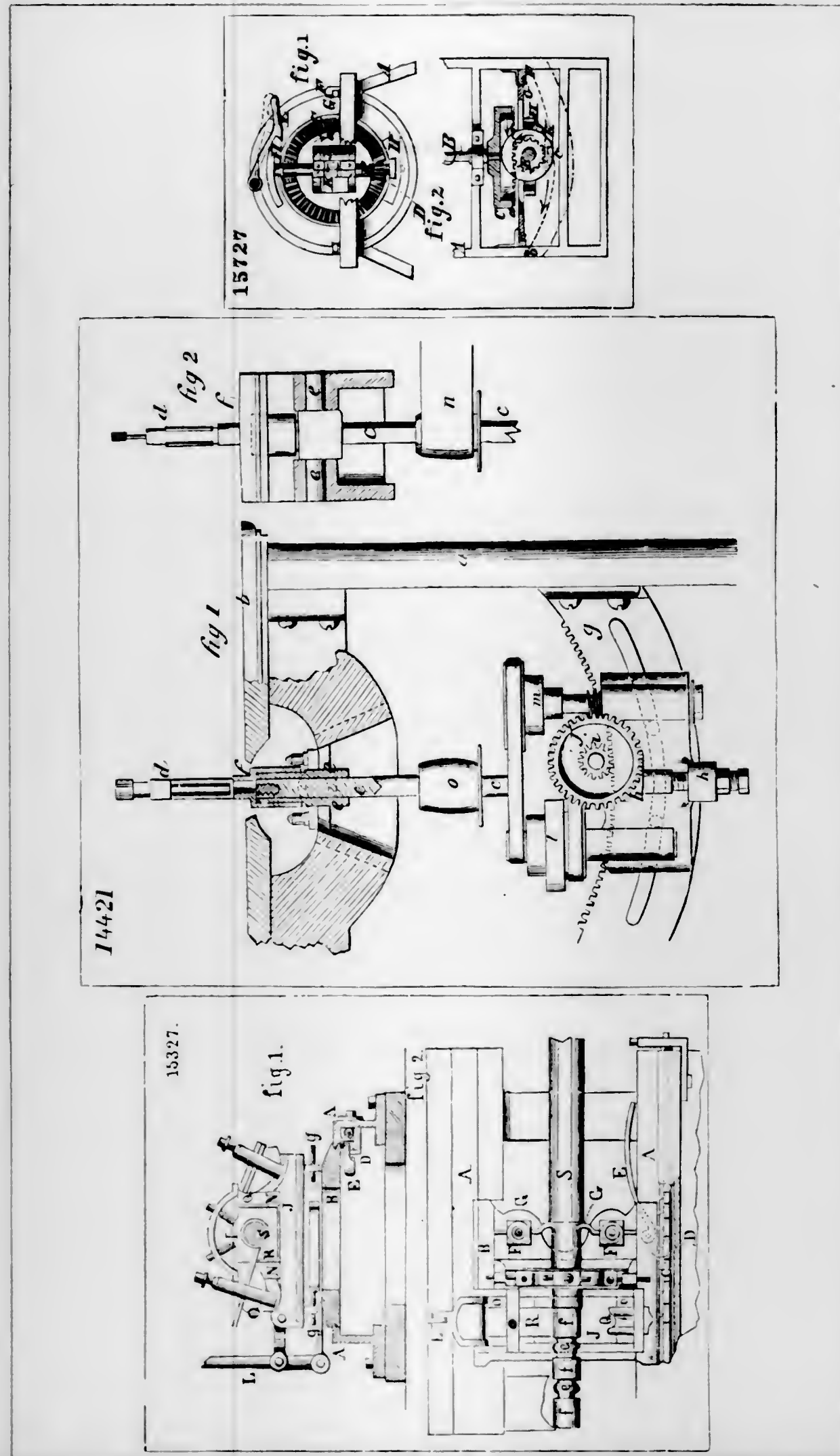


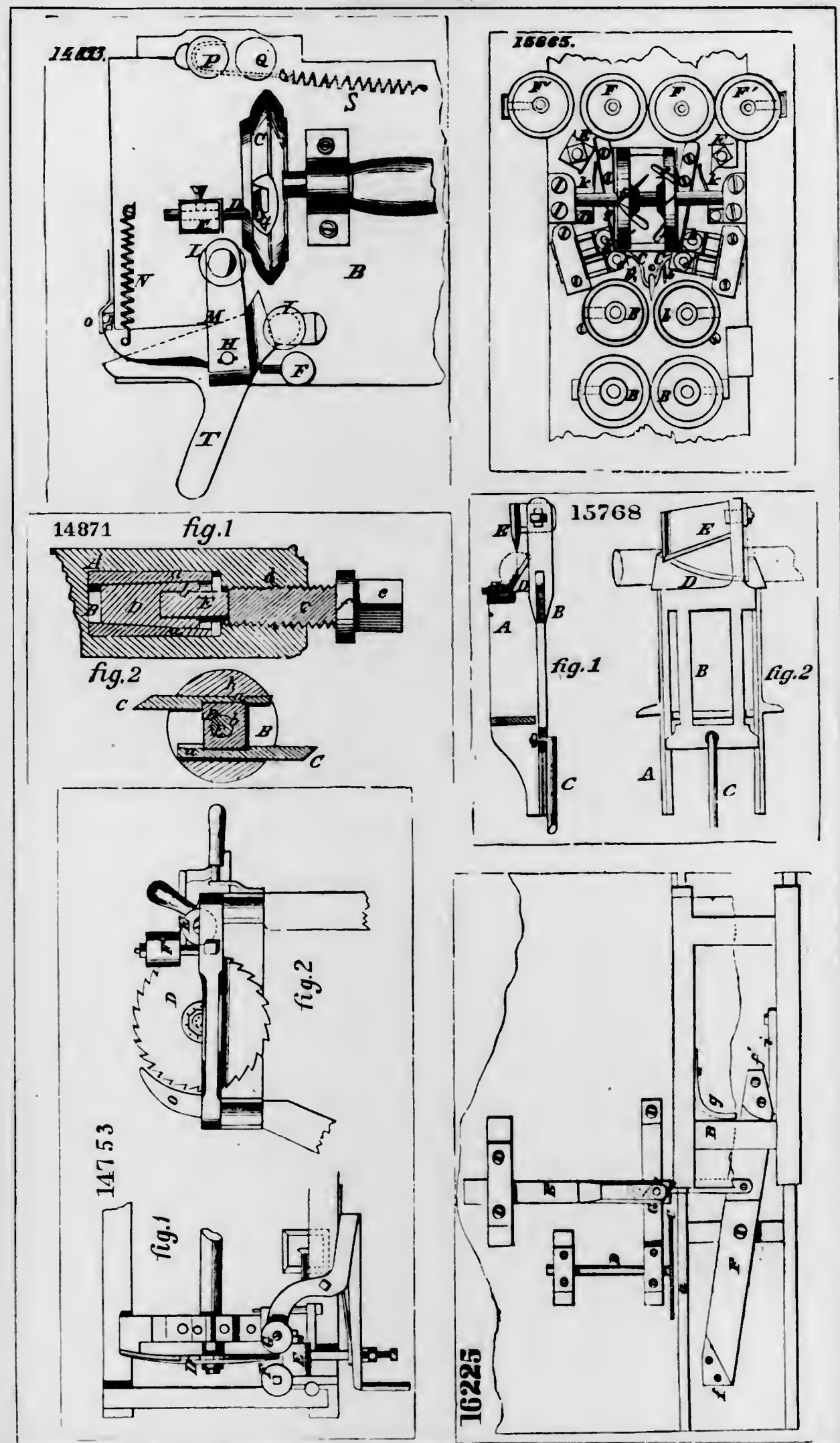
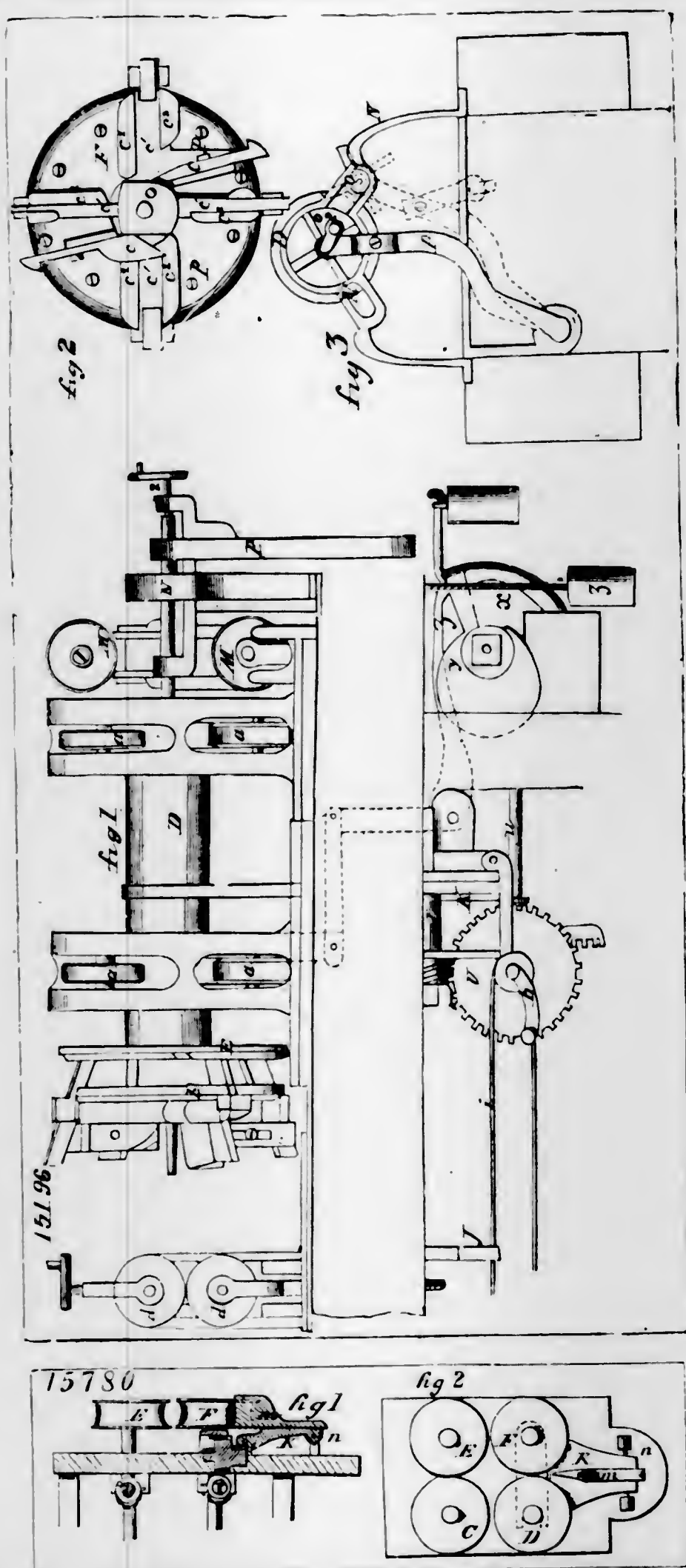
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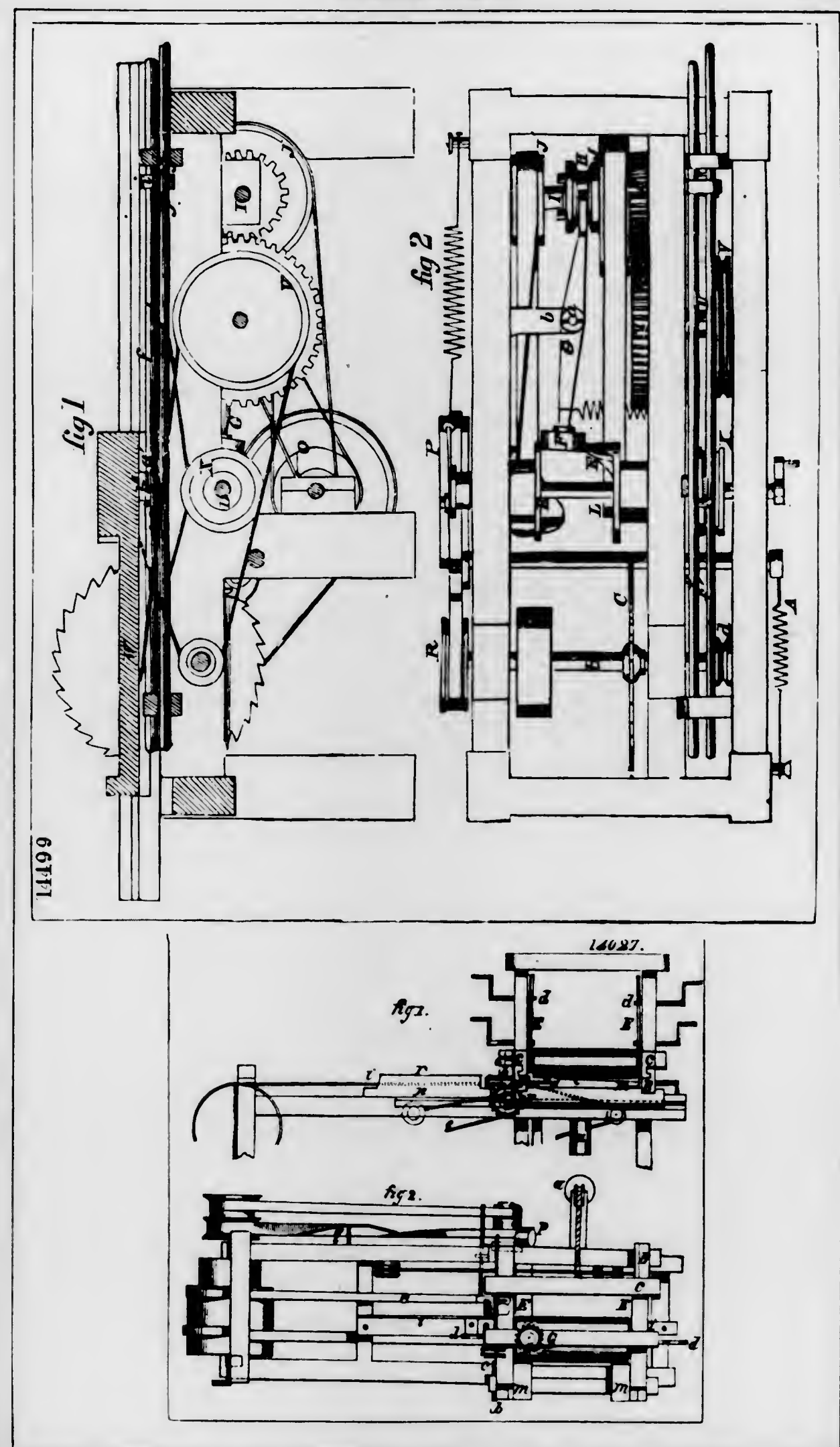
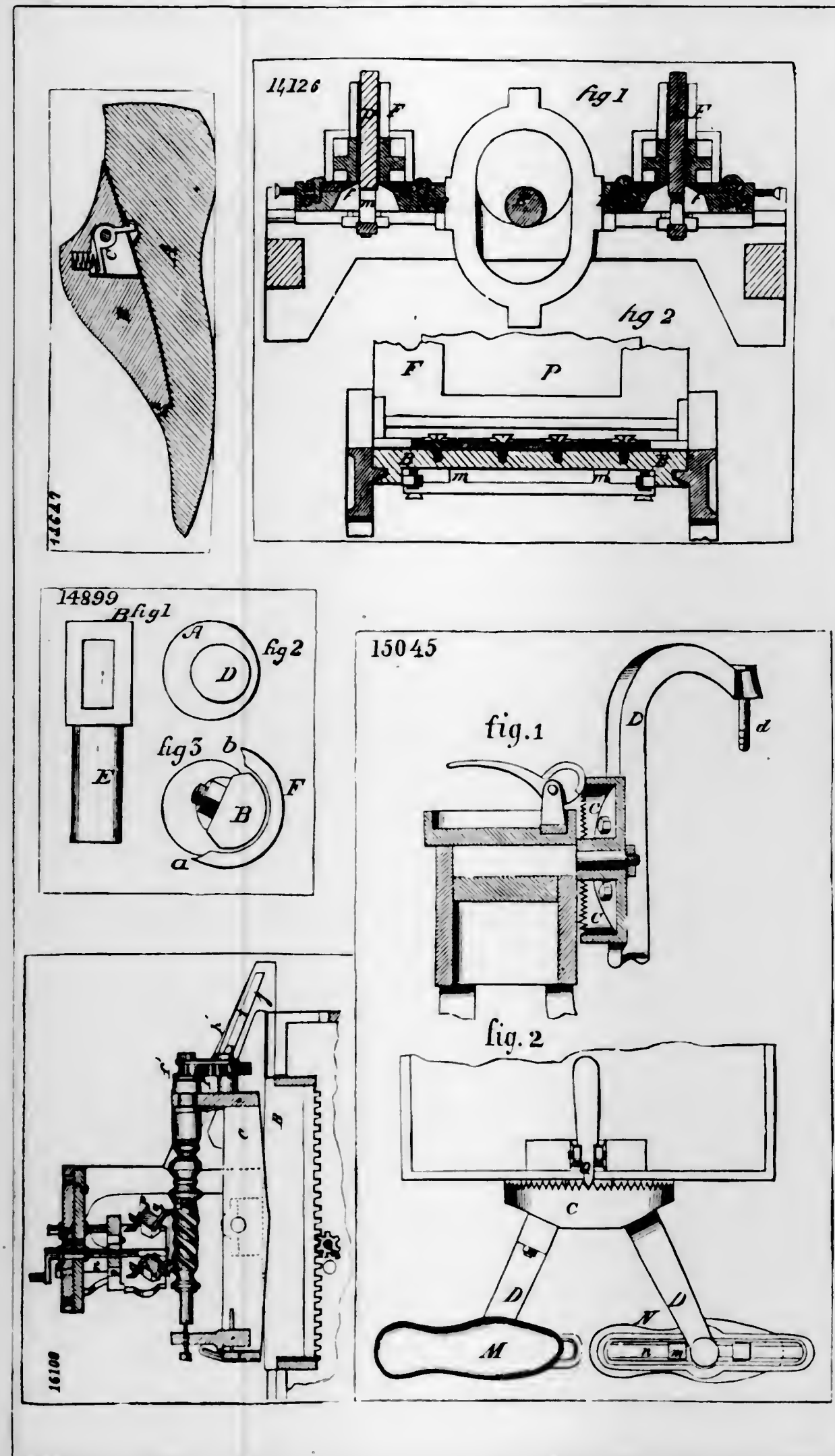


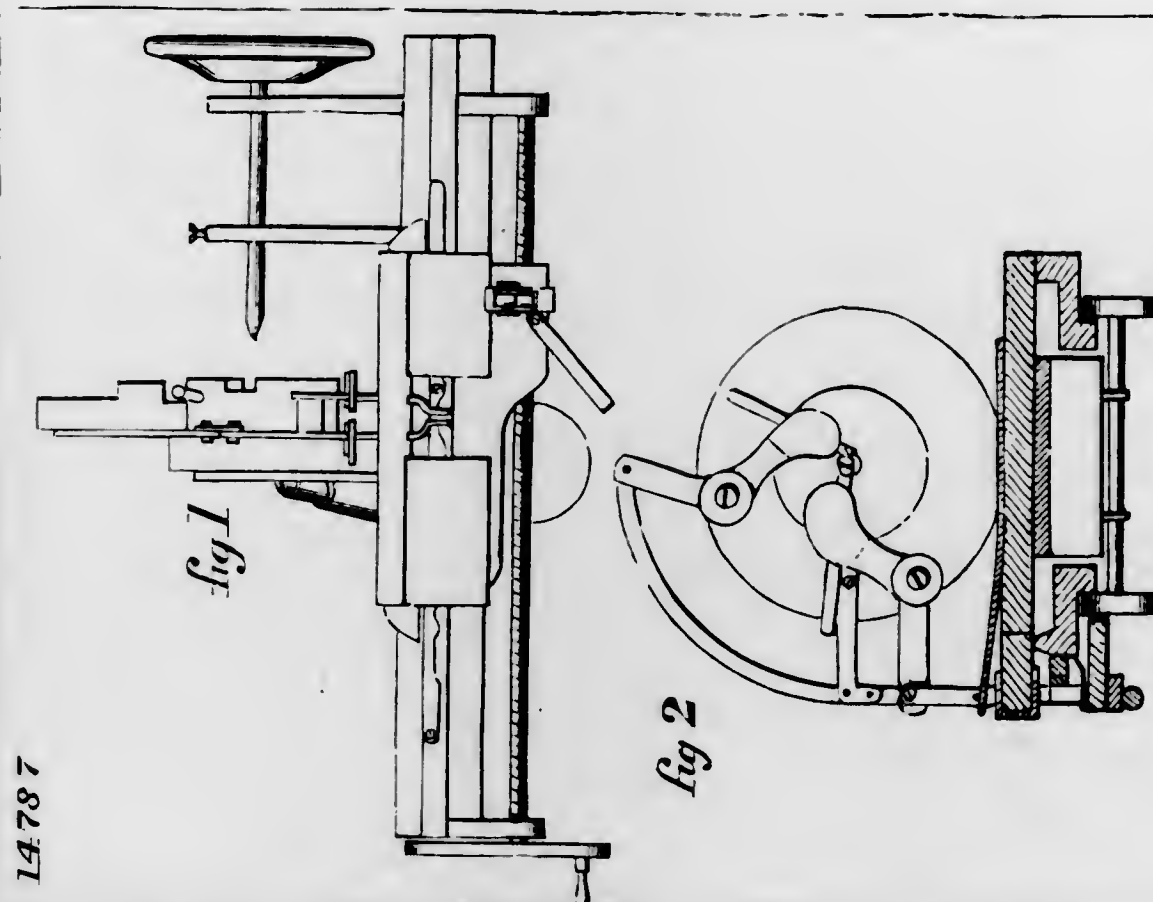
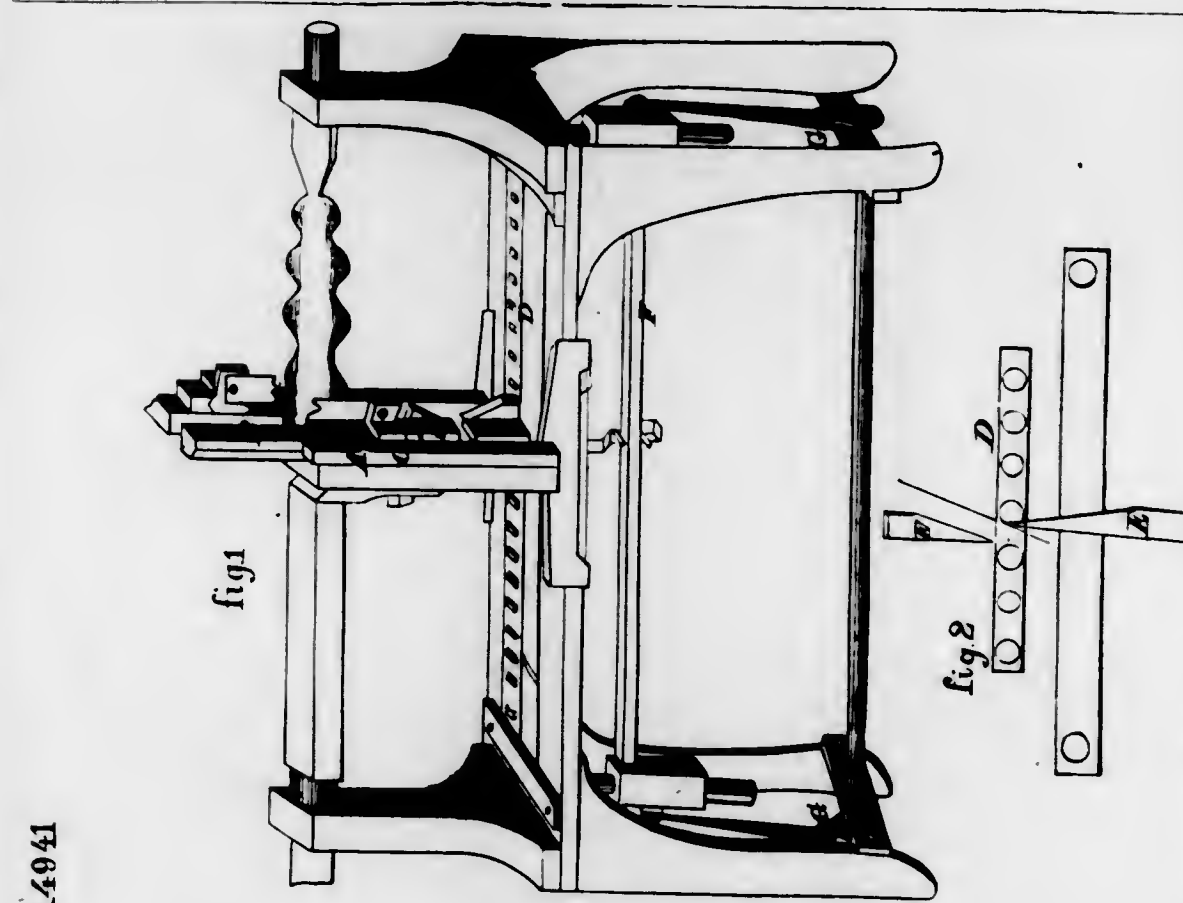
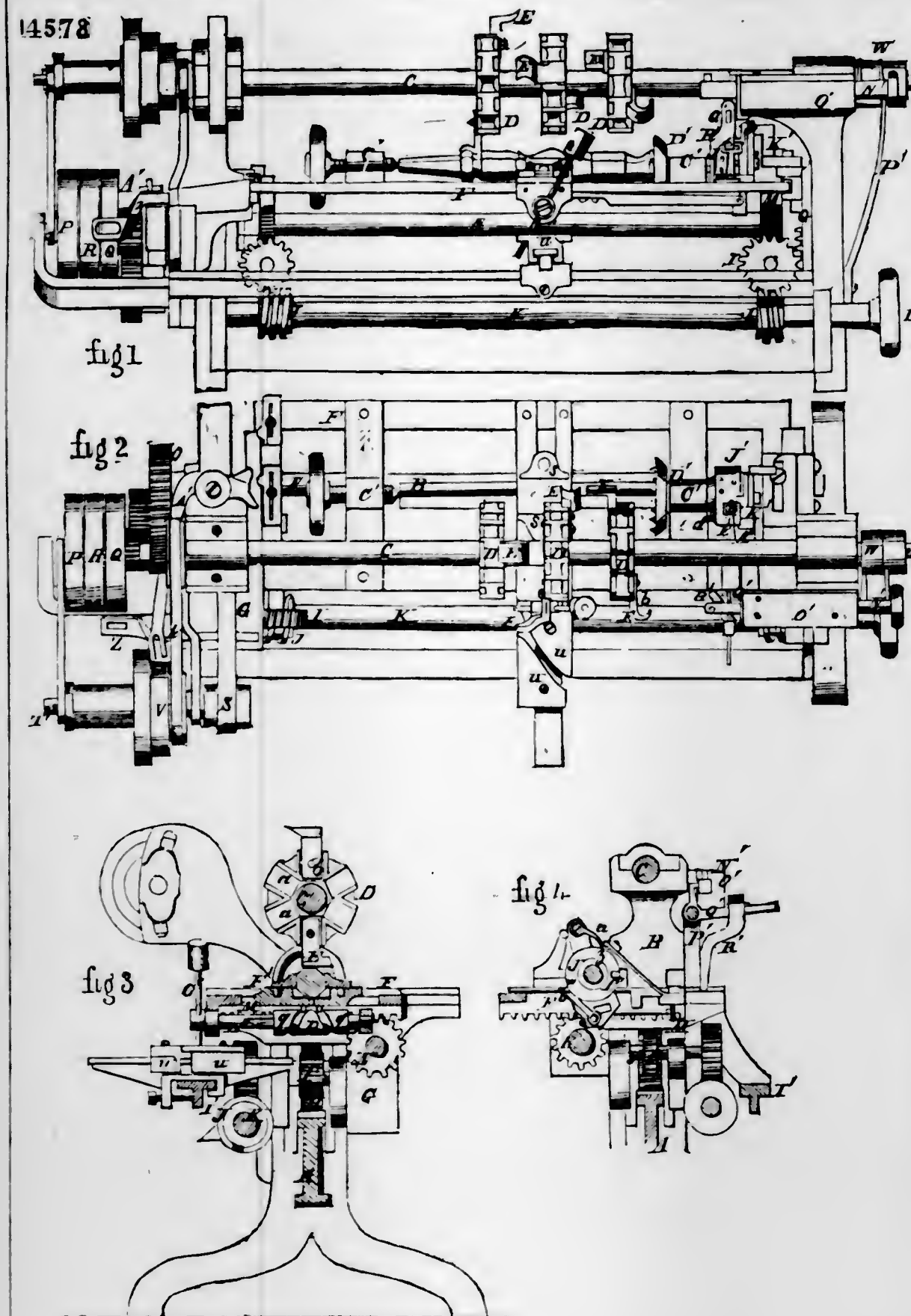
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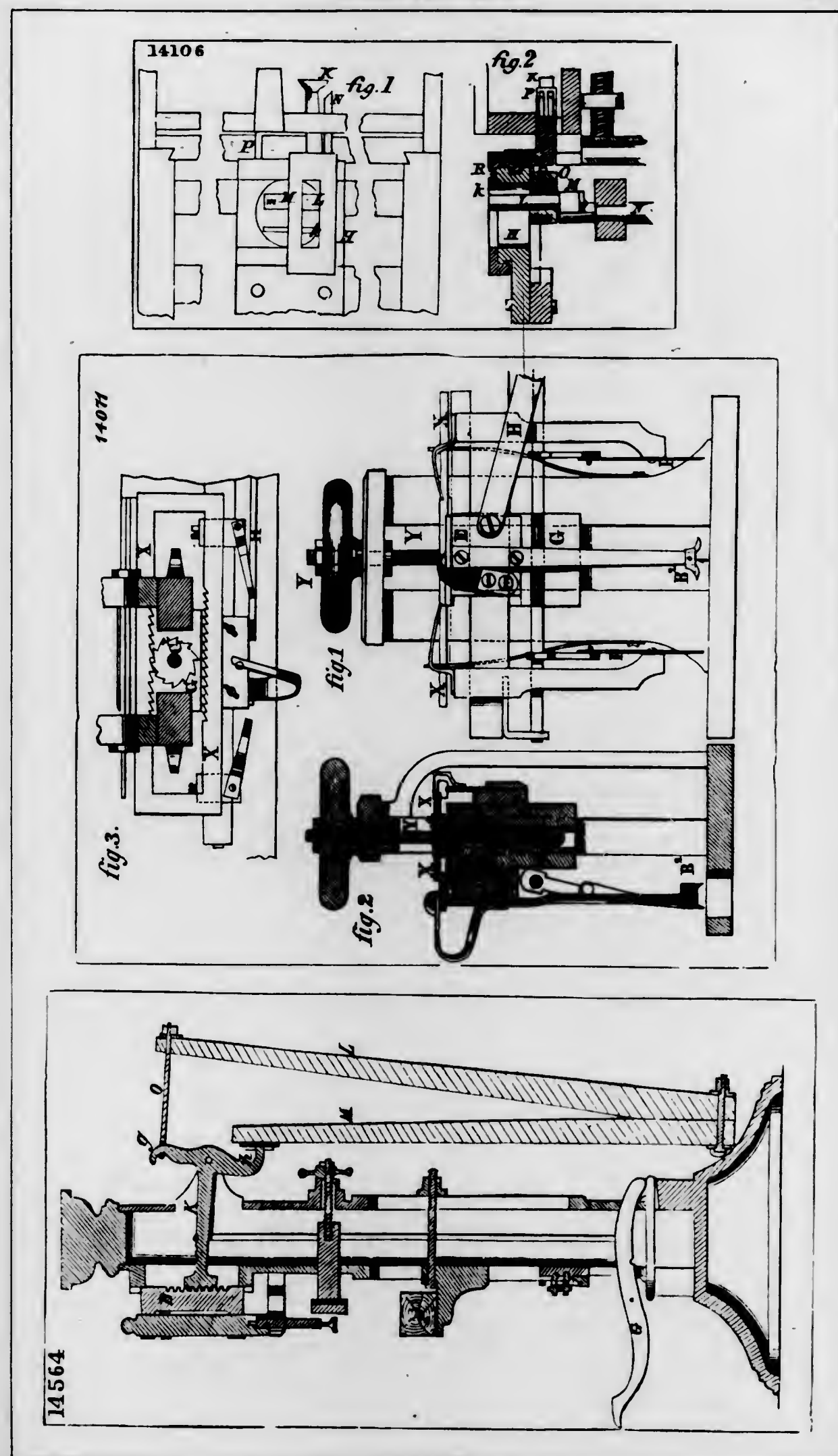
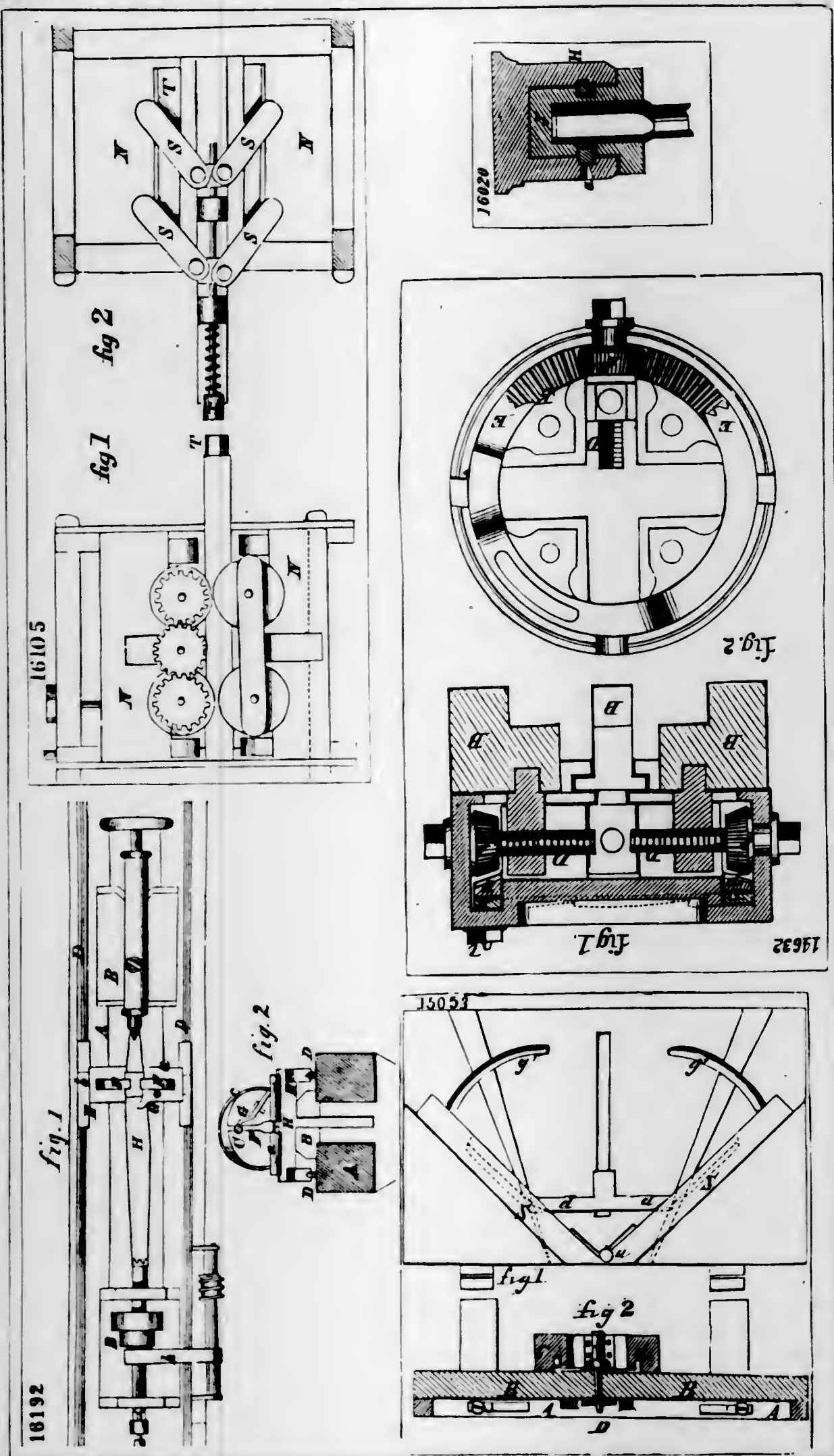


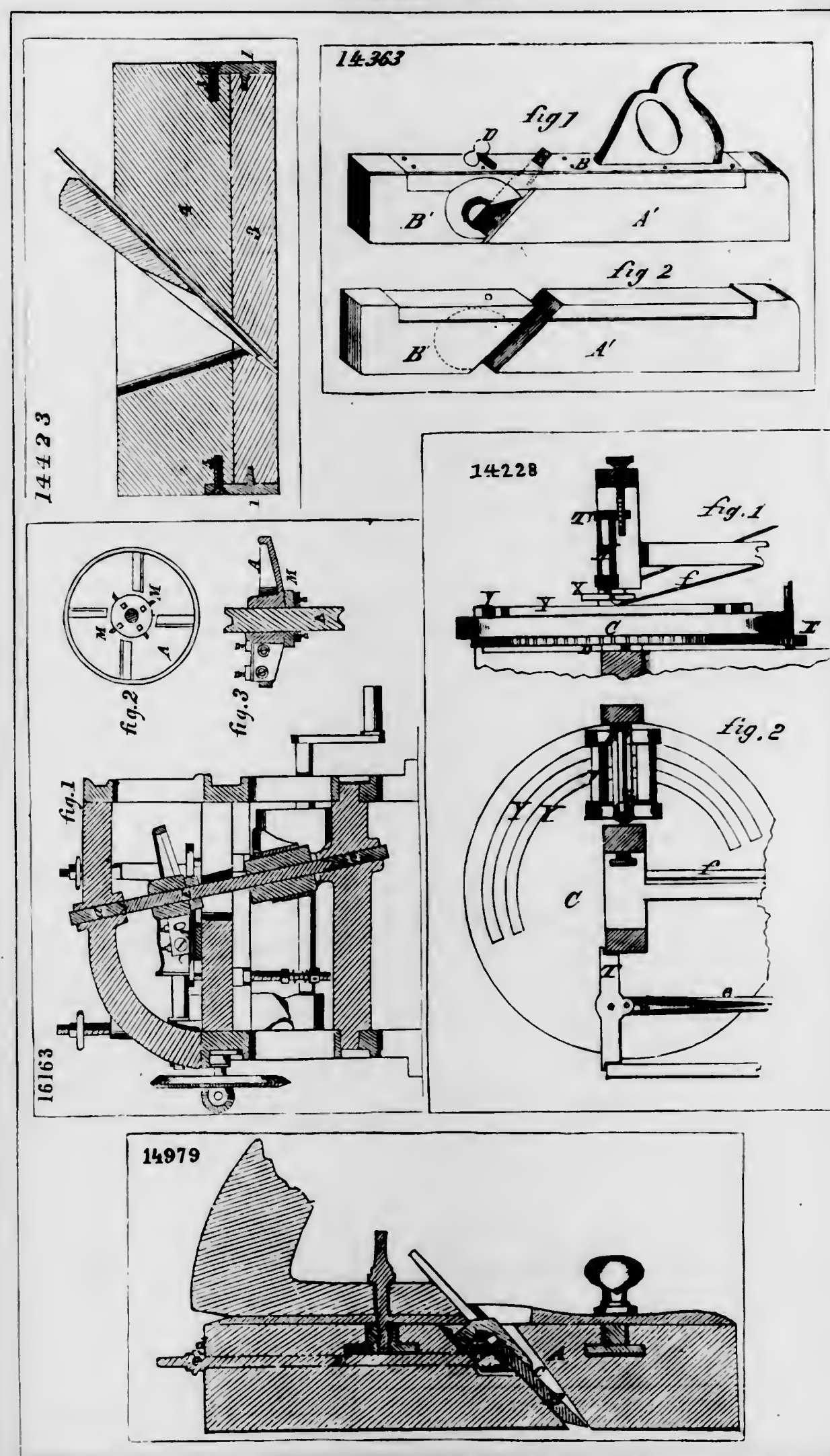
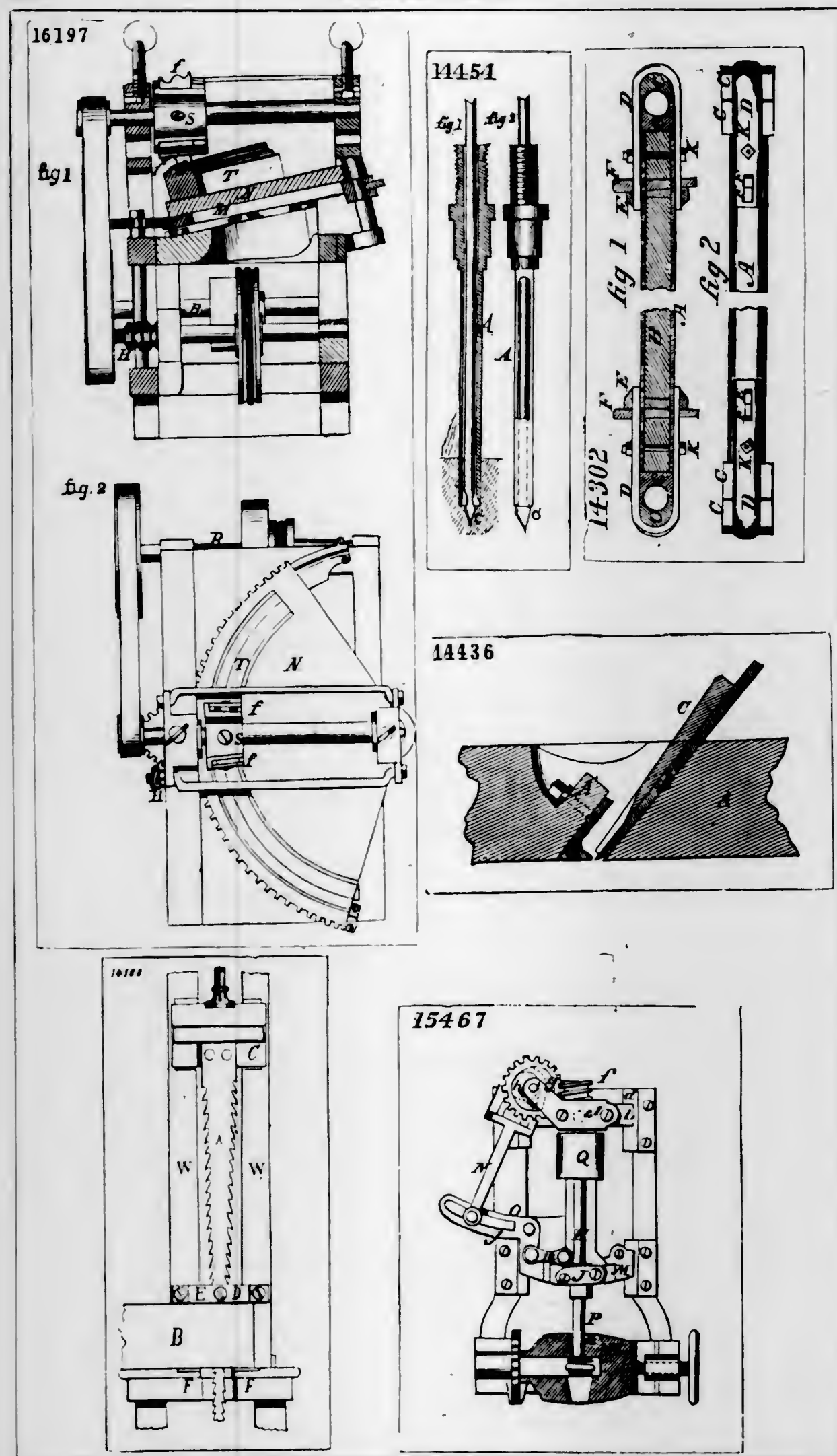


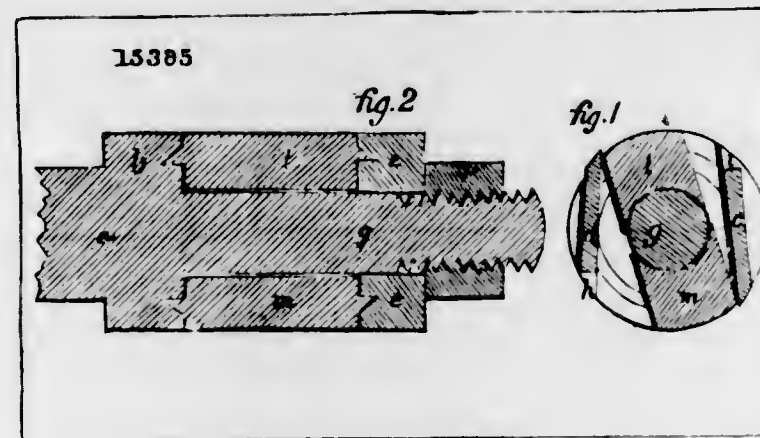
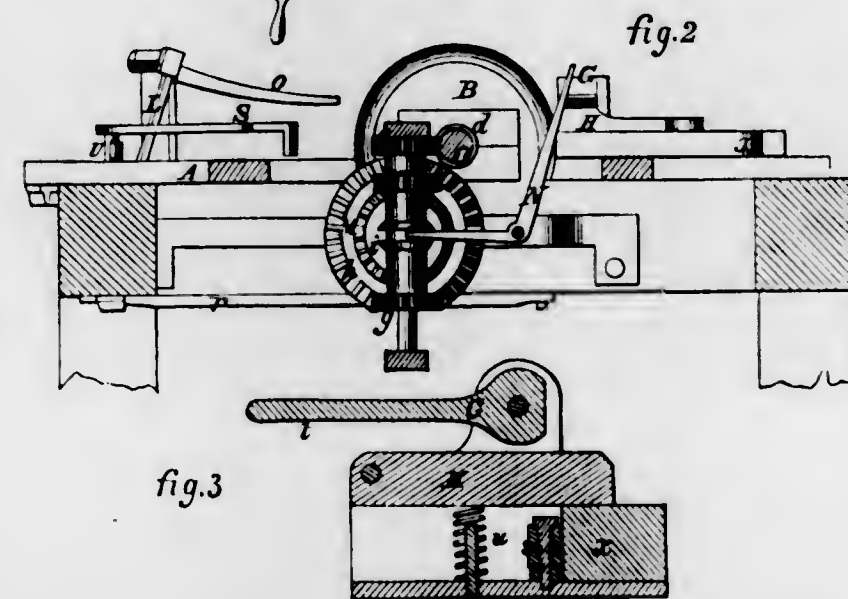
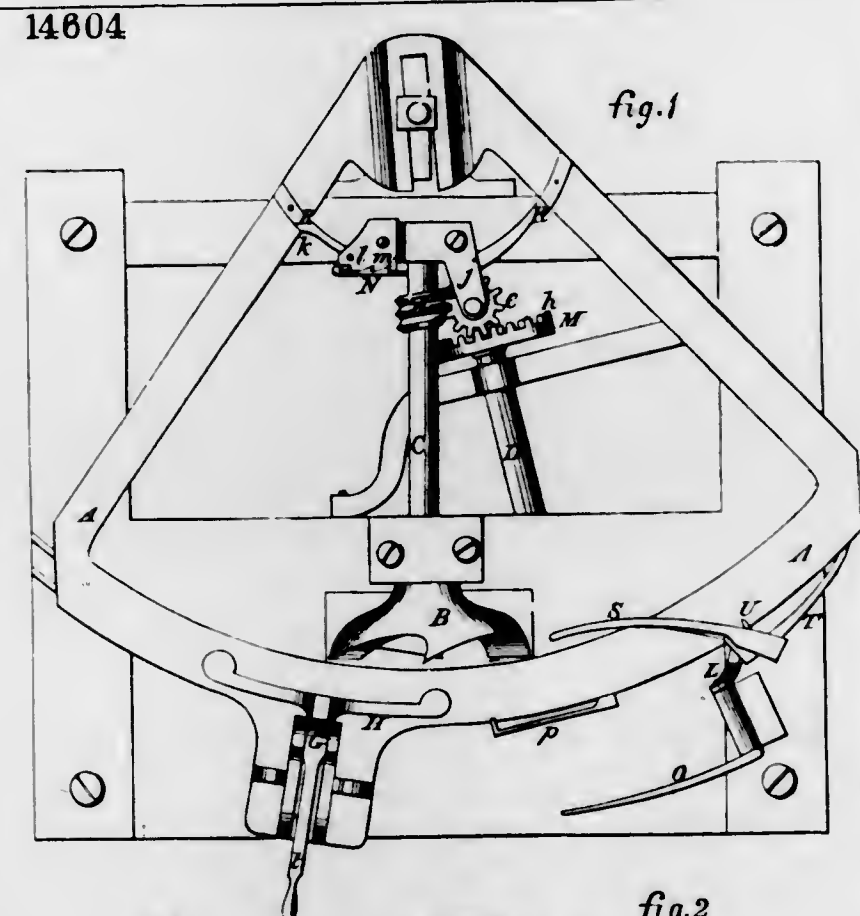
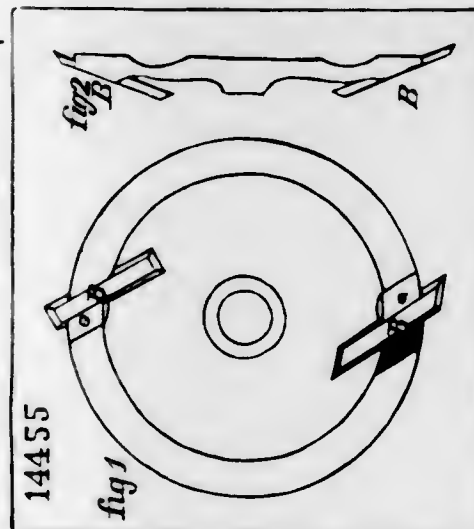
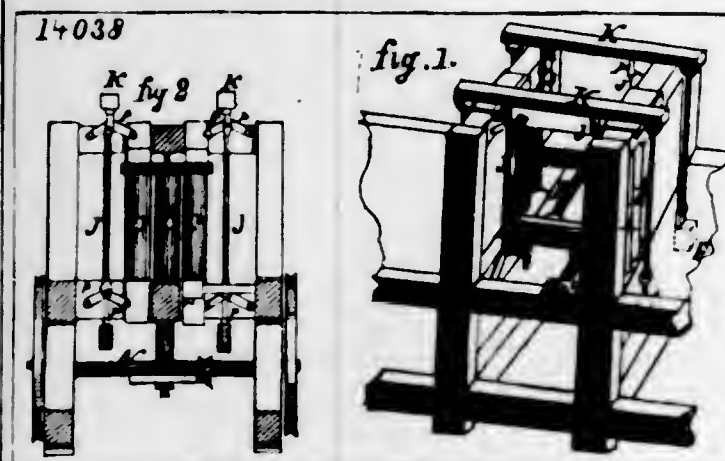
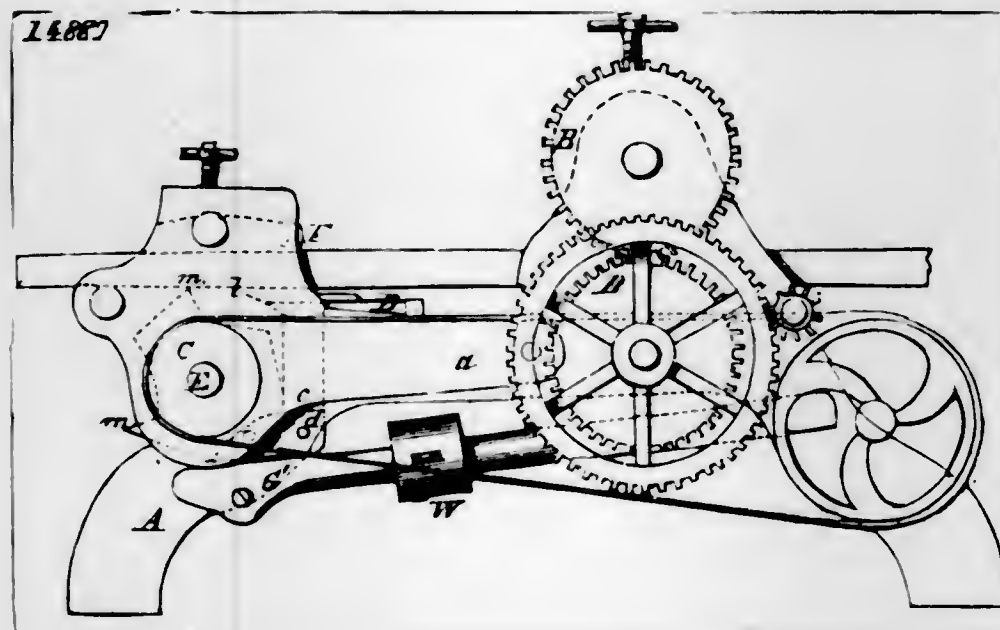
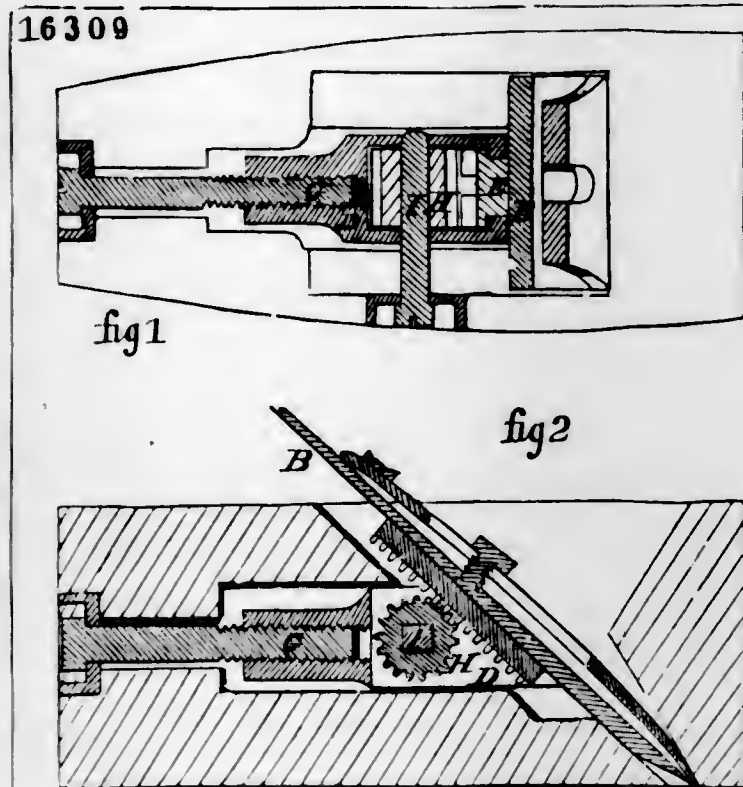
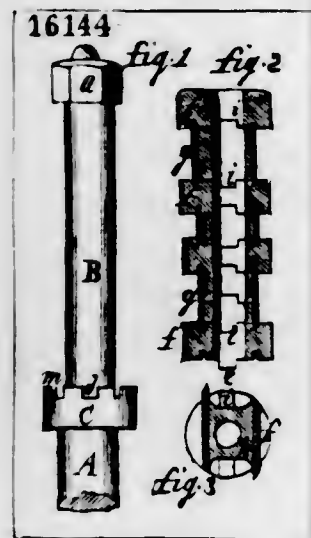


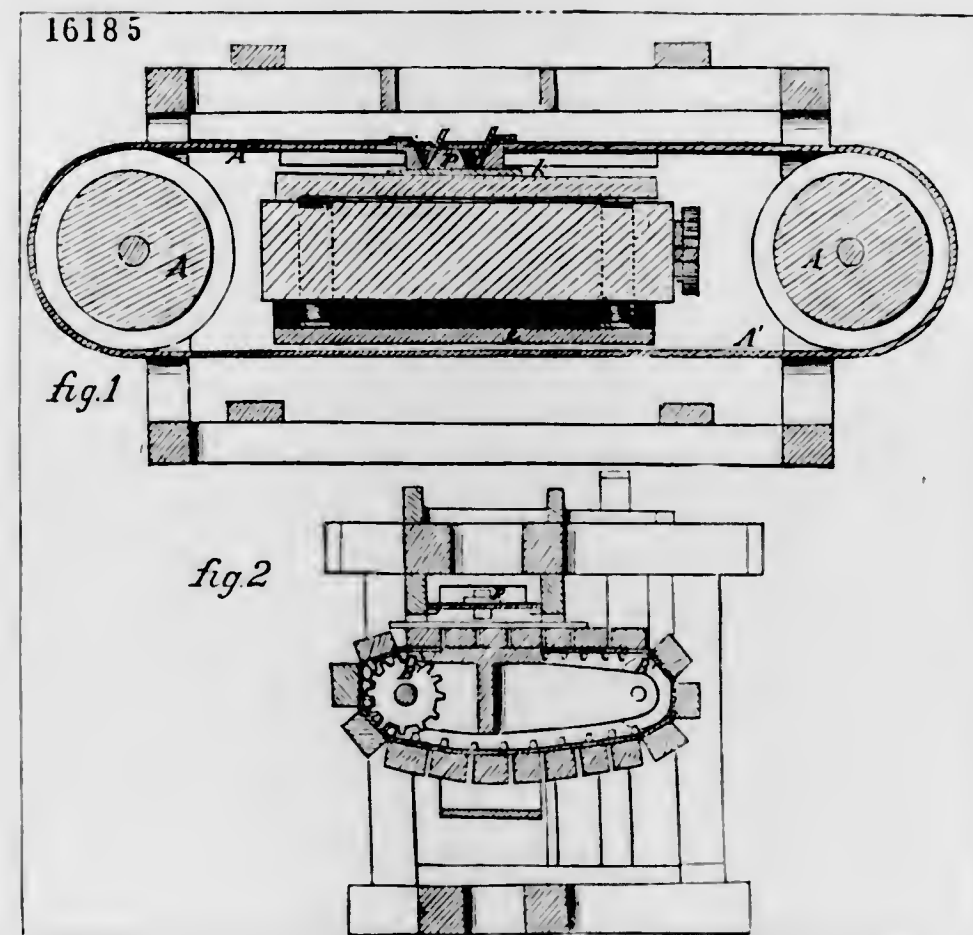
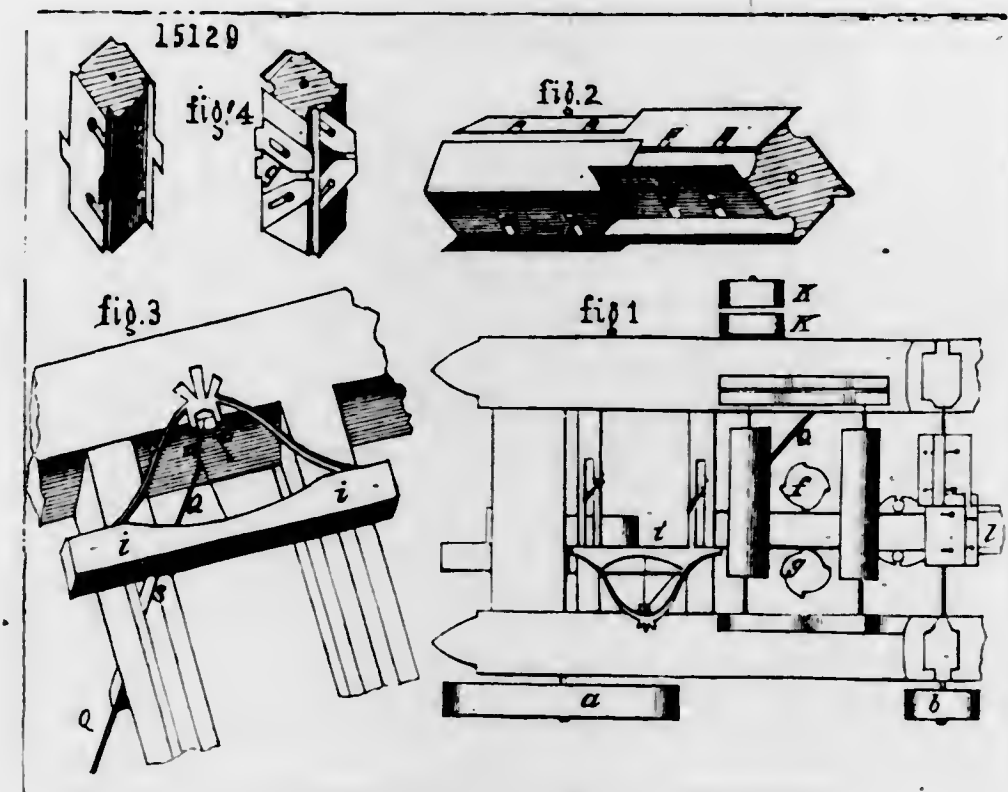
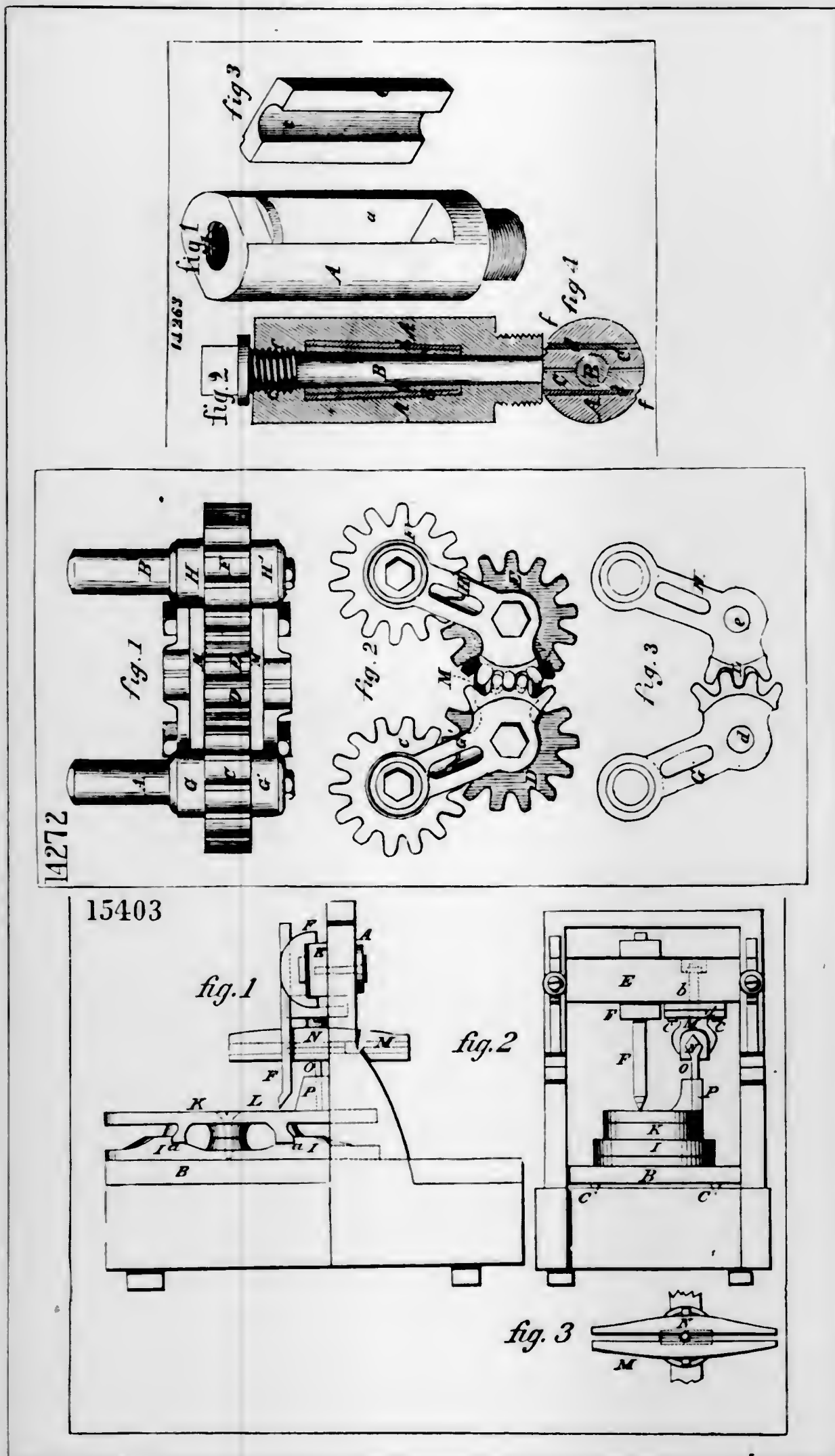


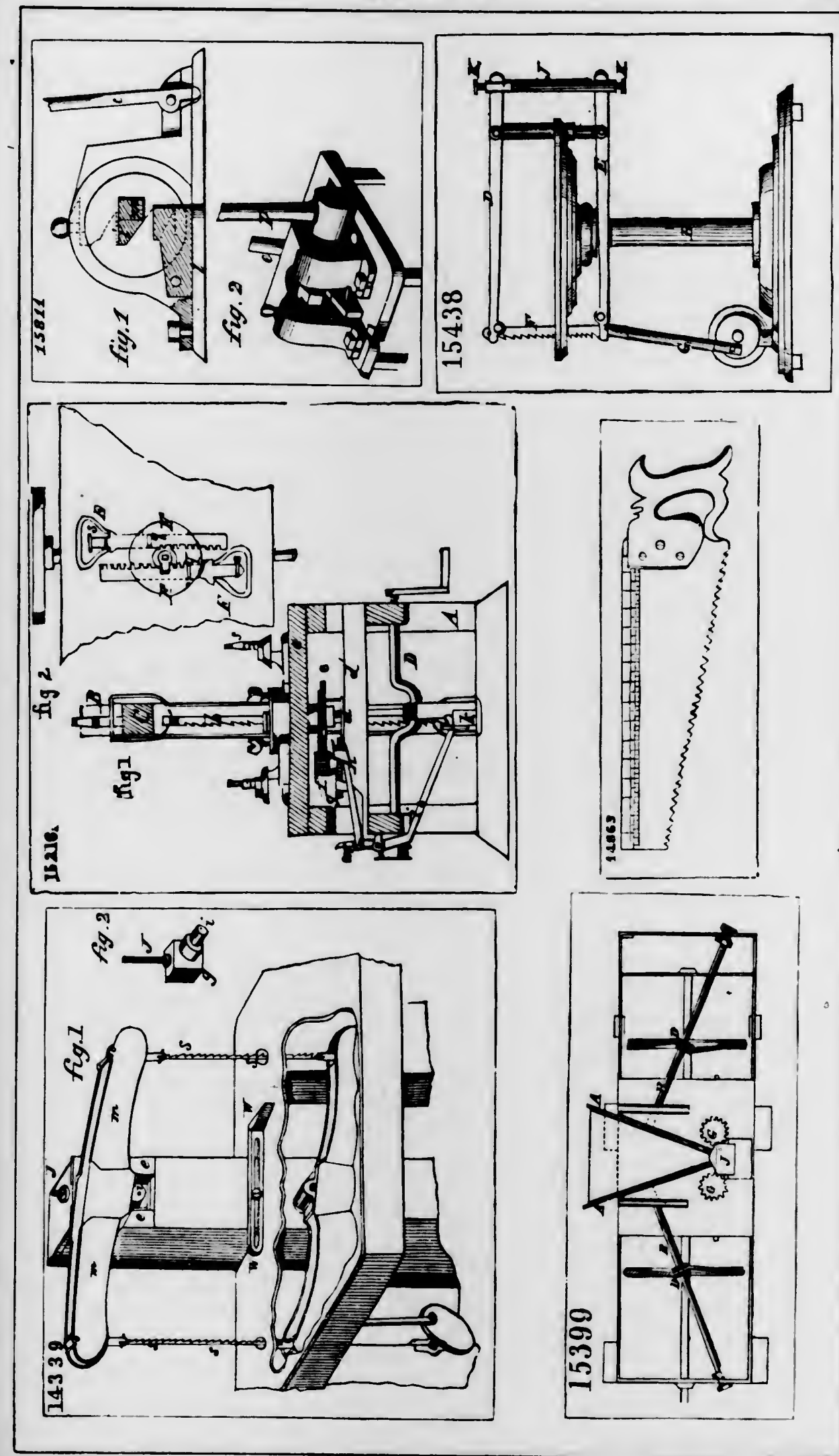
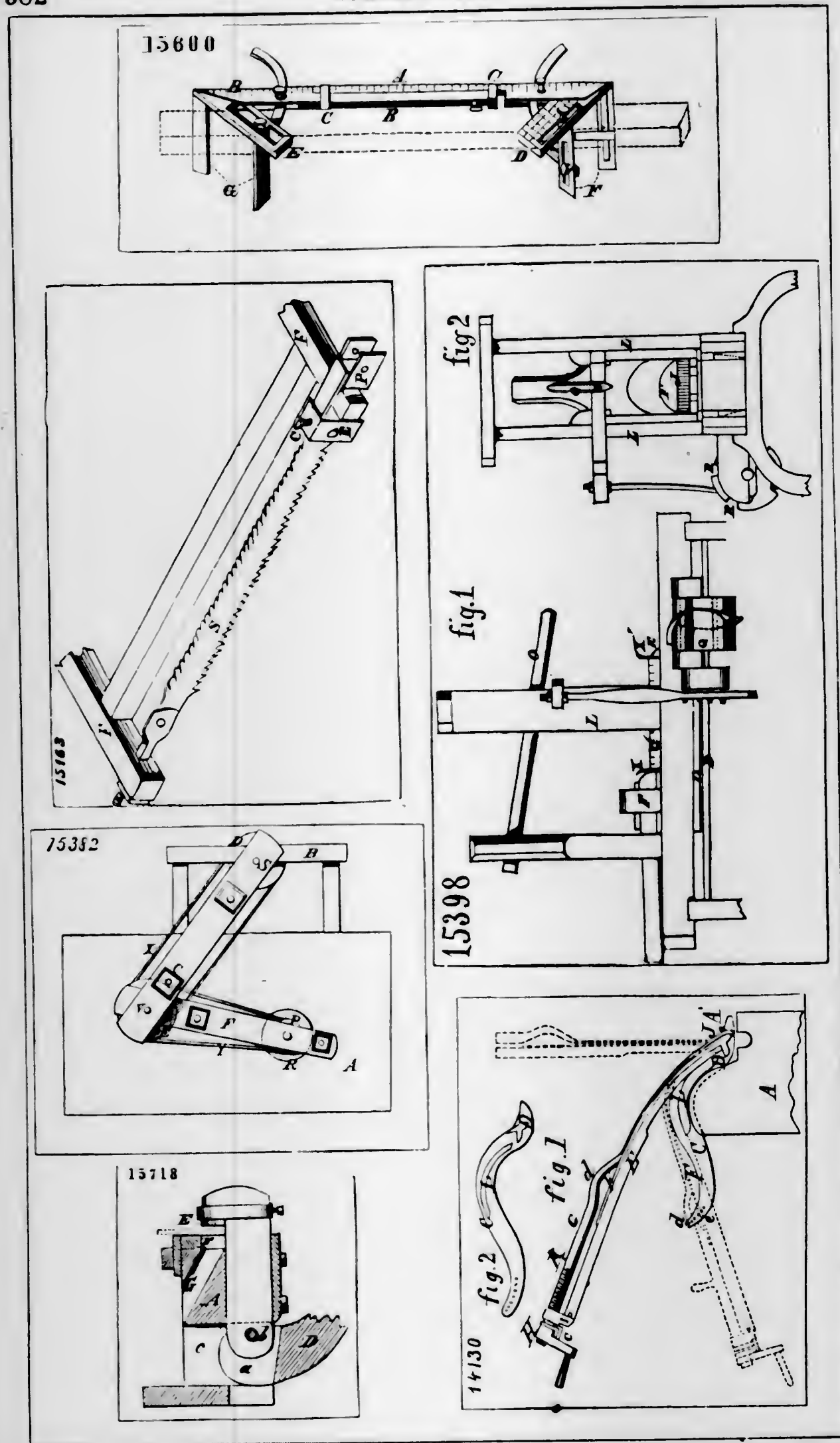




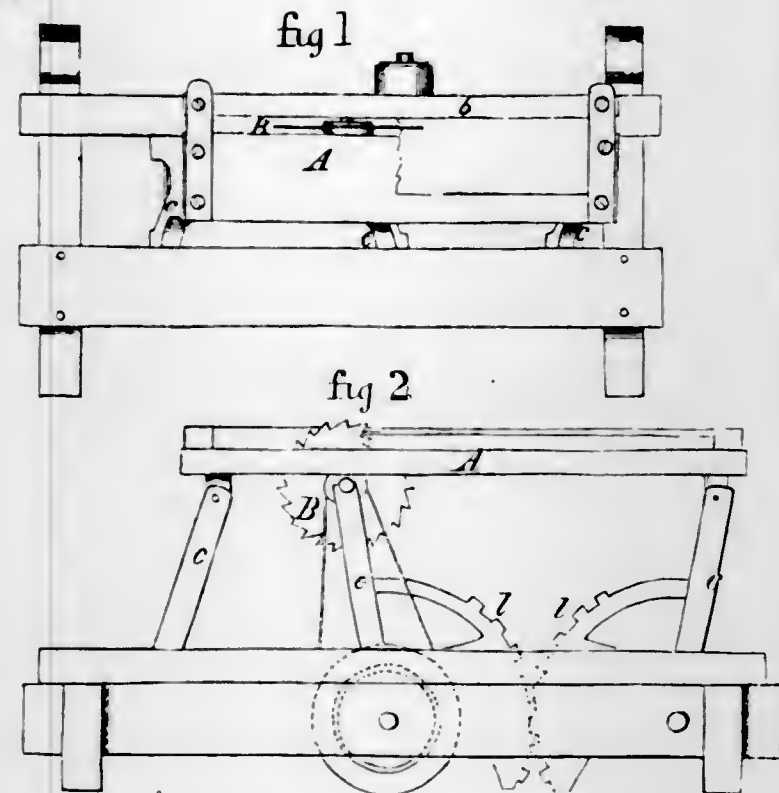




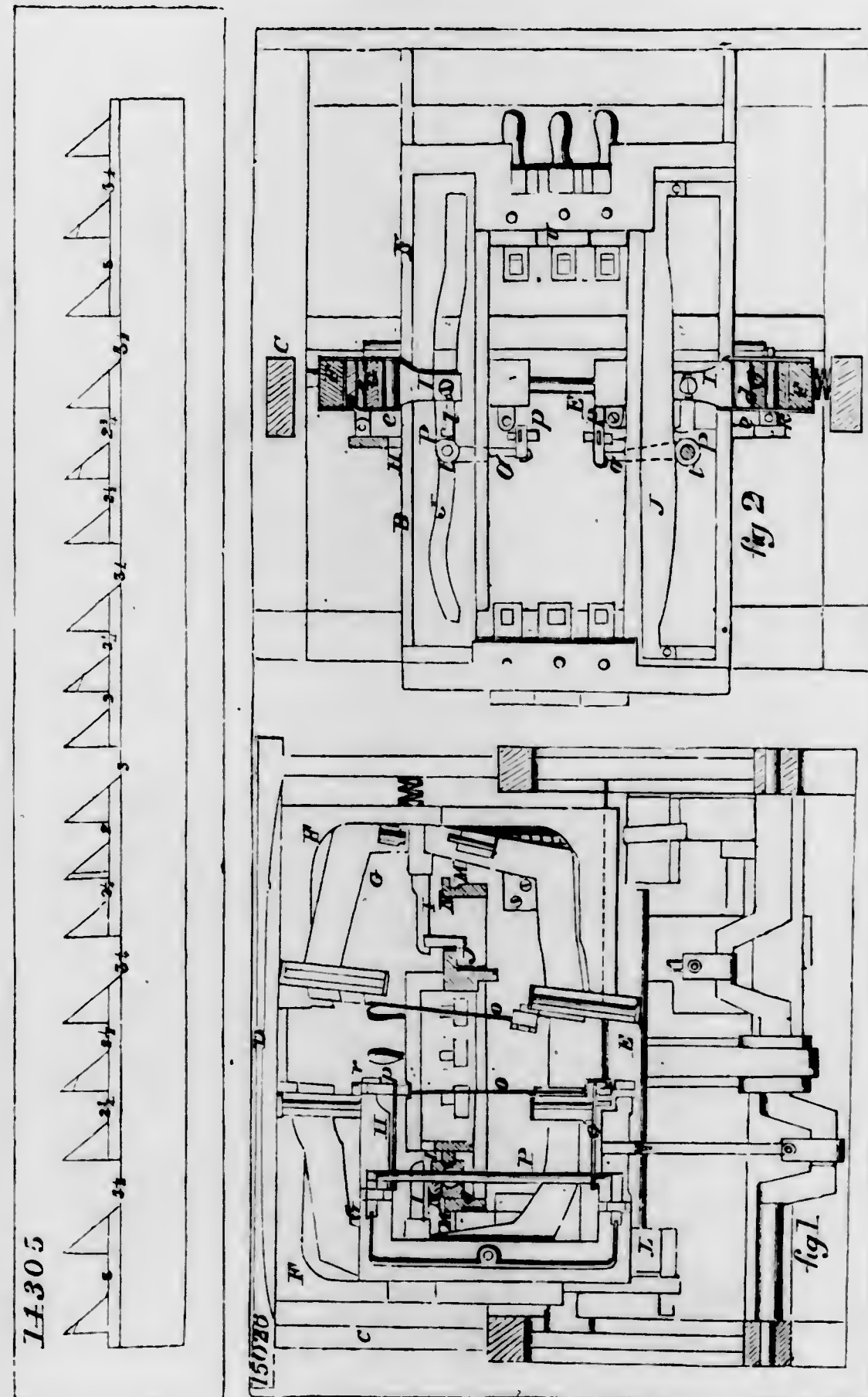
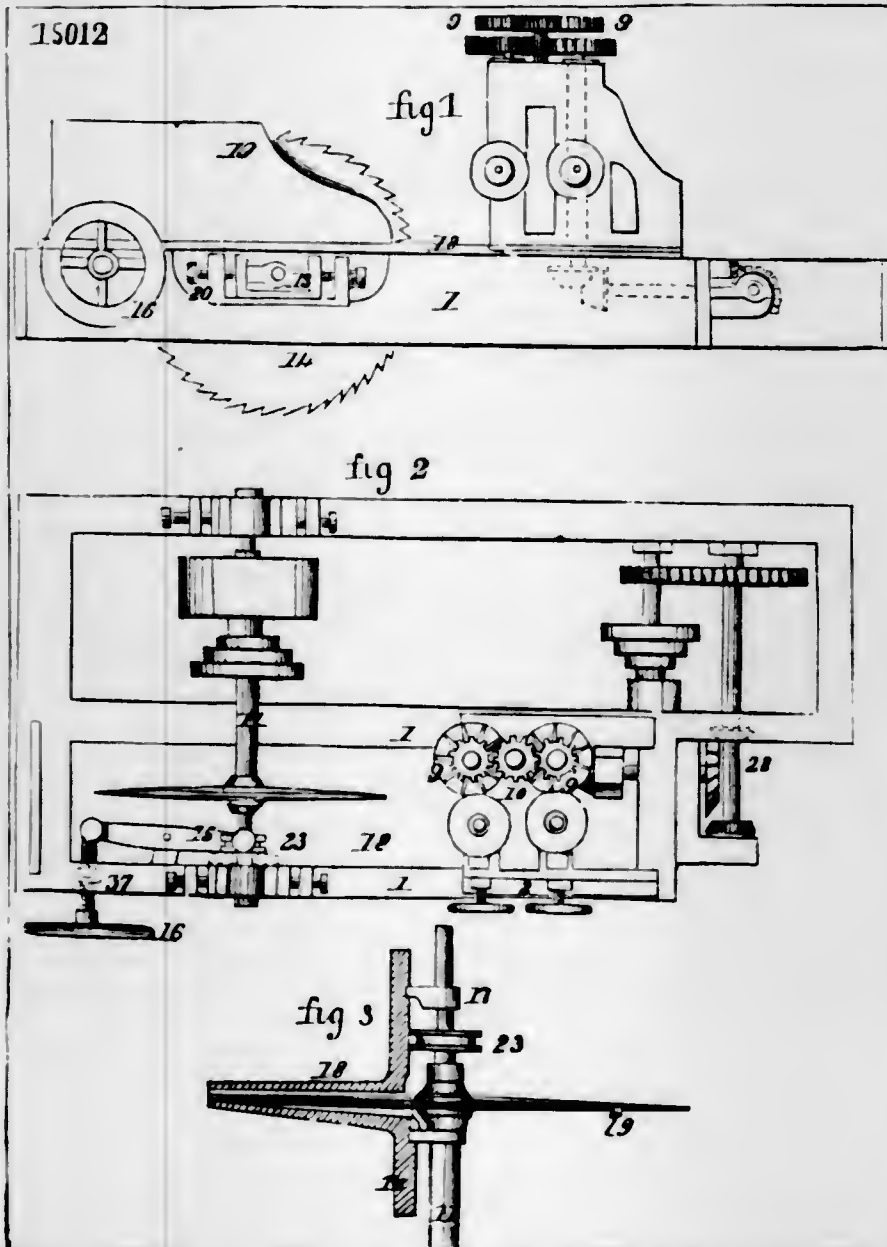




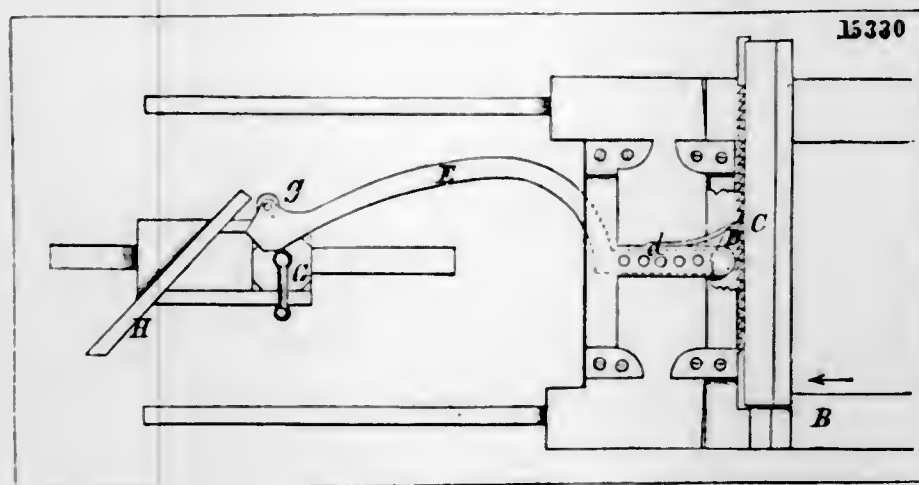
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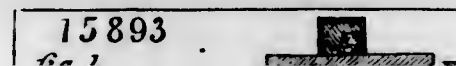
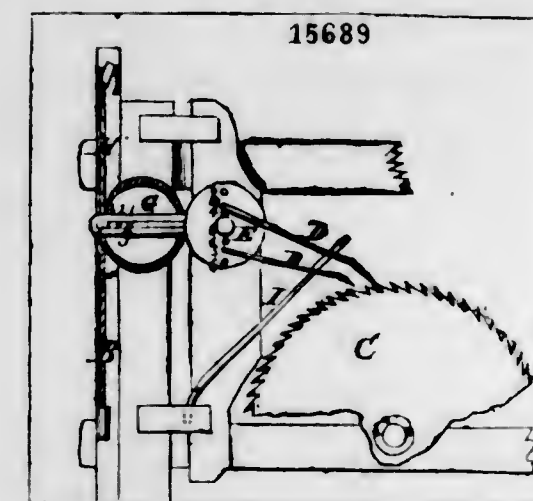
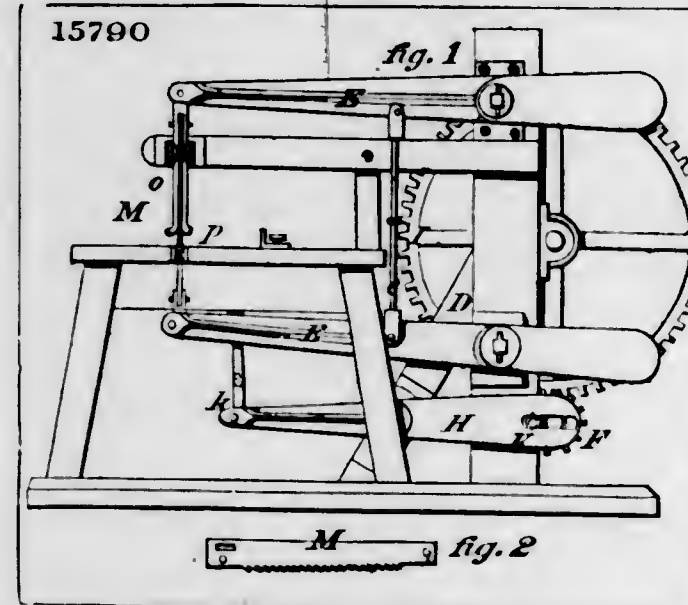
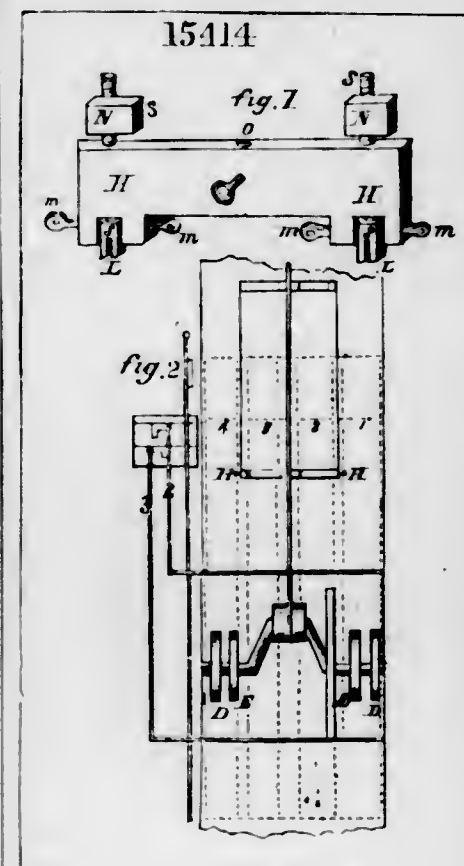
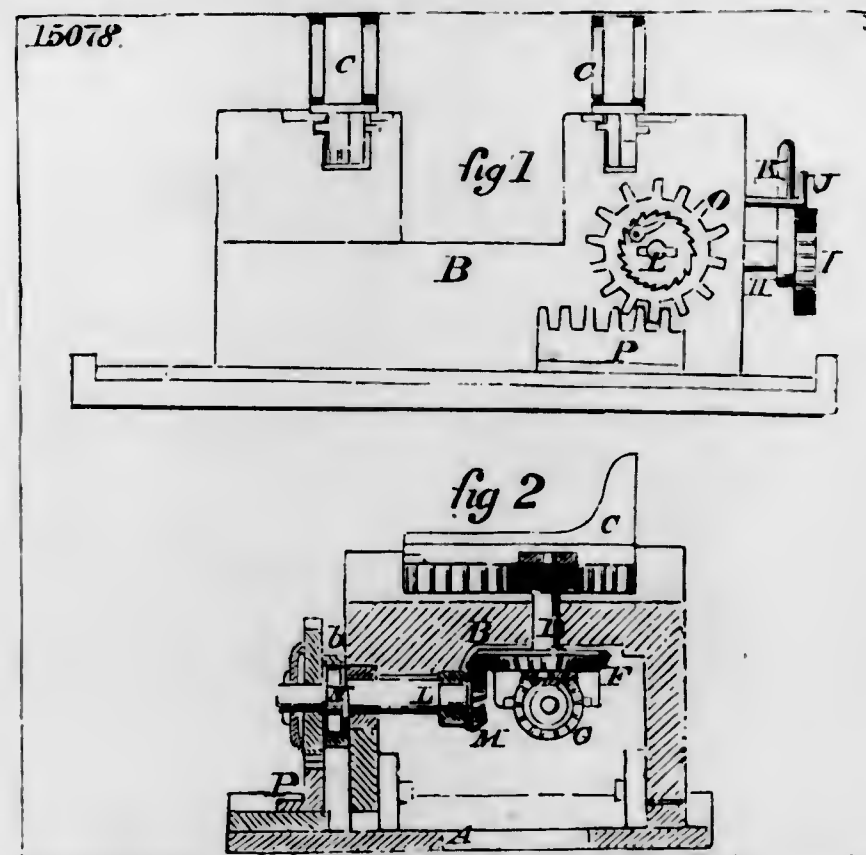
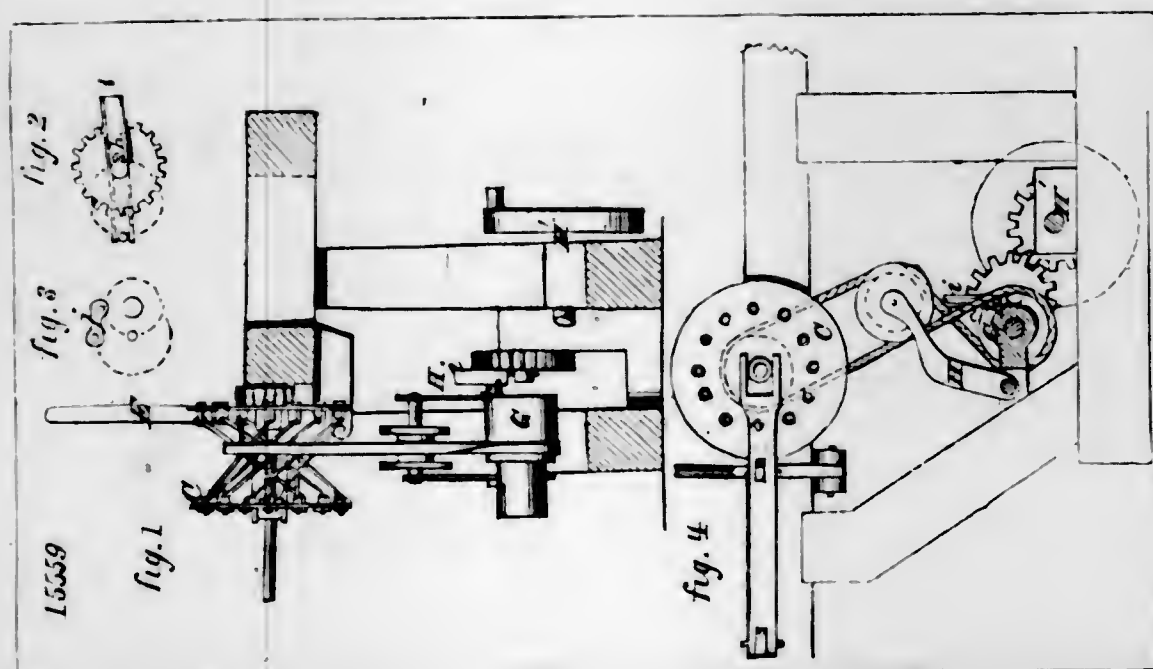
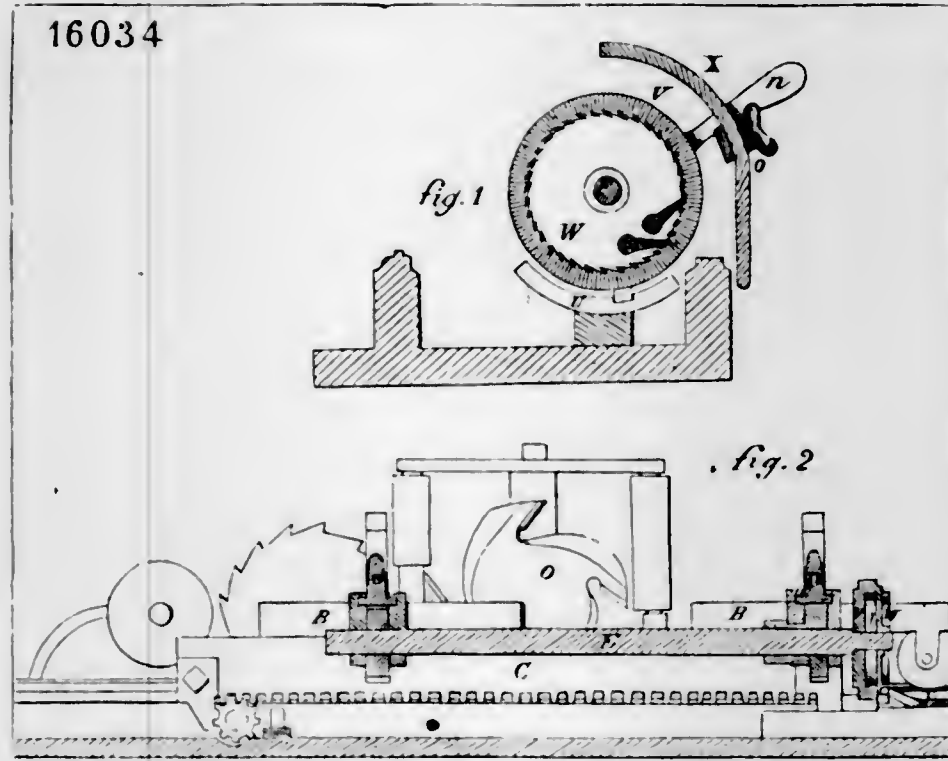
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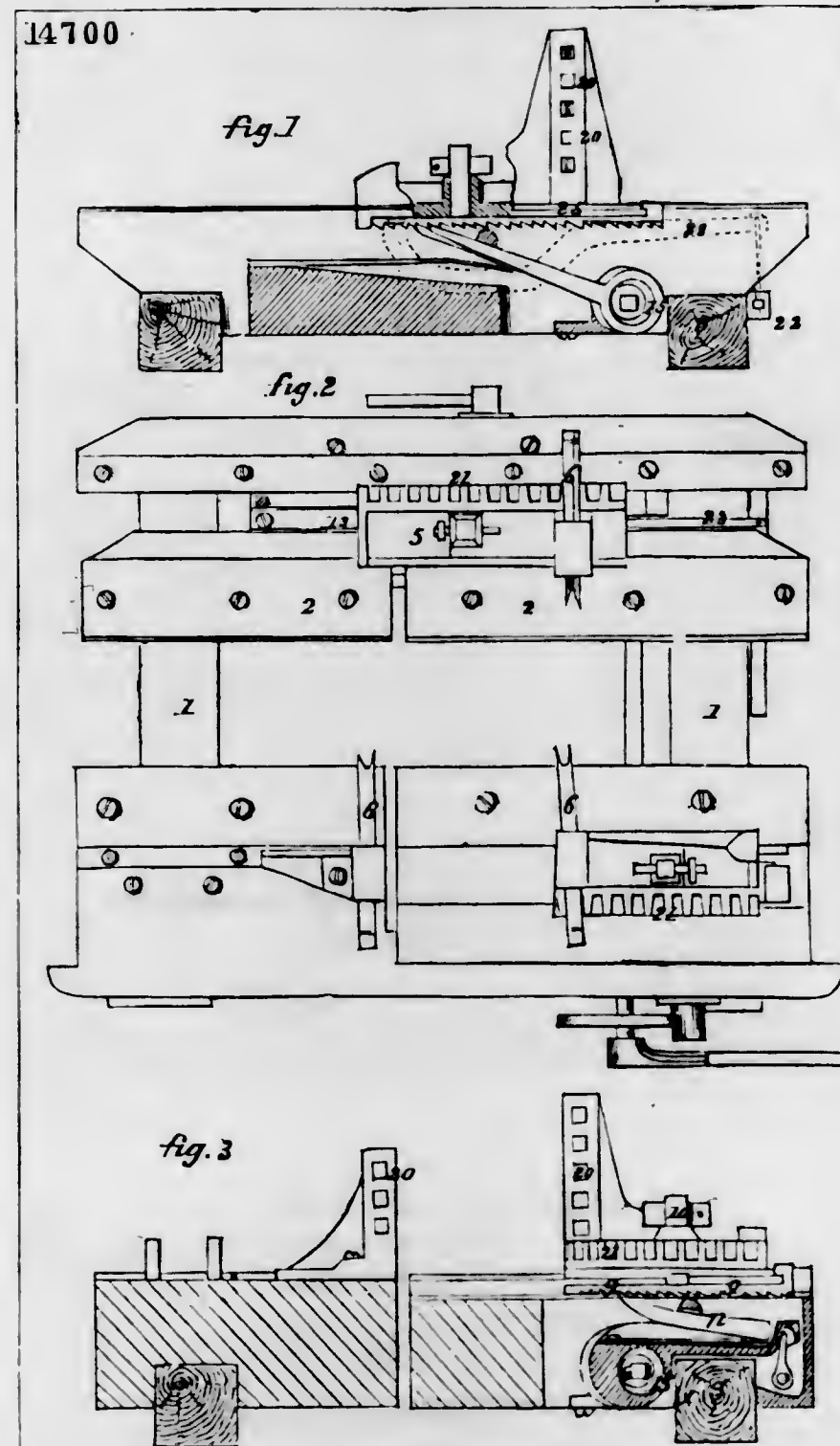
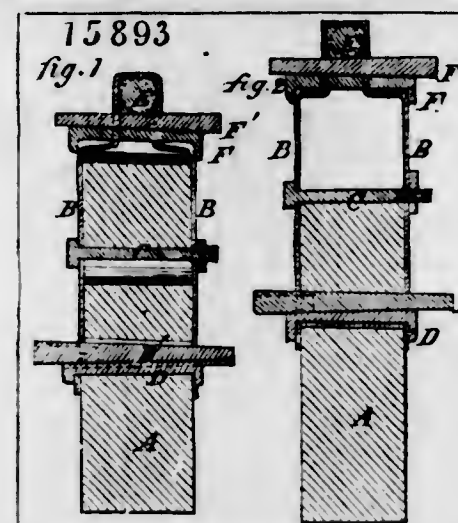
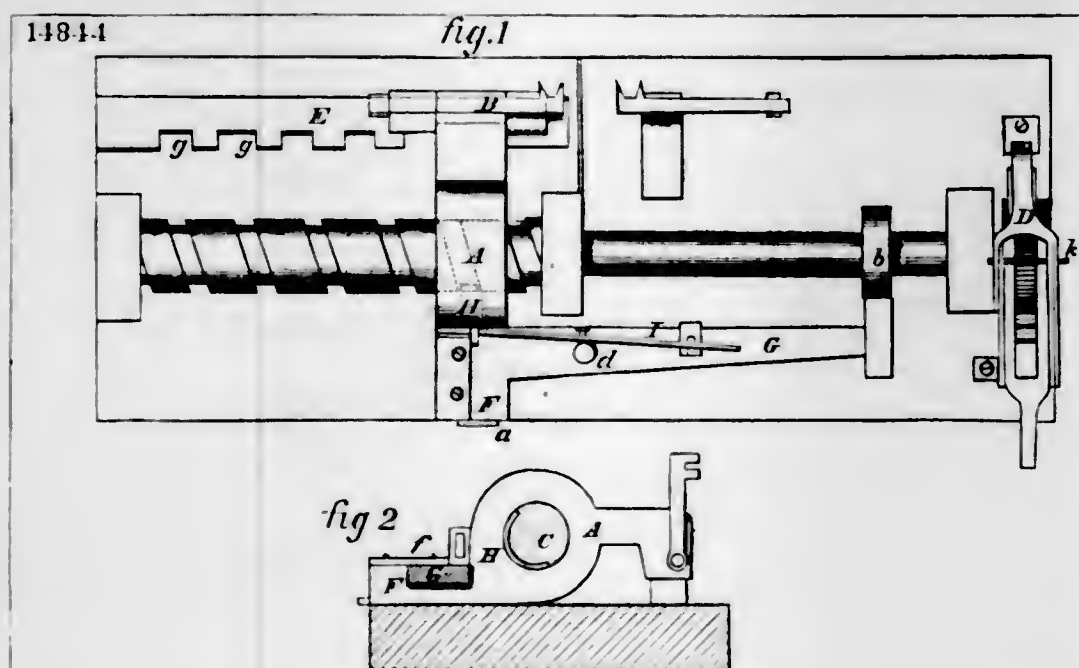
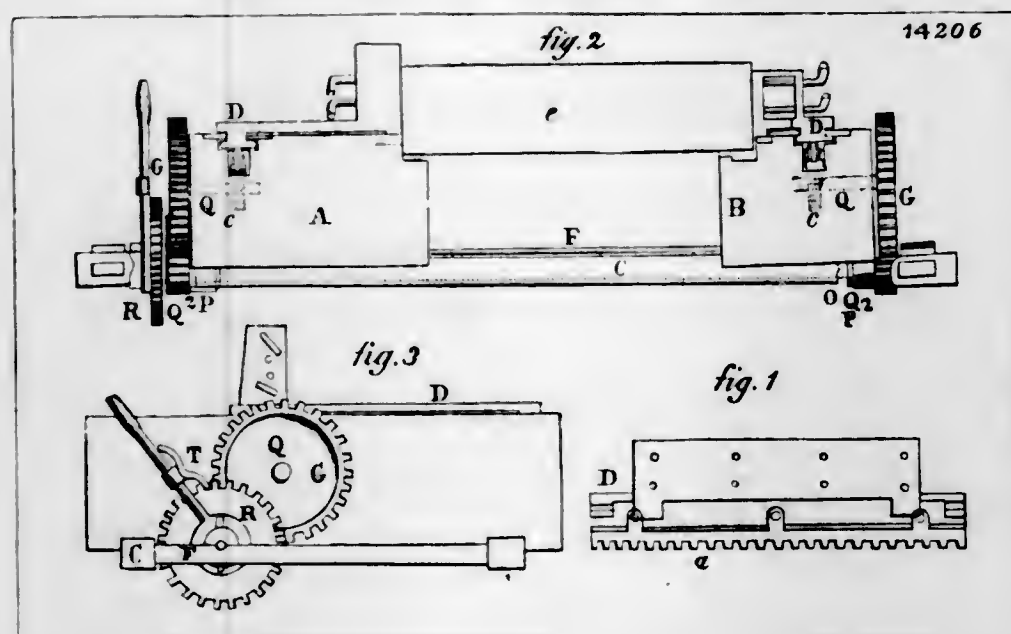
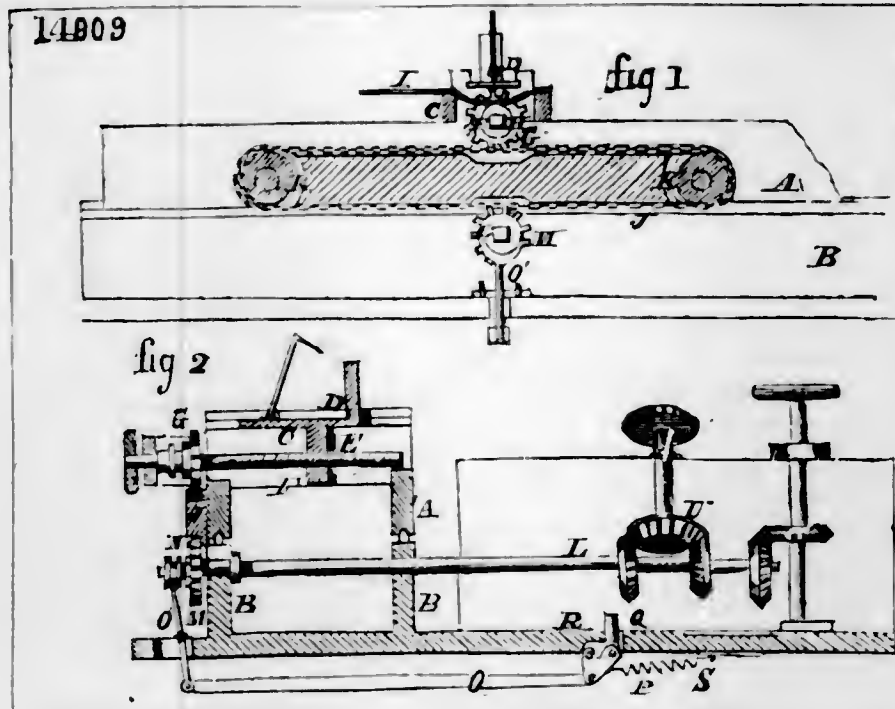


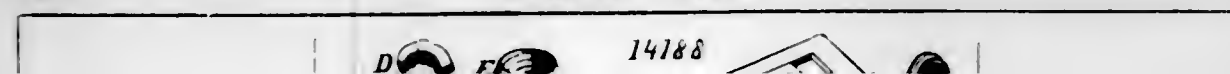
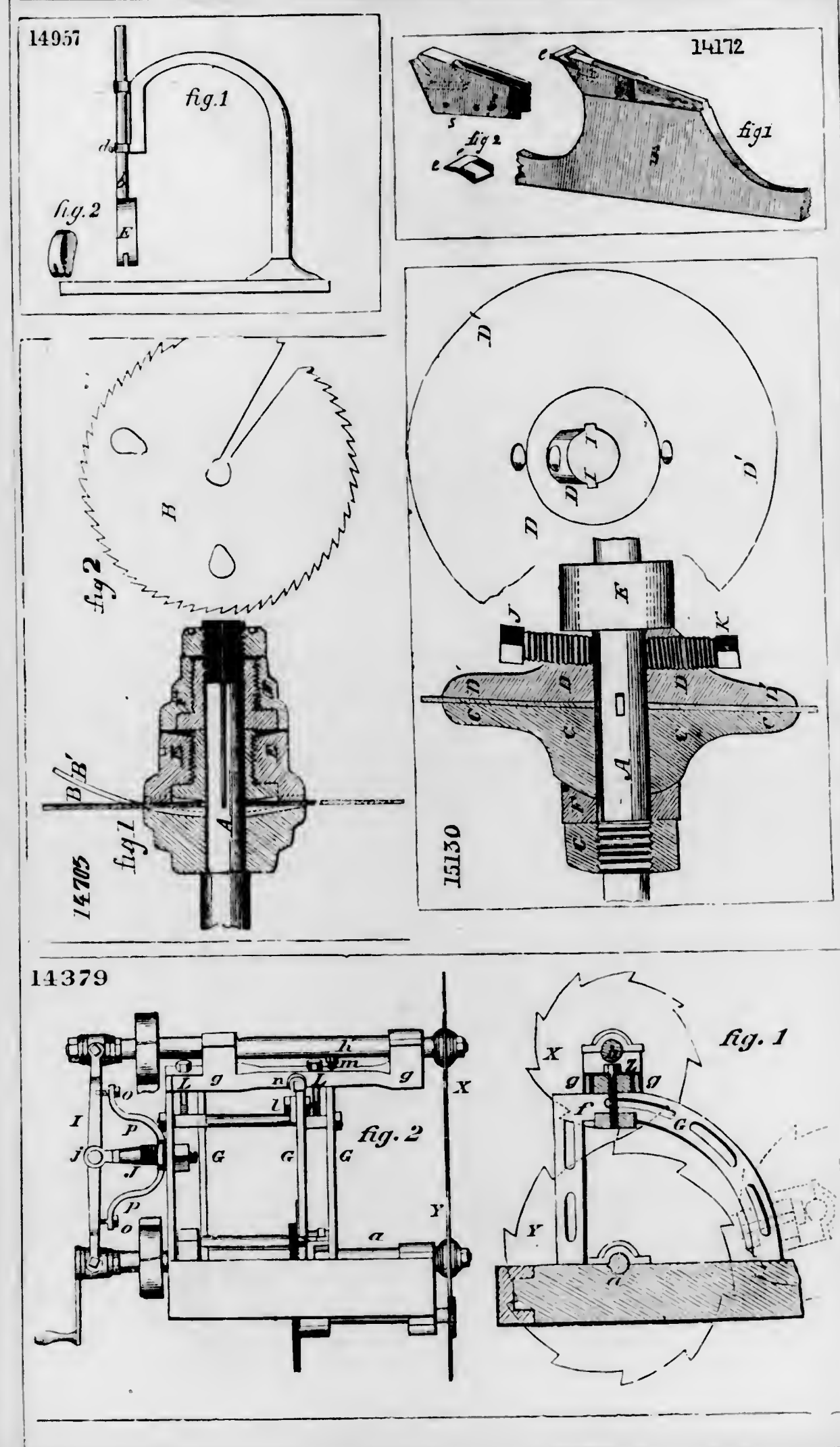
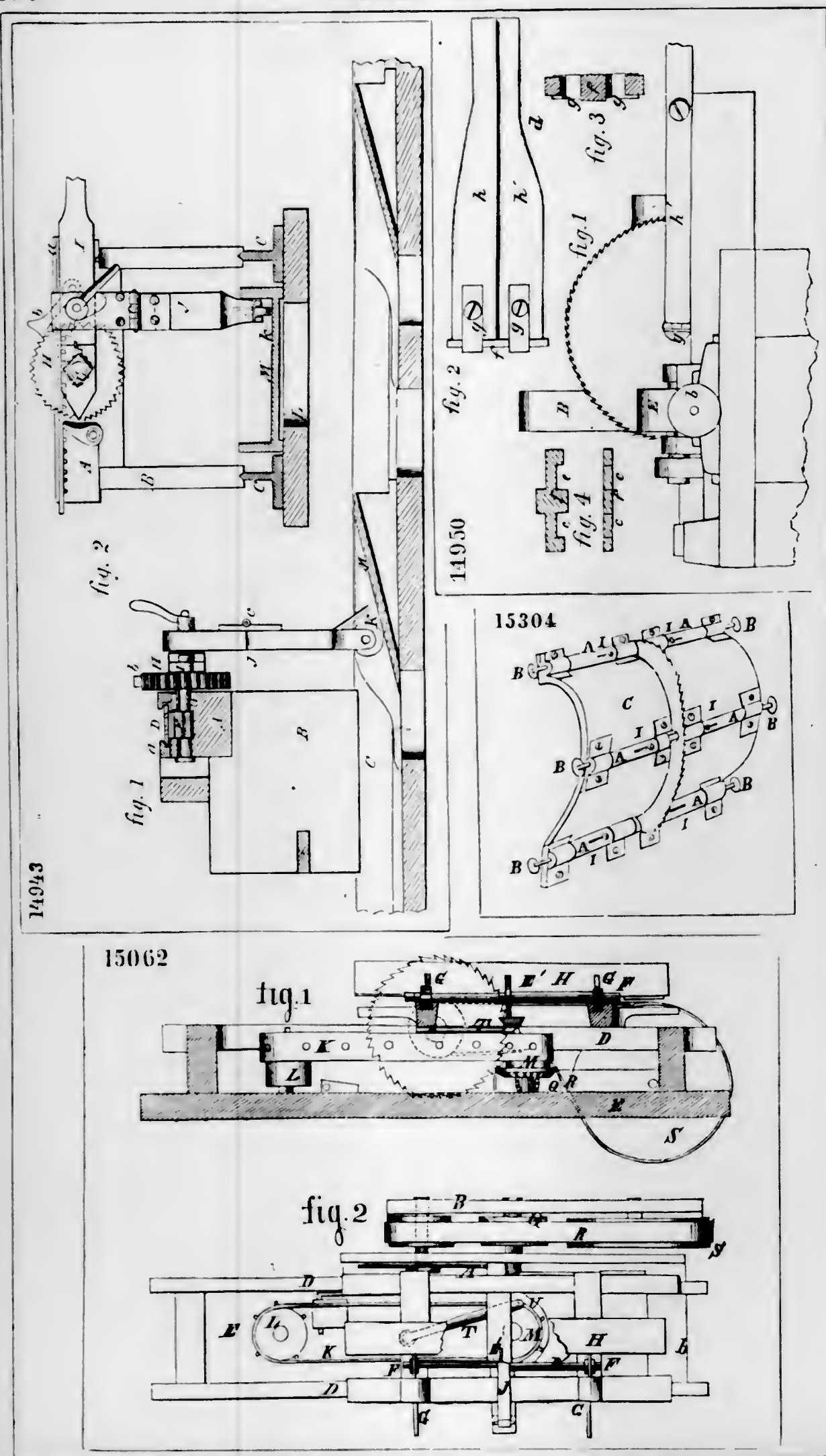
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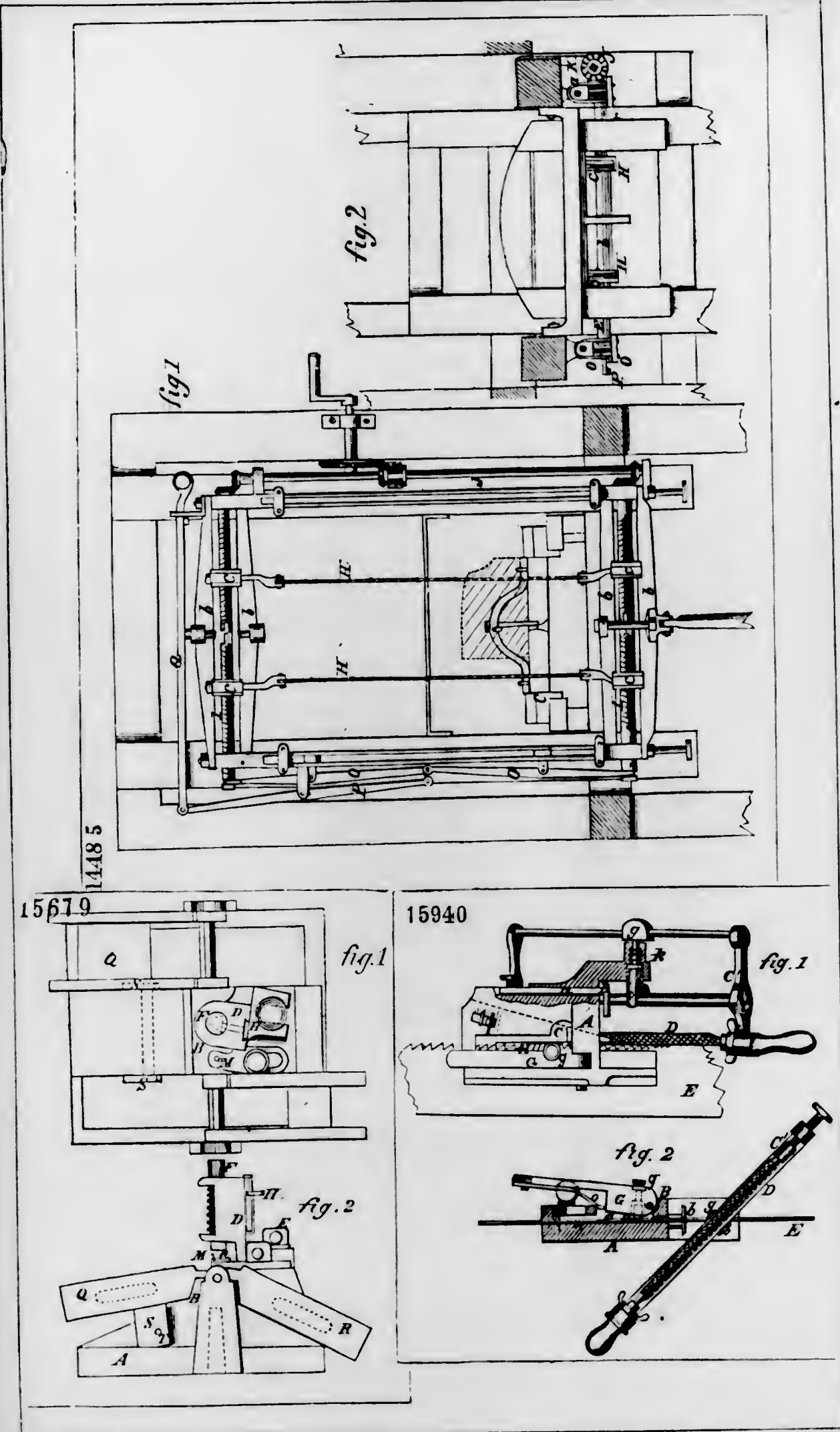
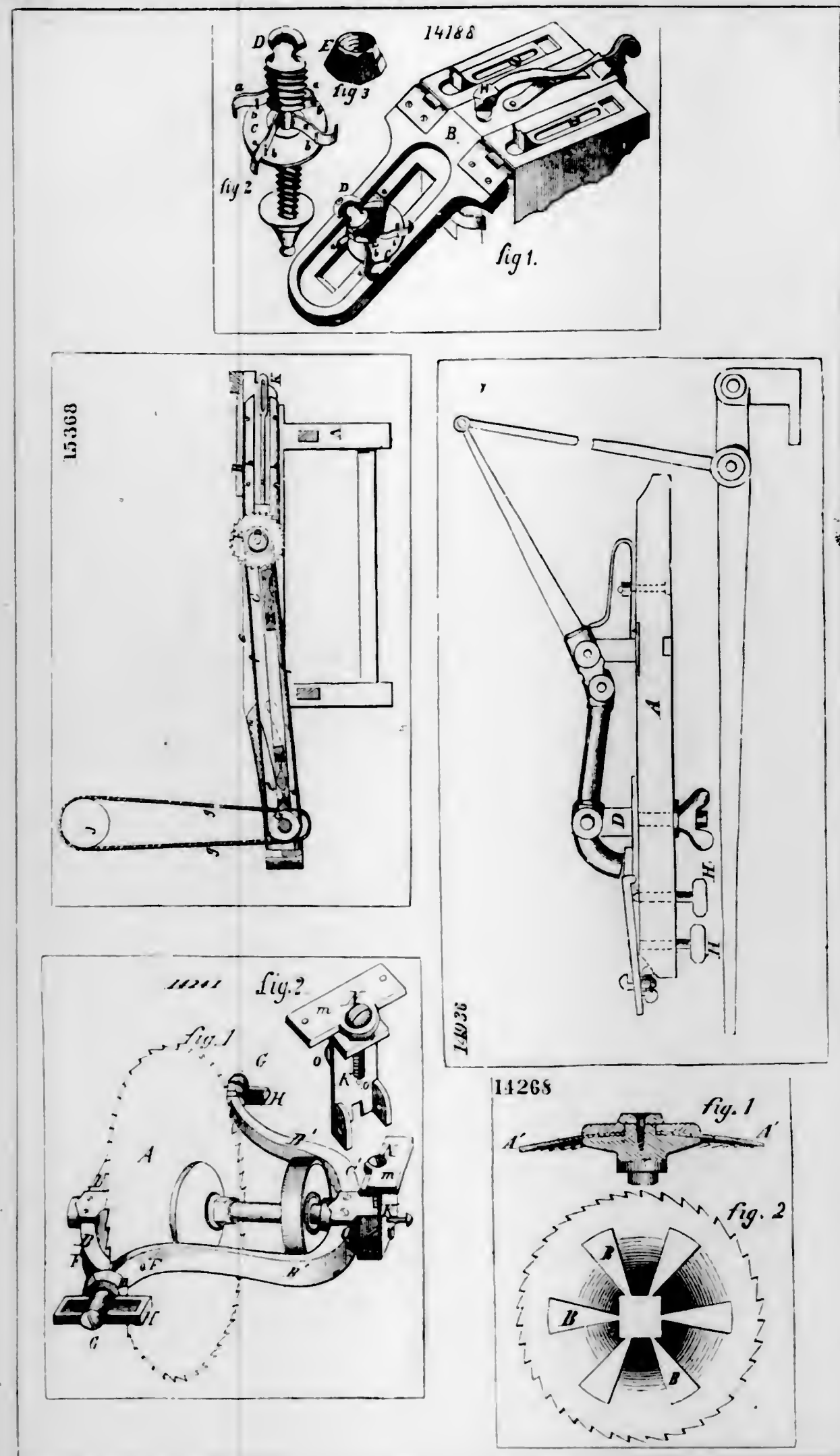


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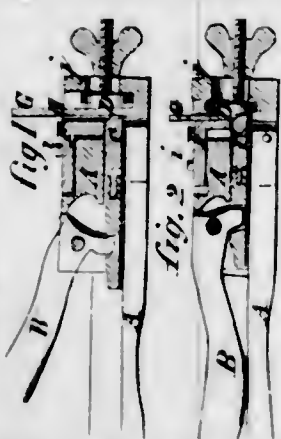
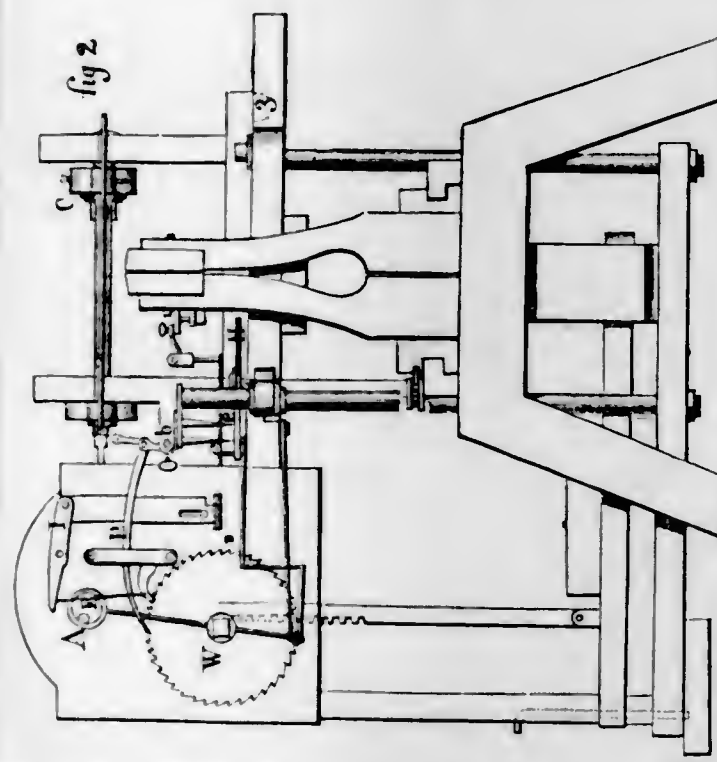
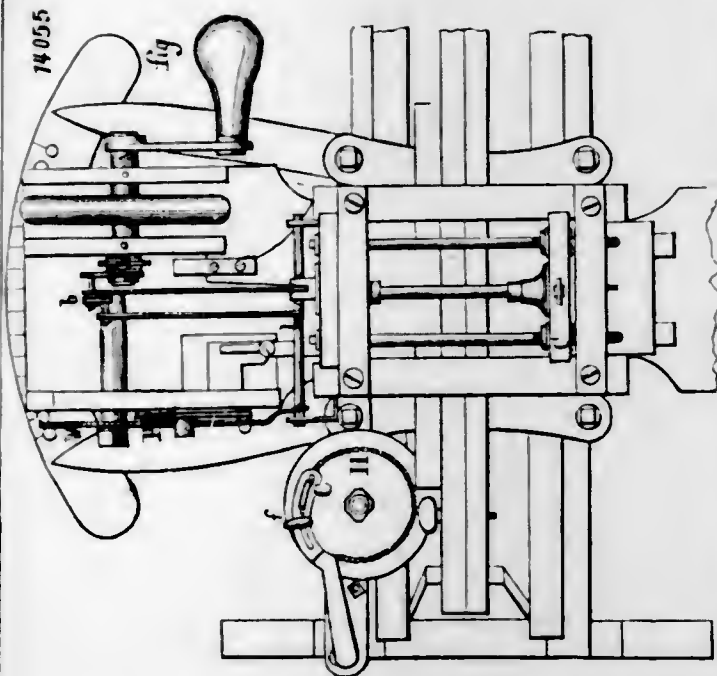
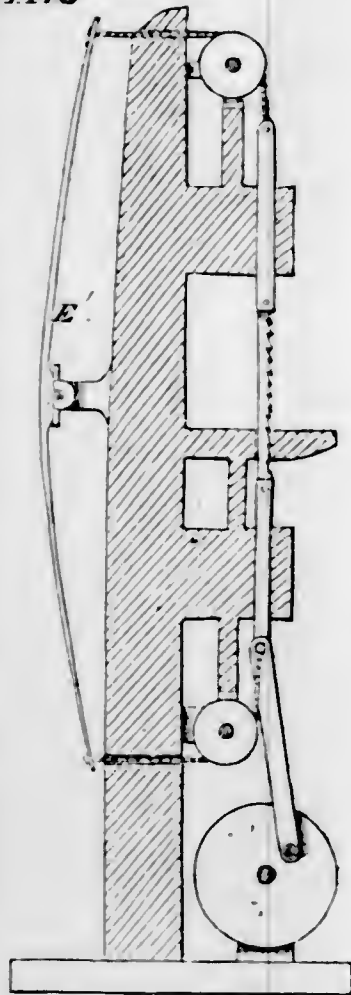




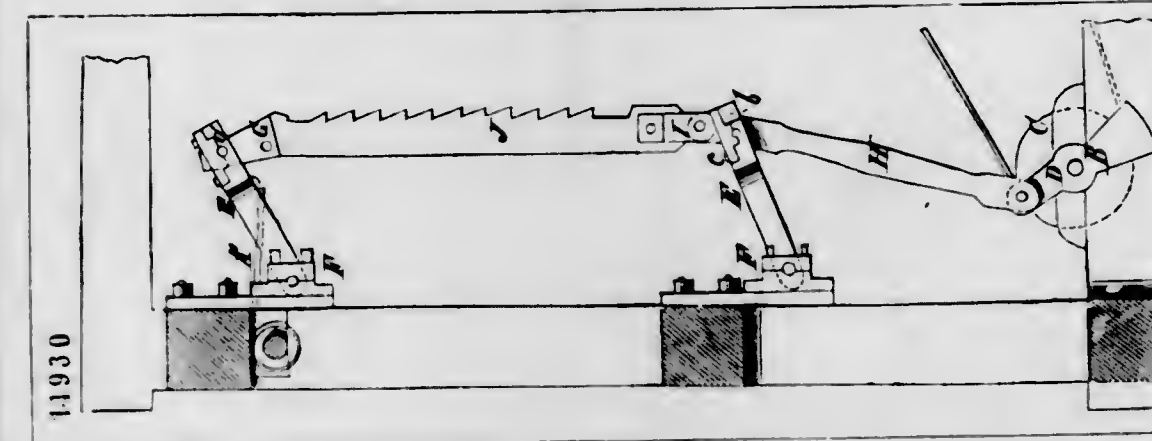
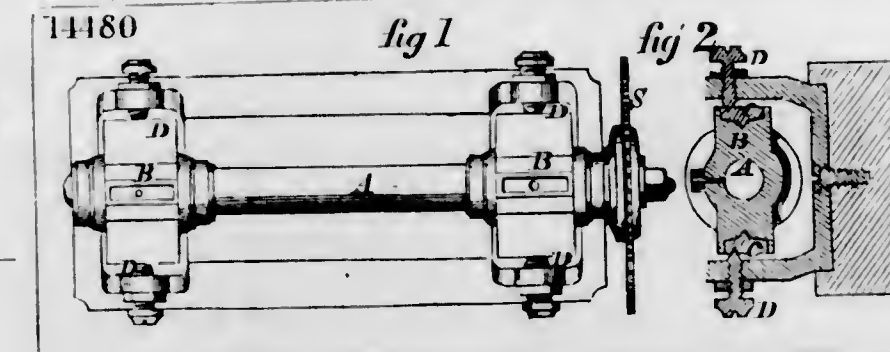
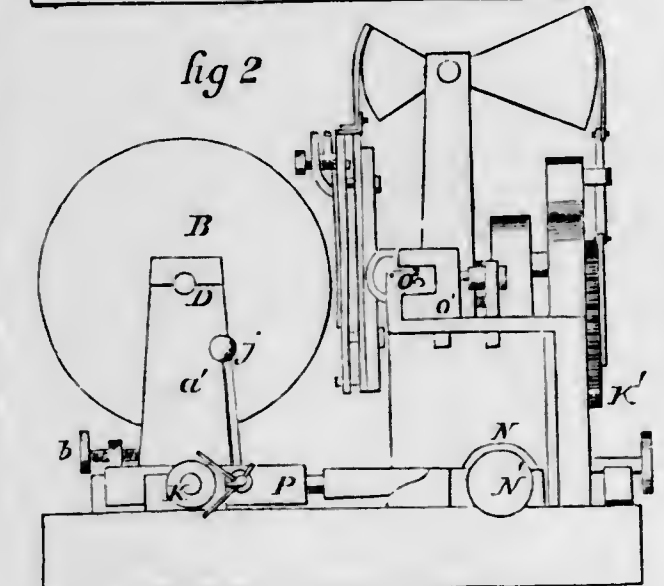
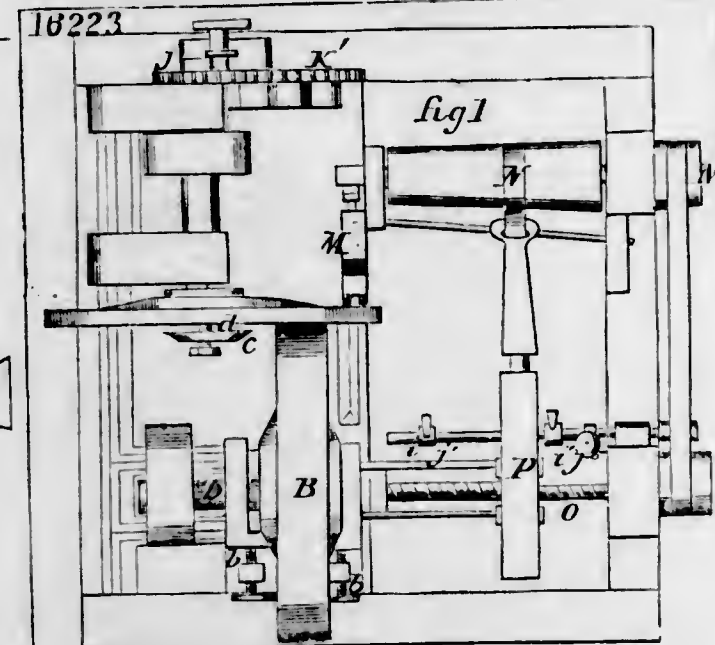
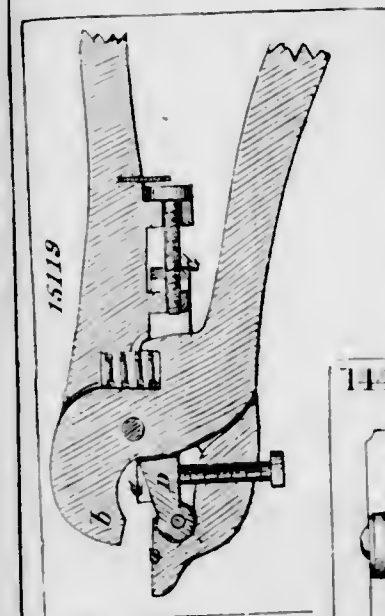
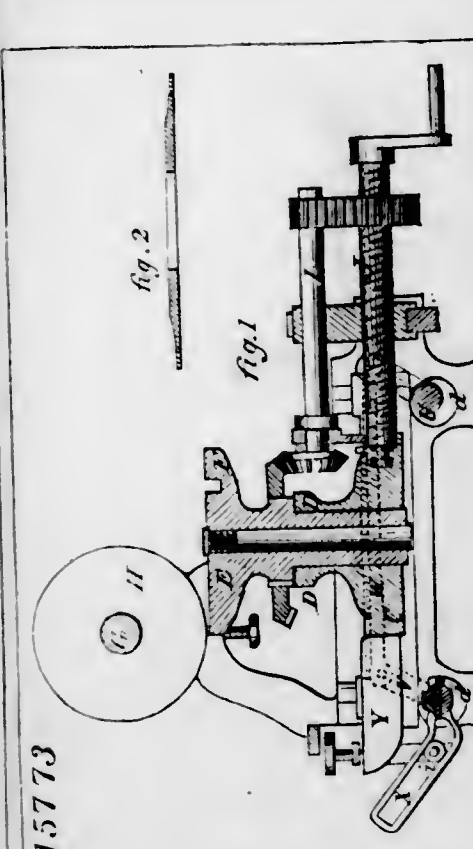
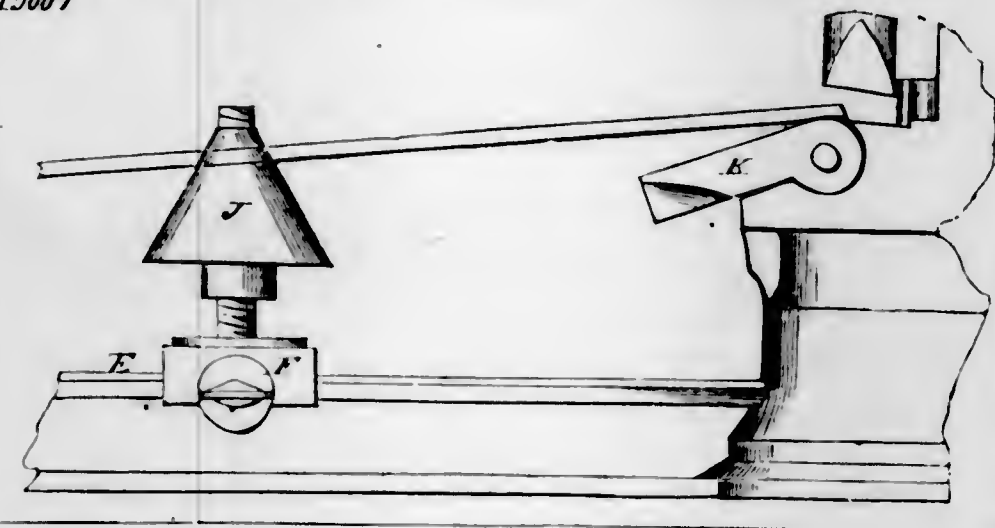


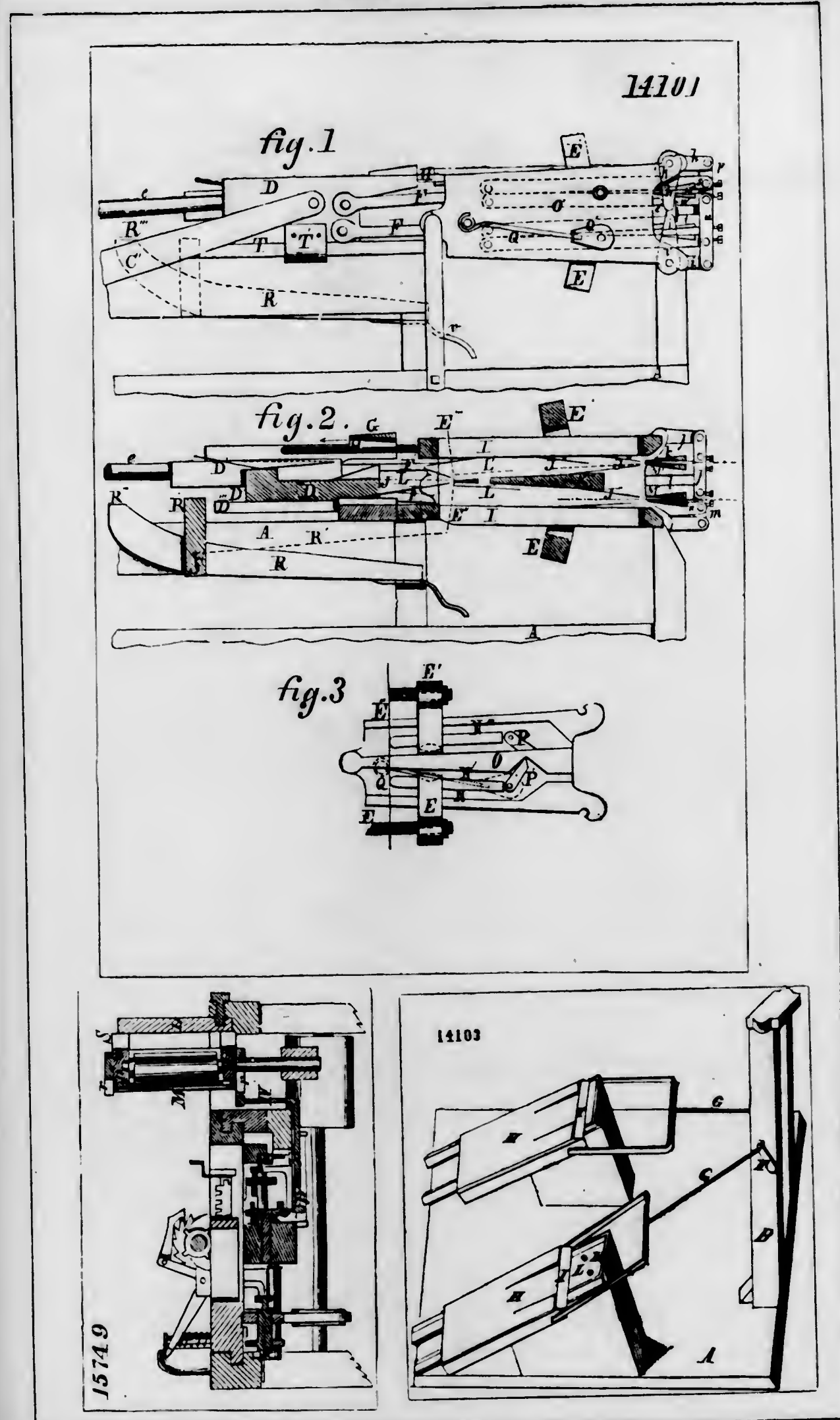
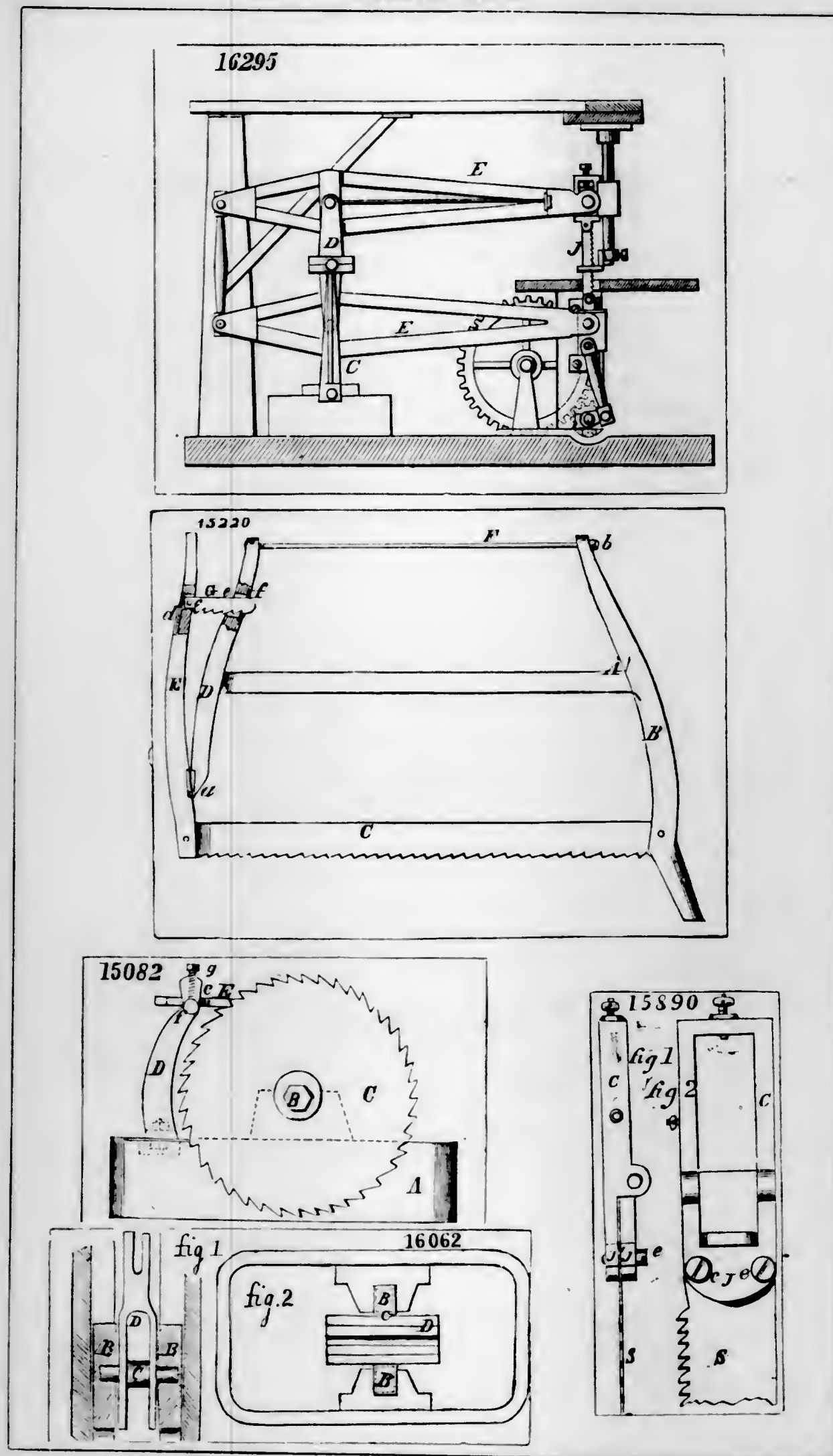


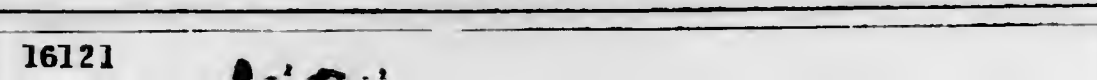
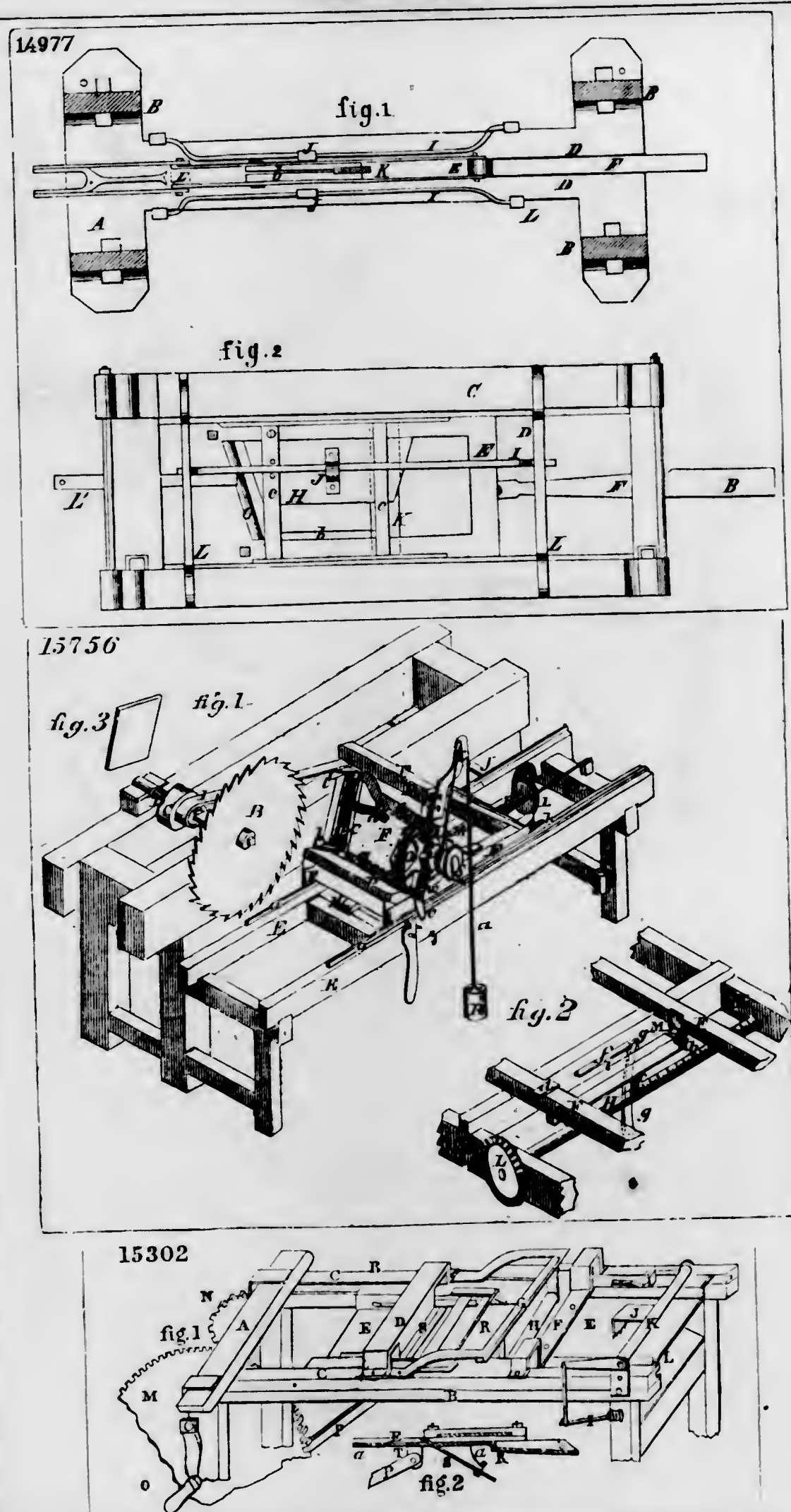
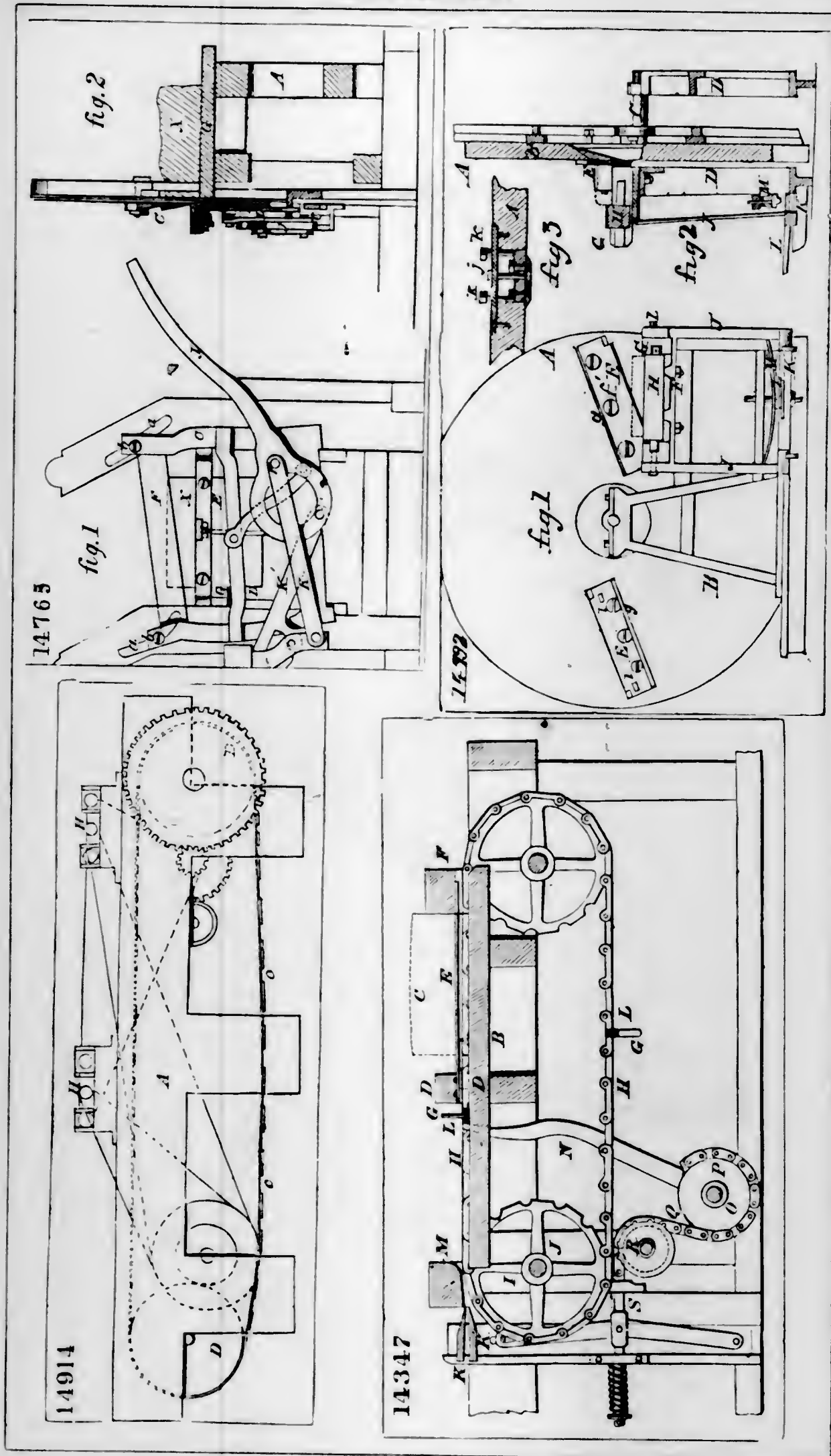
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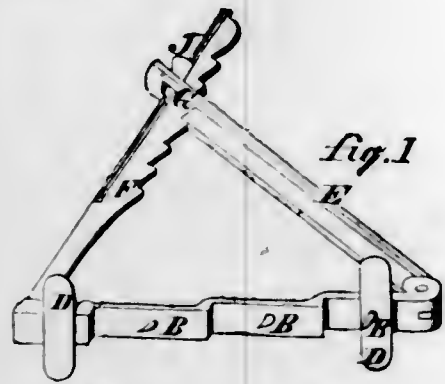


fig. 2

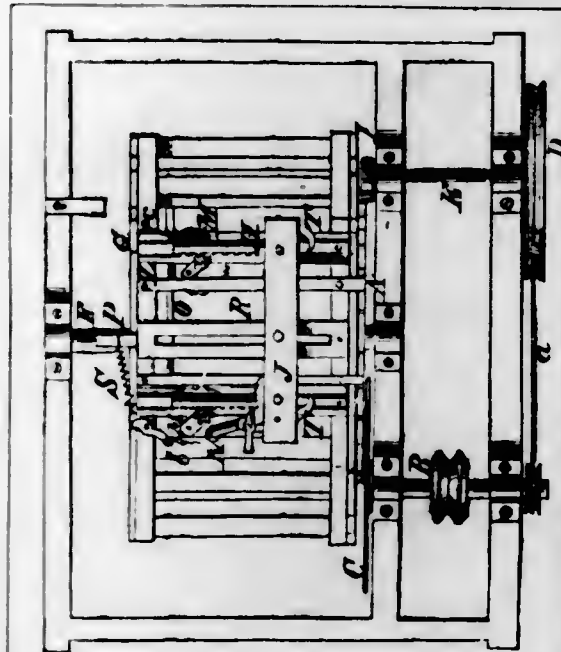
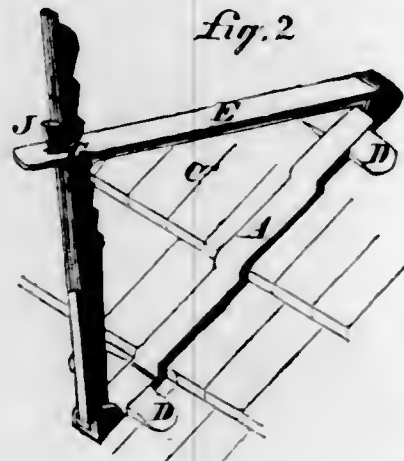
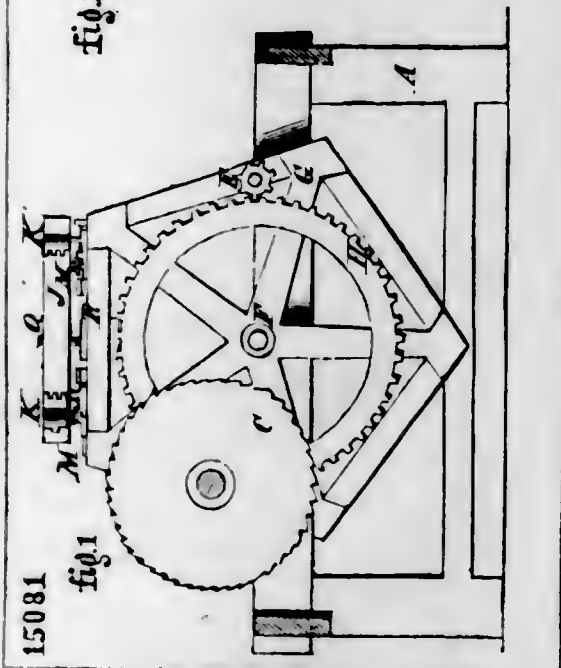


fig. 2



15081

15728

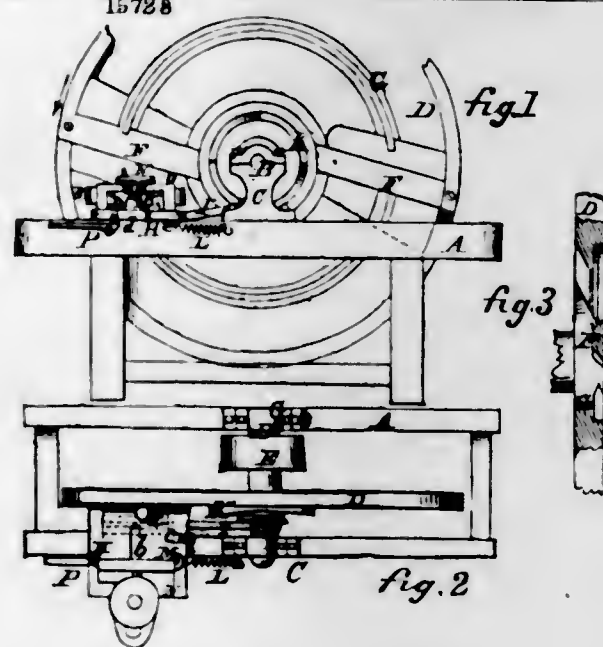
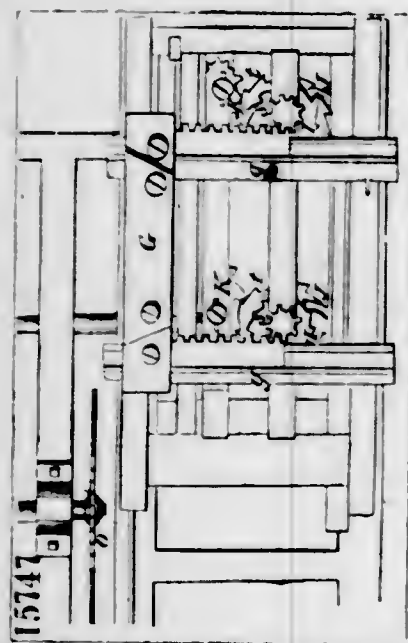


fig. 1

fig. 3

fig. 2



15147

16121

fig 1

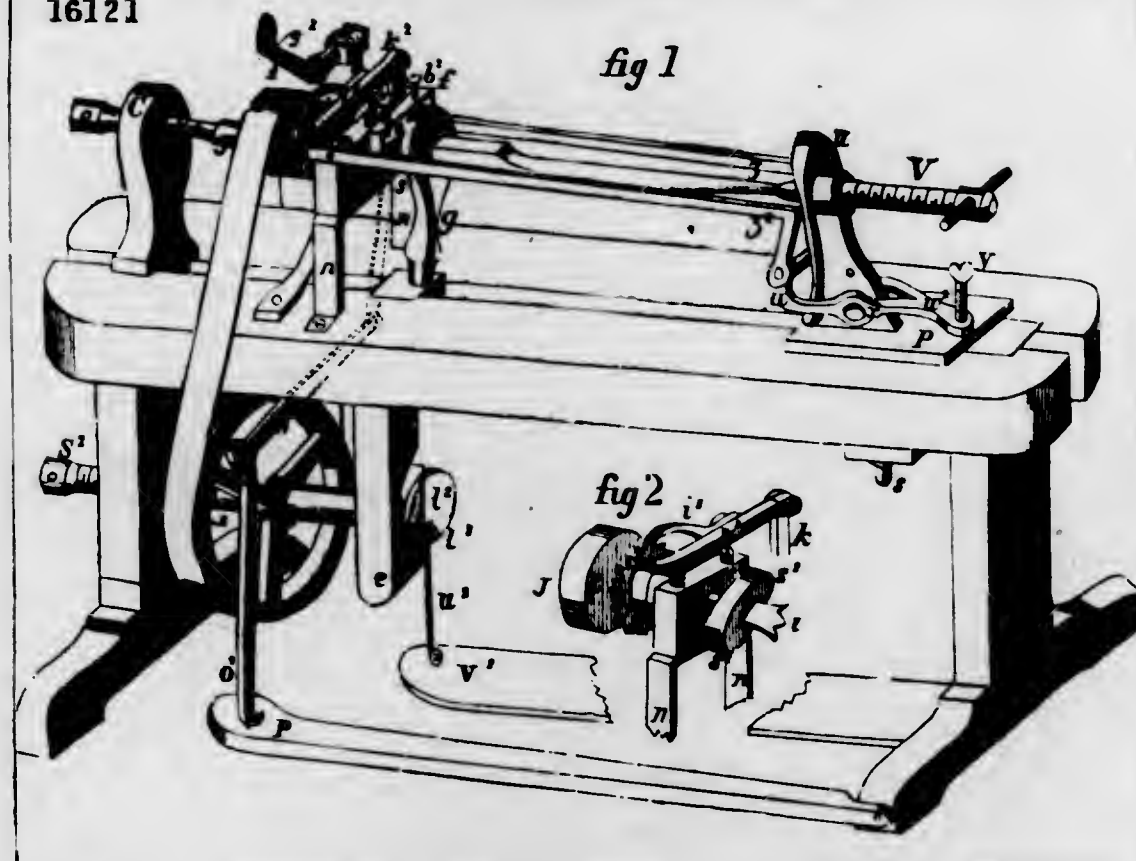
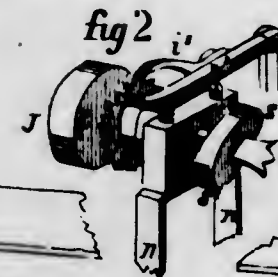


fig 2



14018

fig. 1

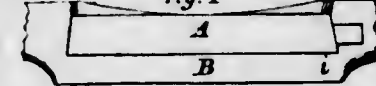
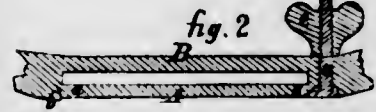


fig. 2



14635

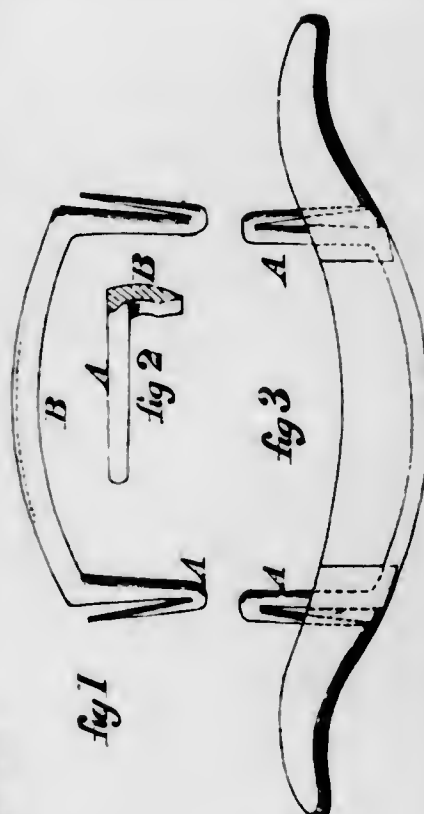


fig 1

fig 2

fig 3

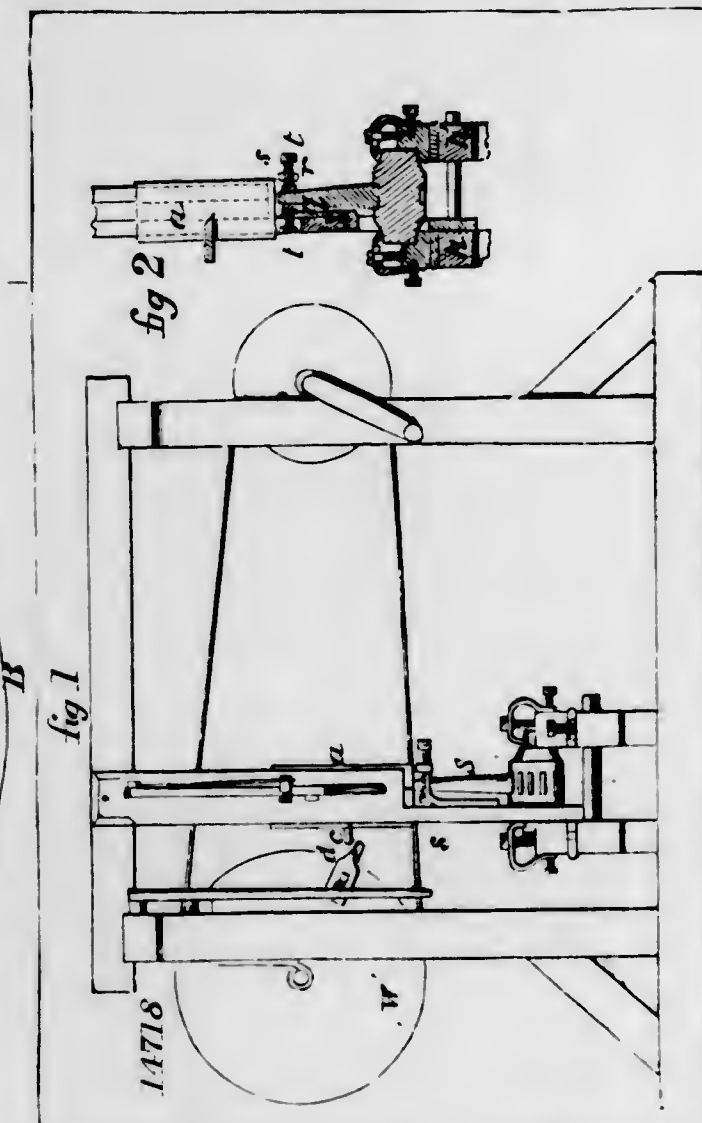
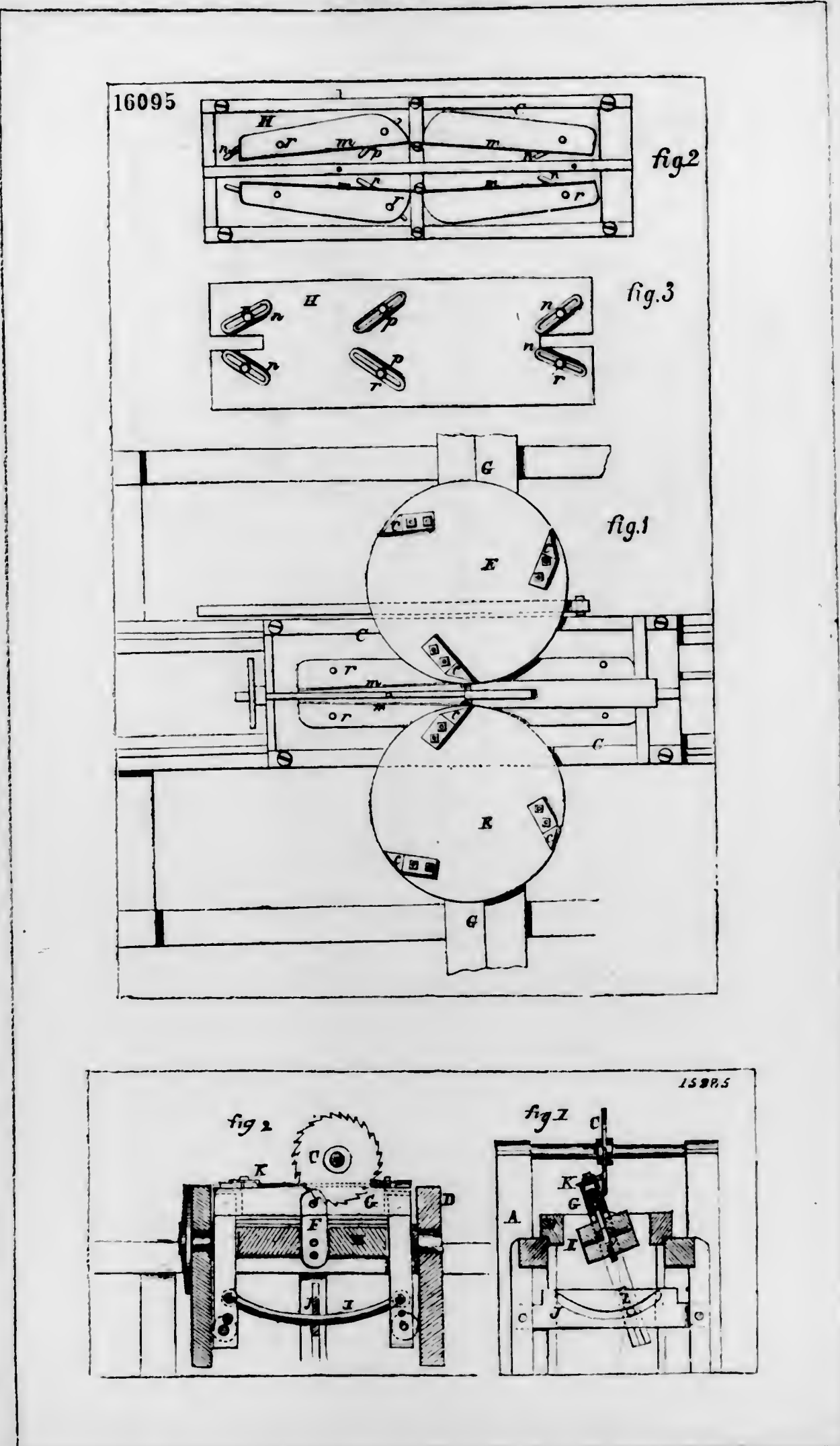
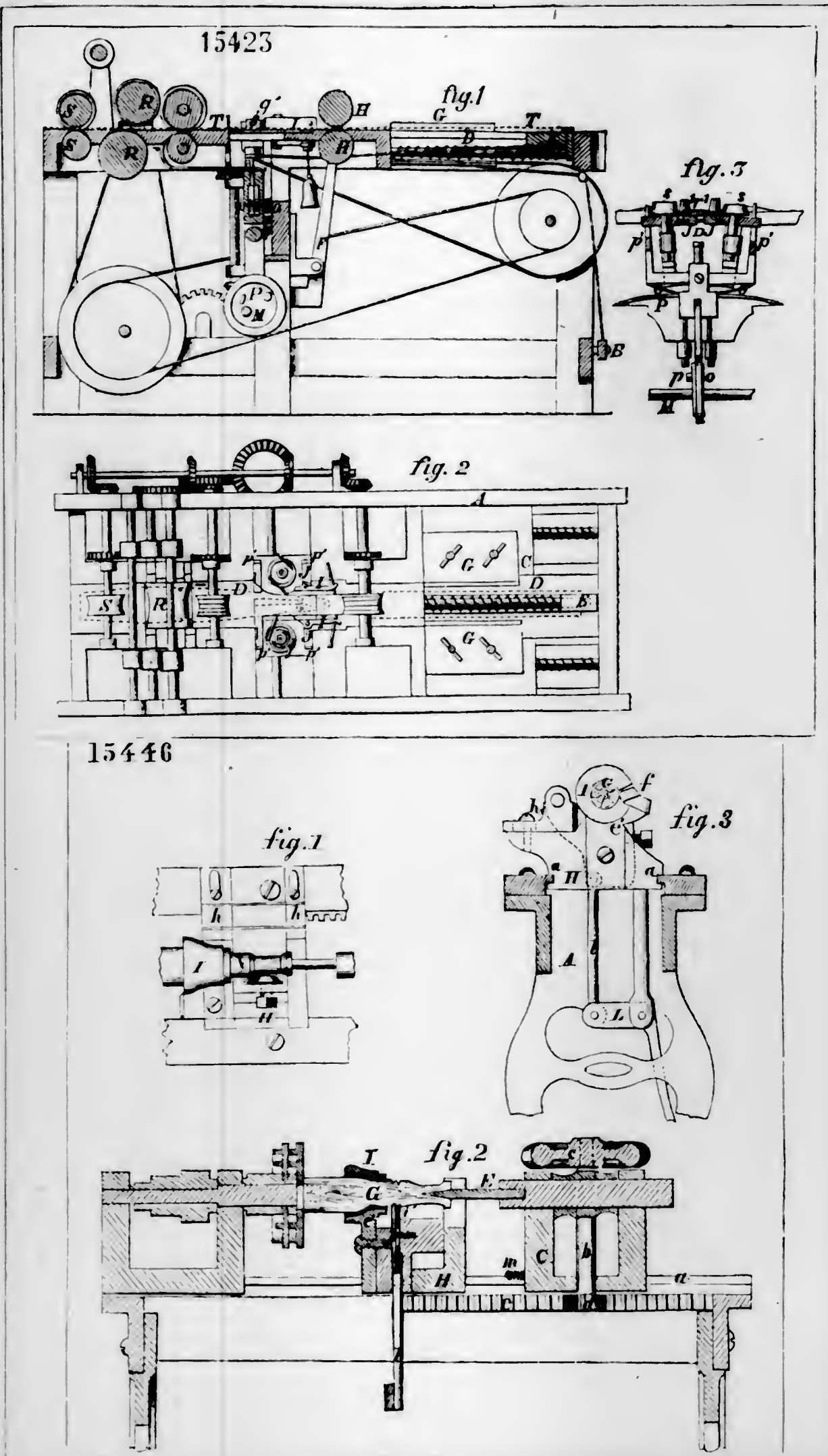
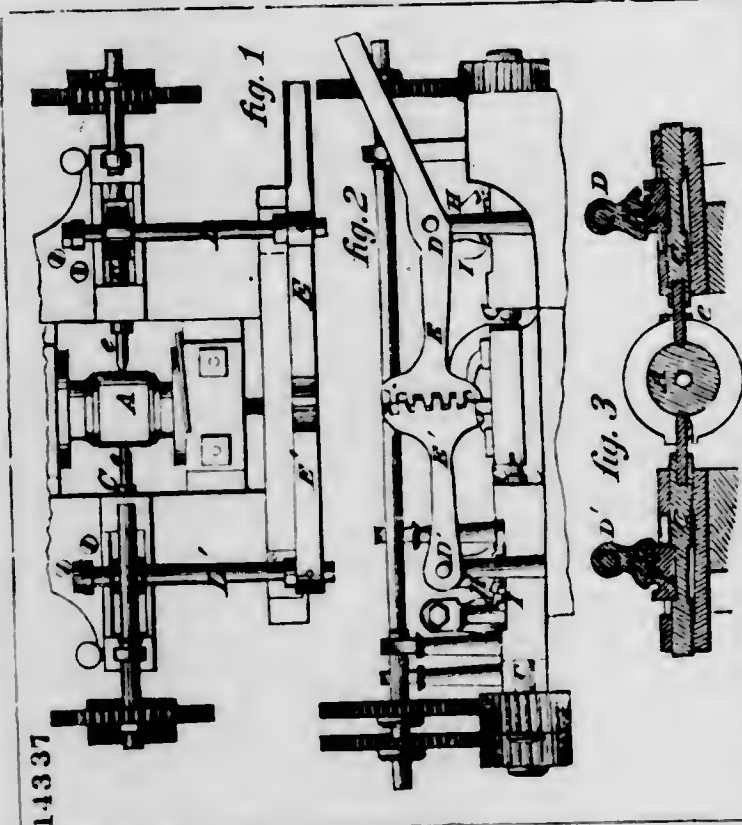
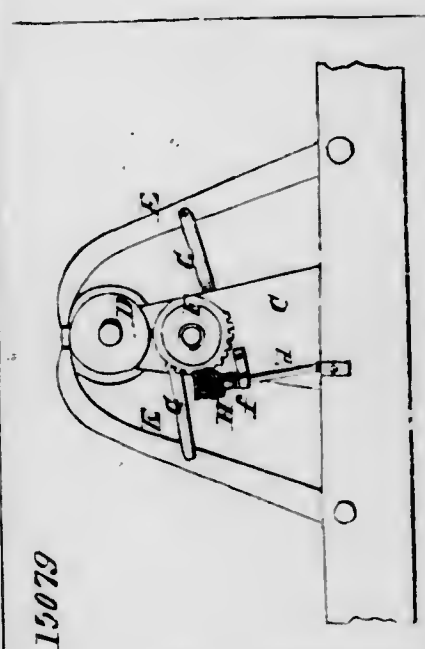
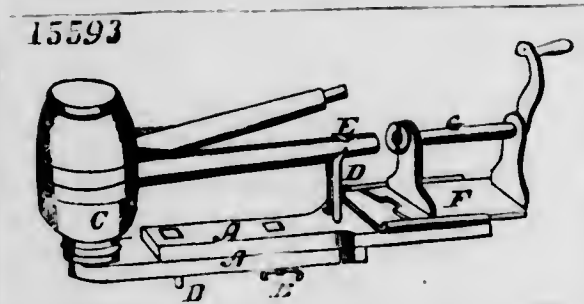
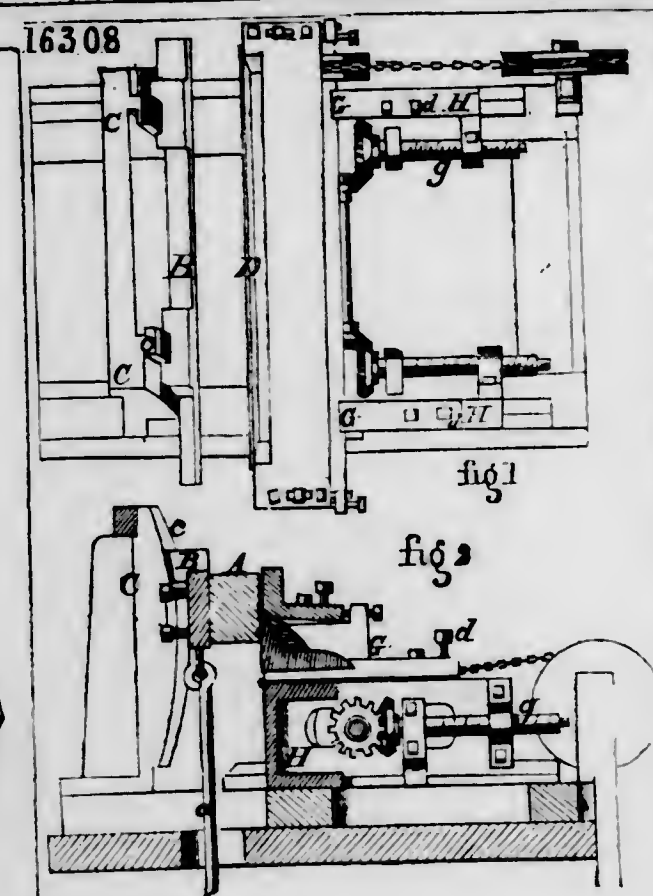
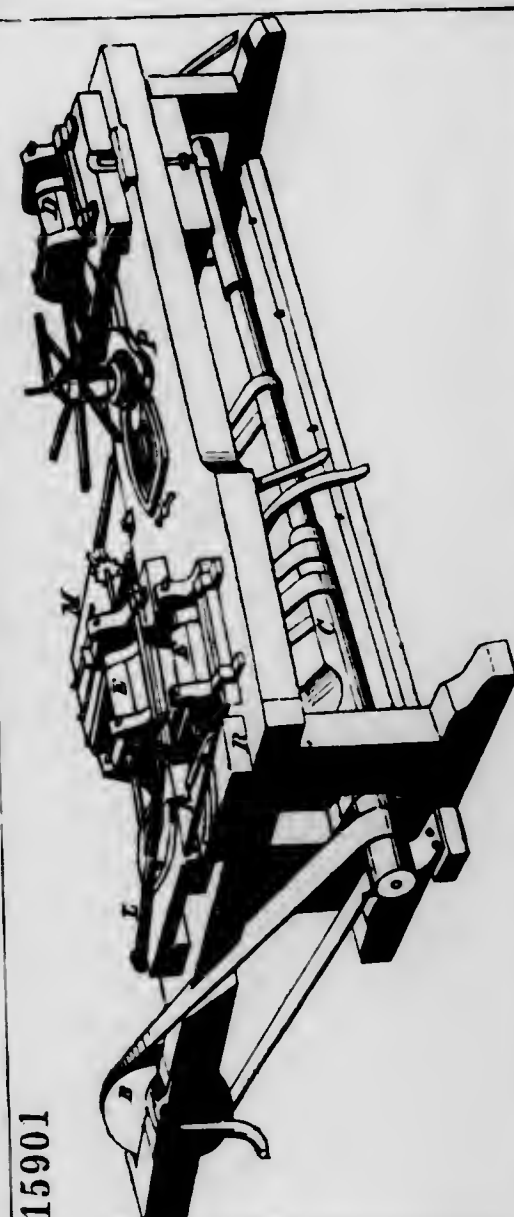
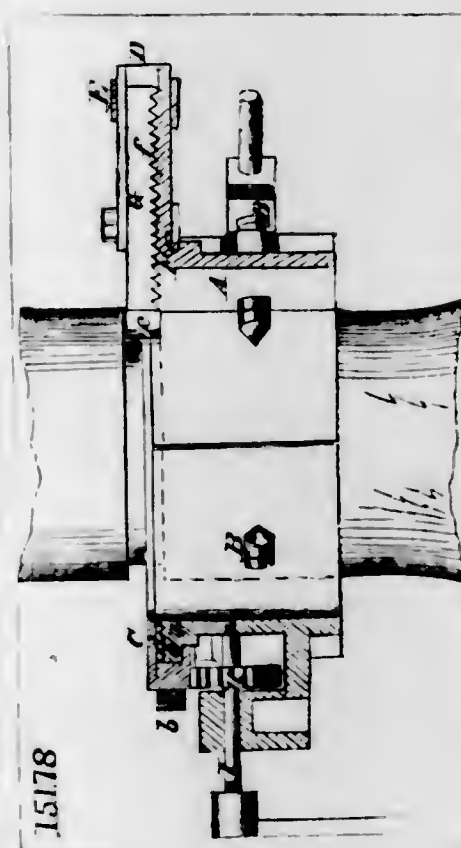
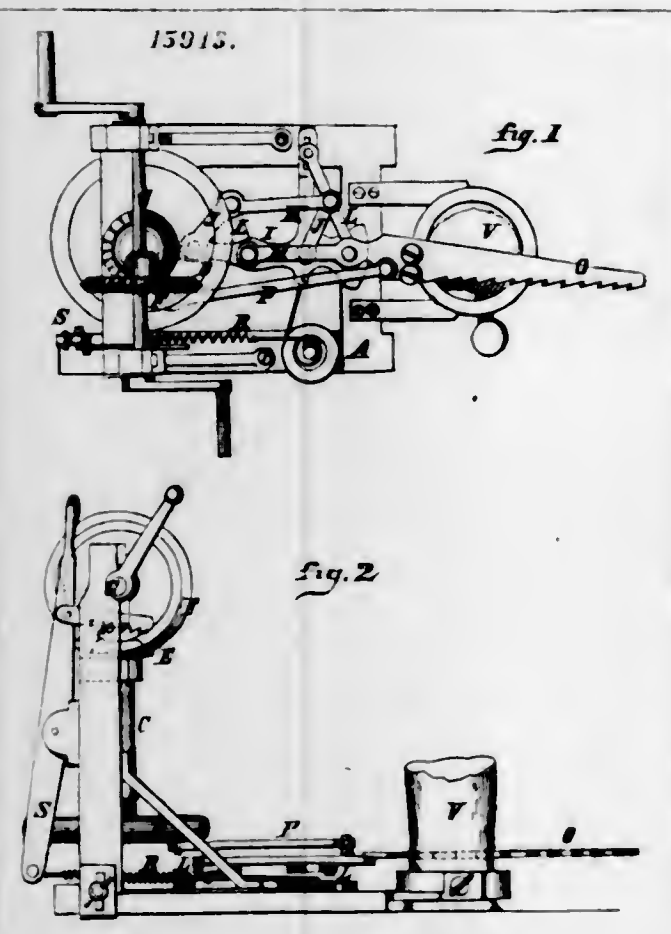
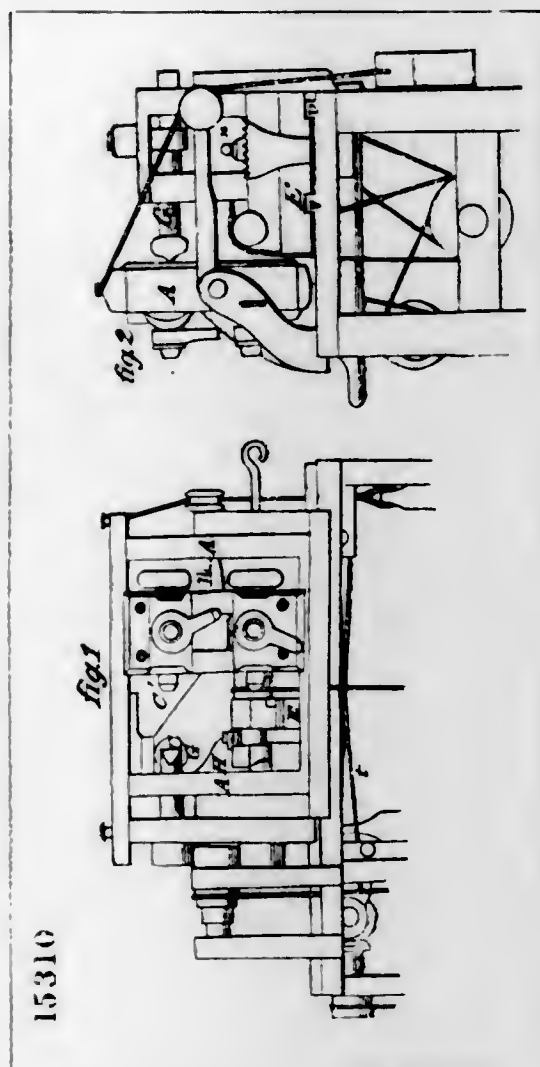
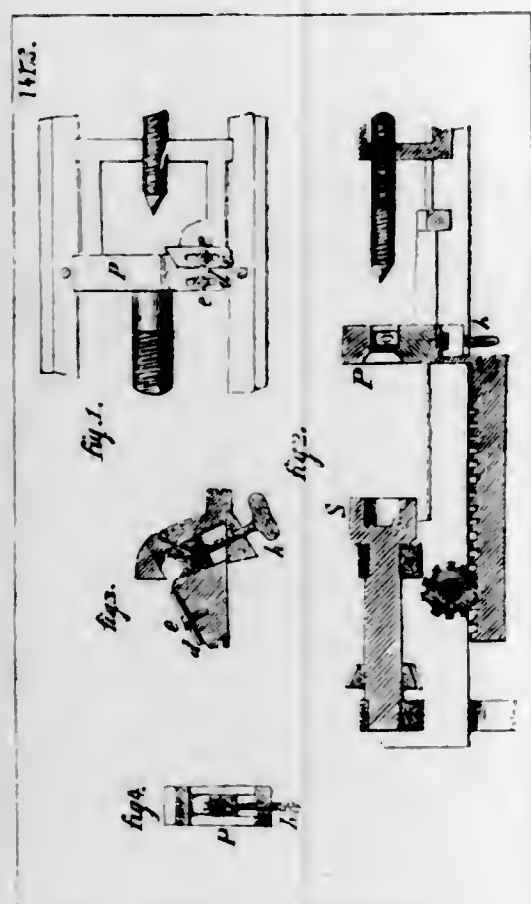
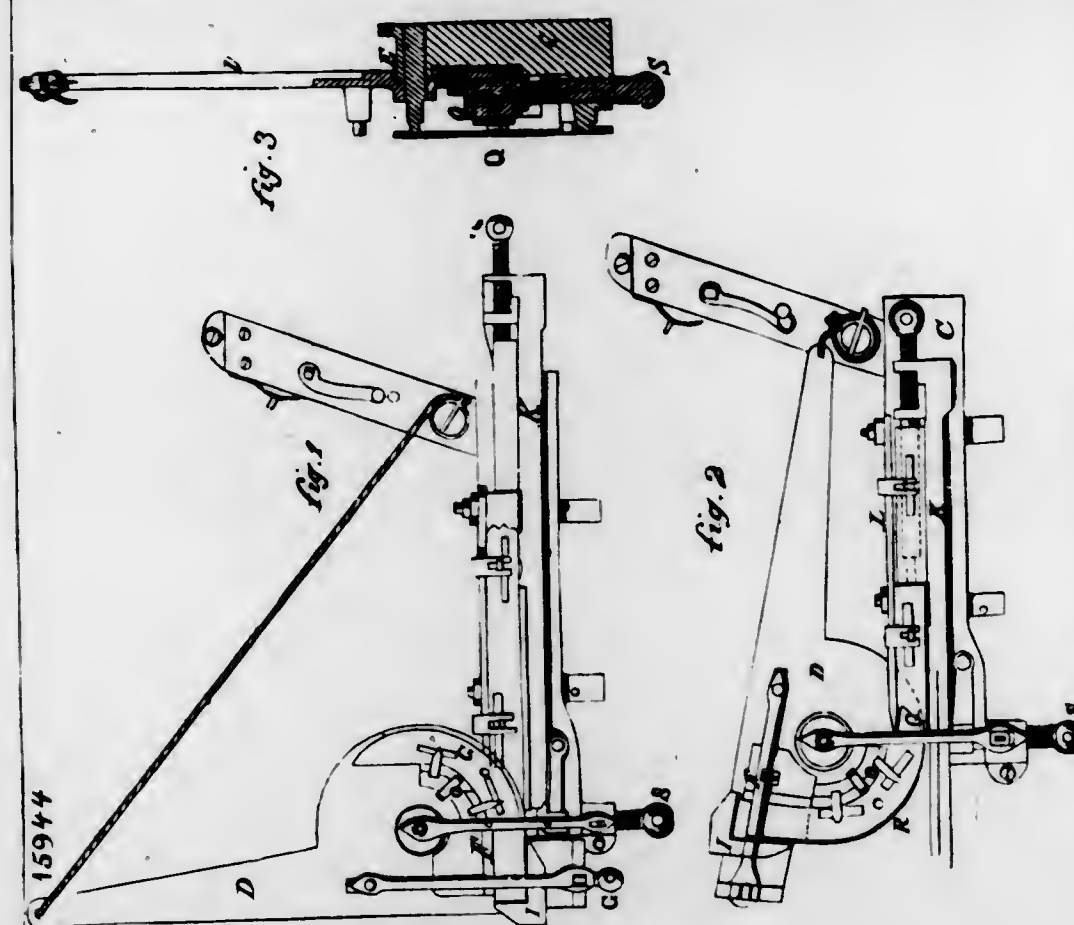
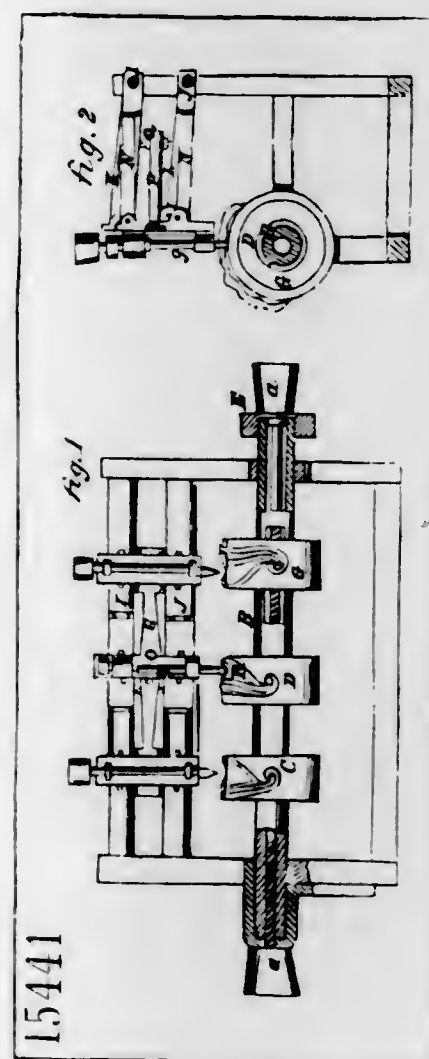
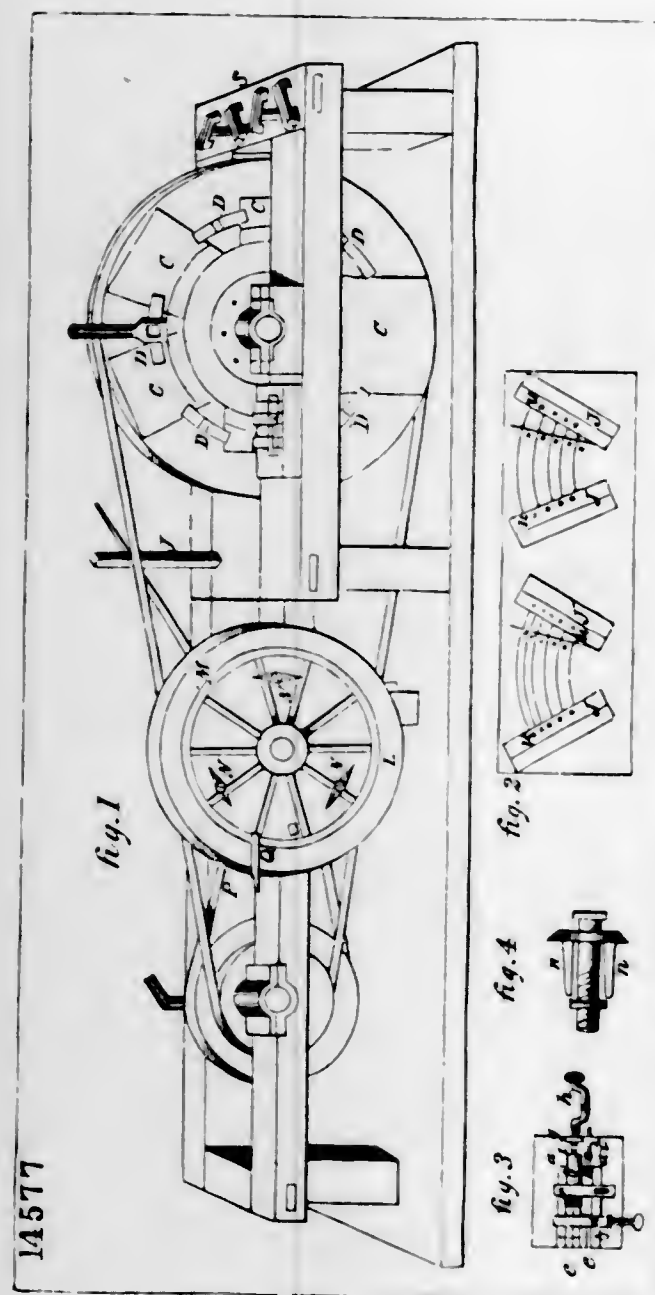
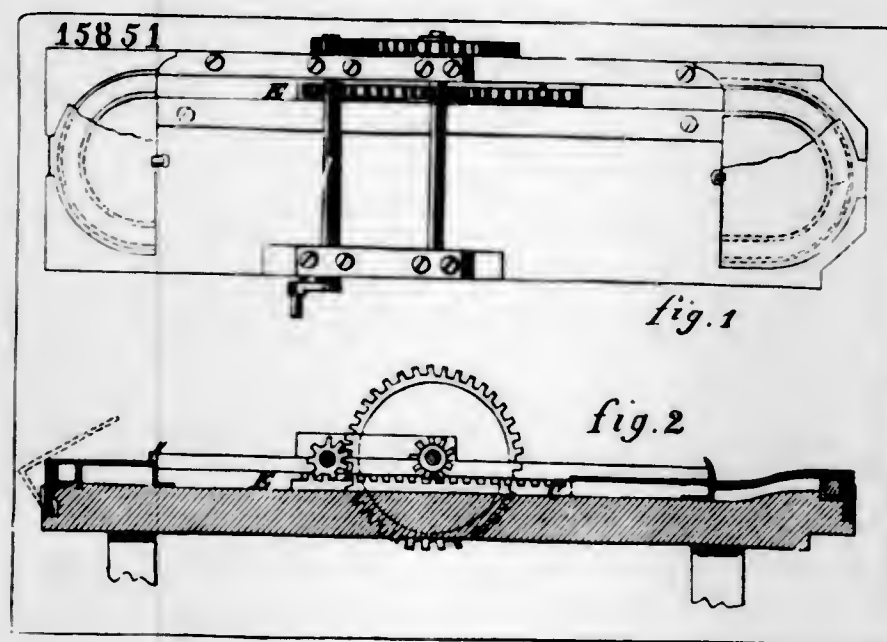


fig 1

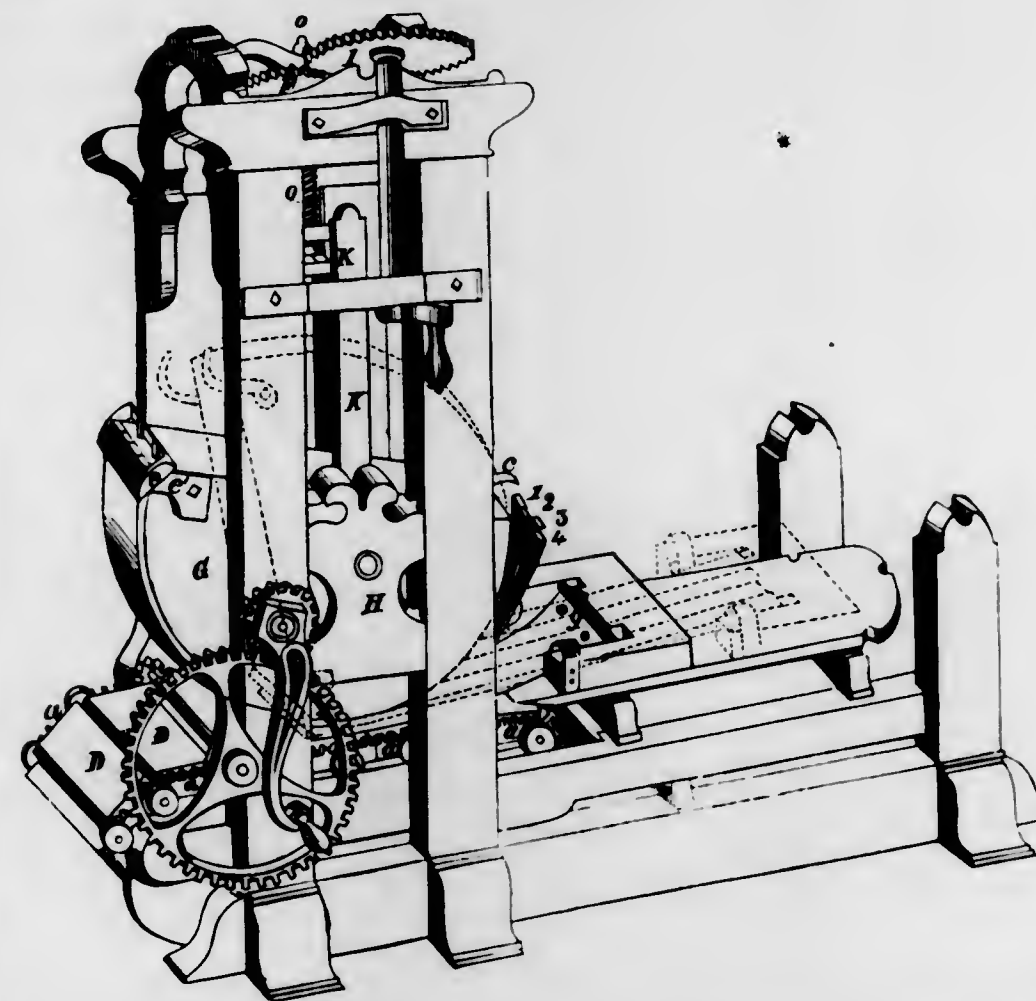
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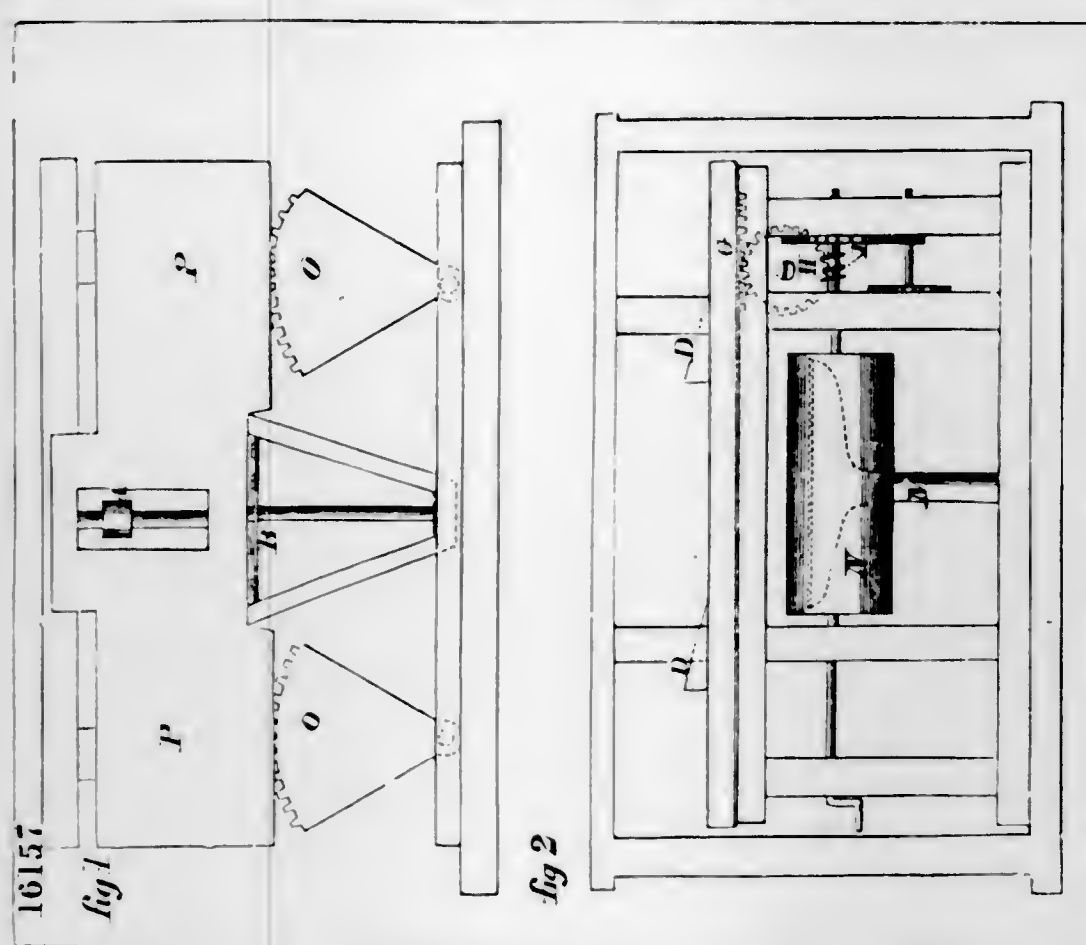




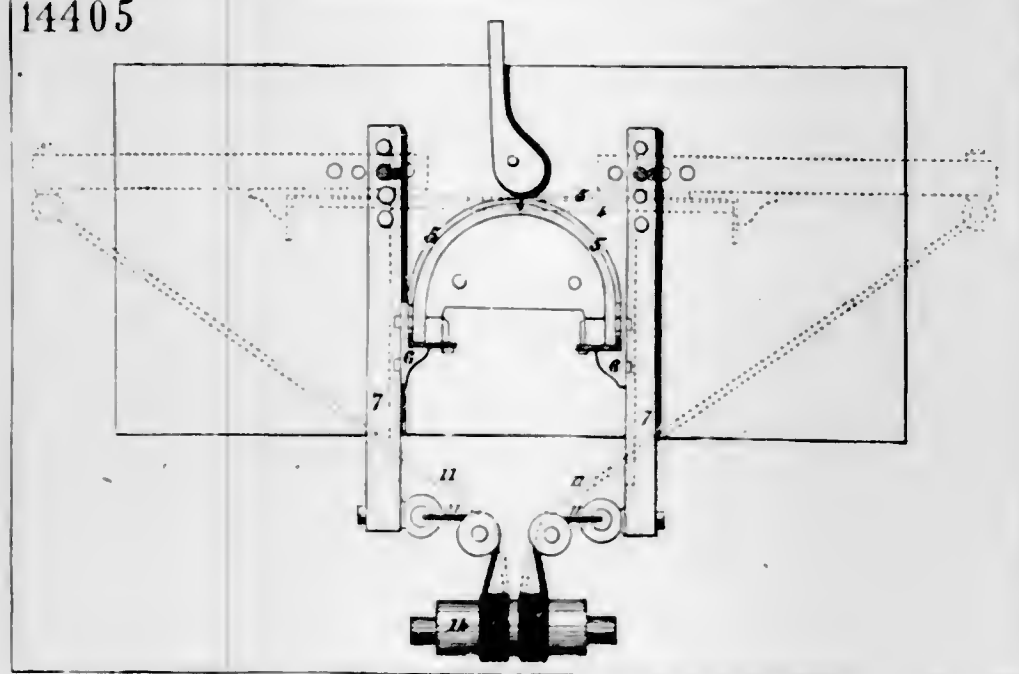


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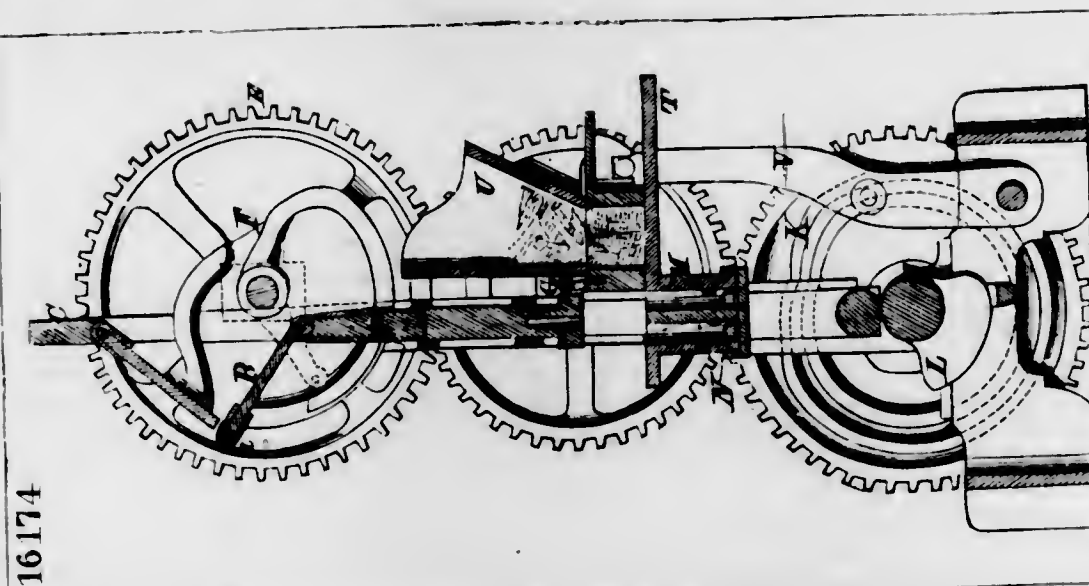
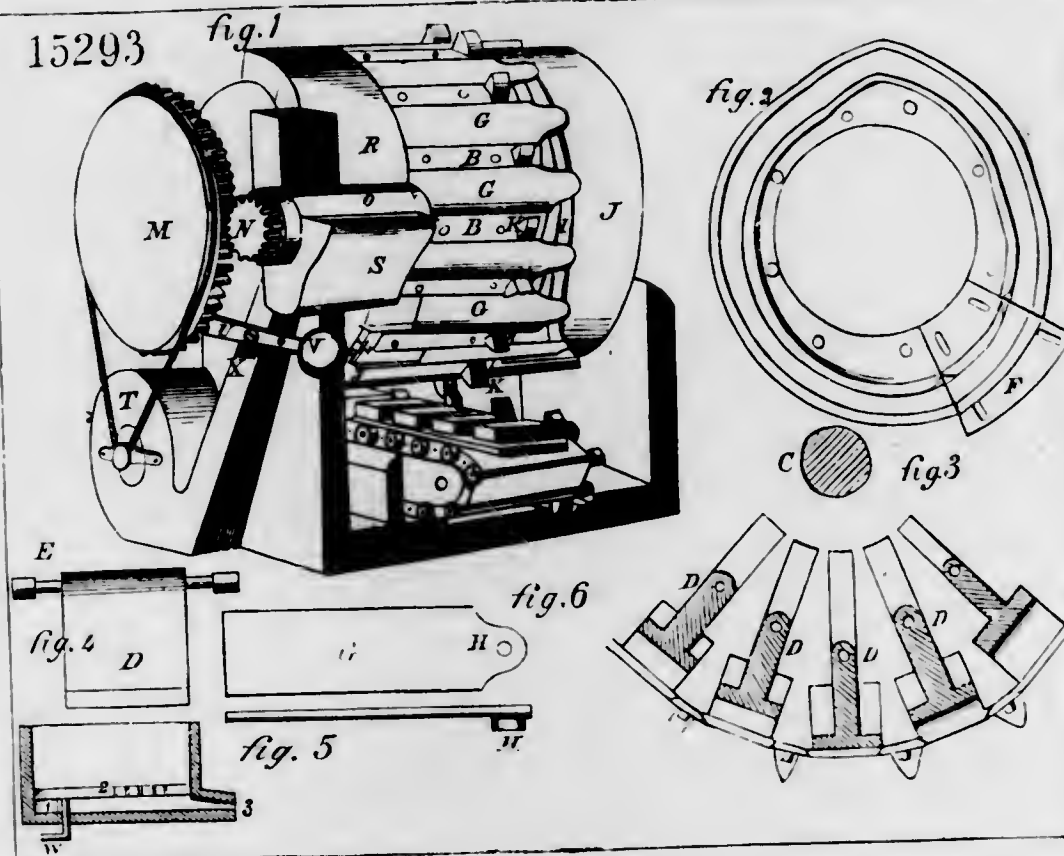
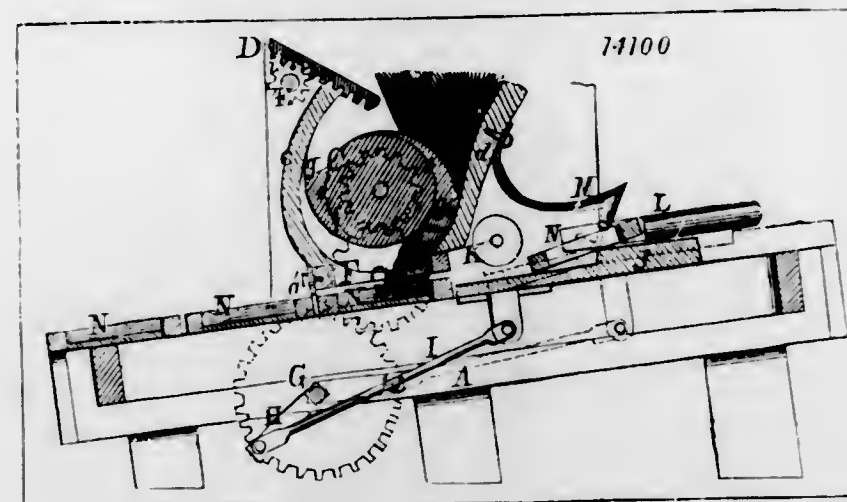
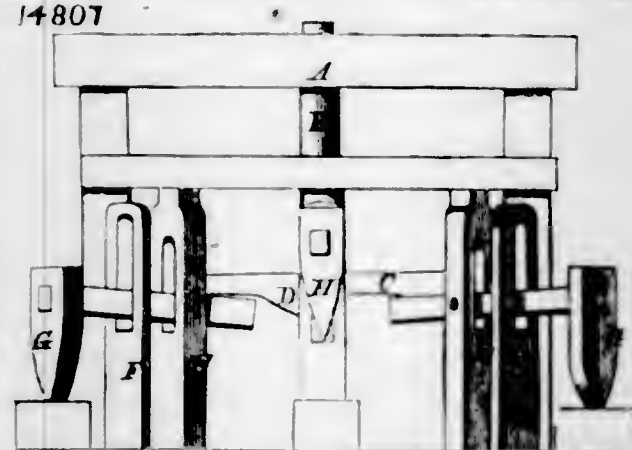


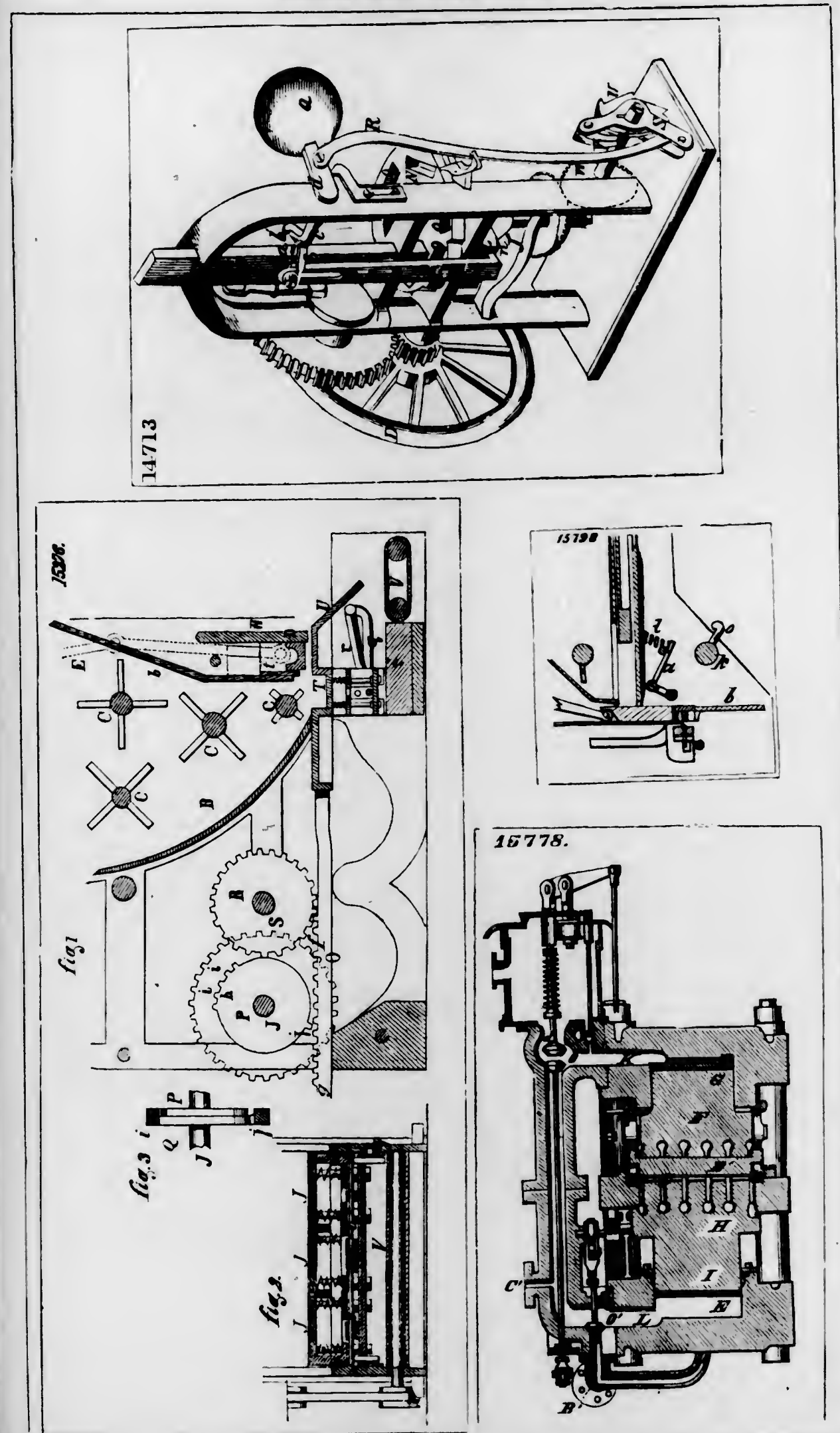
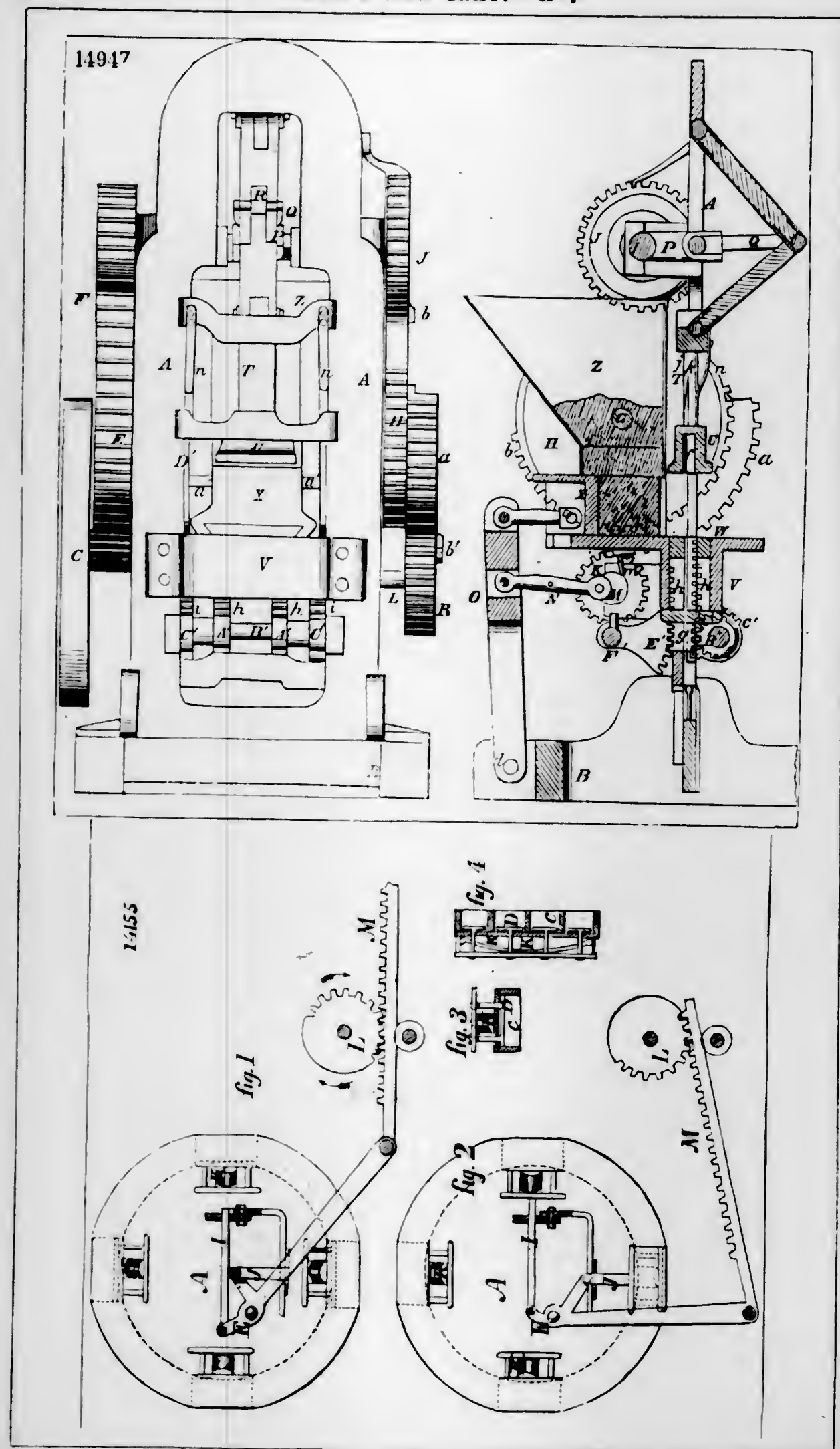


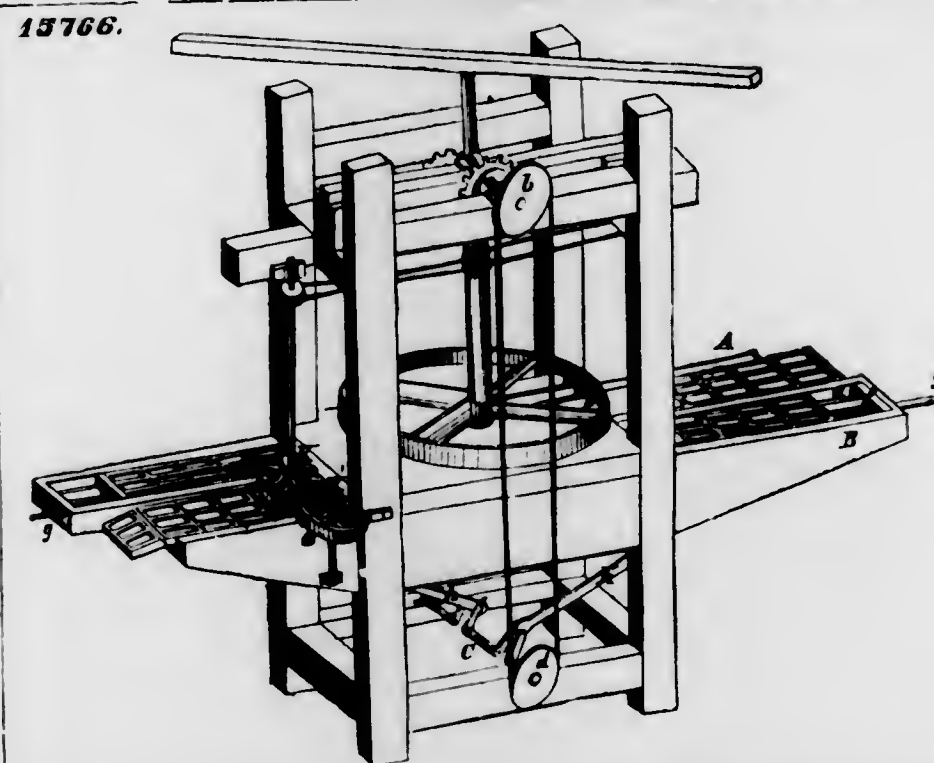
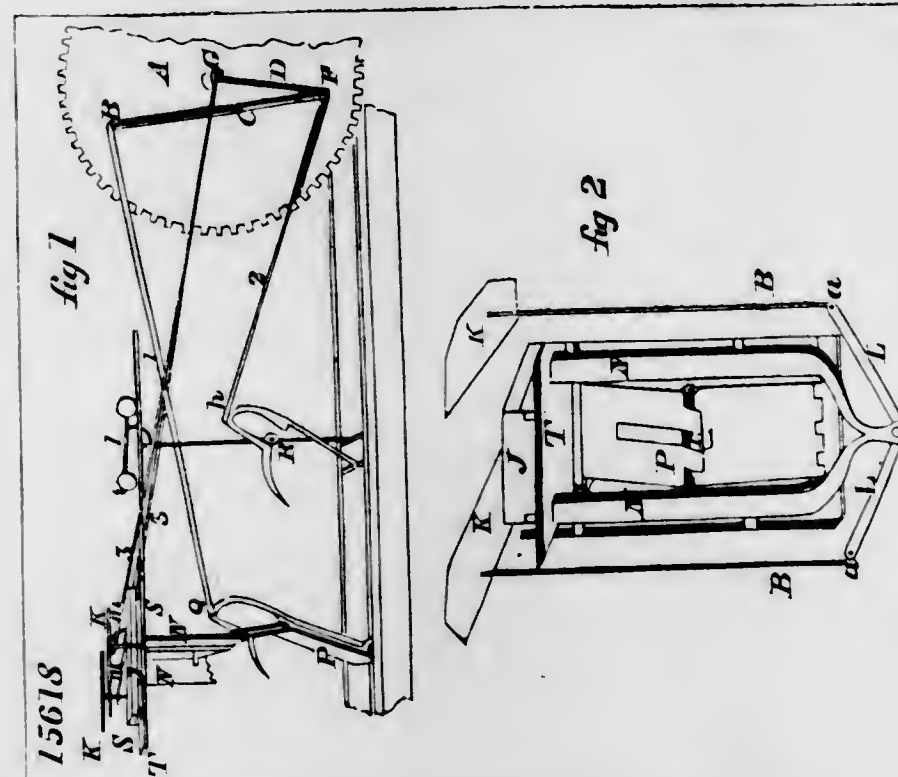
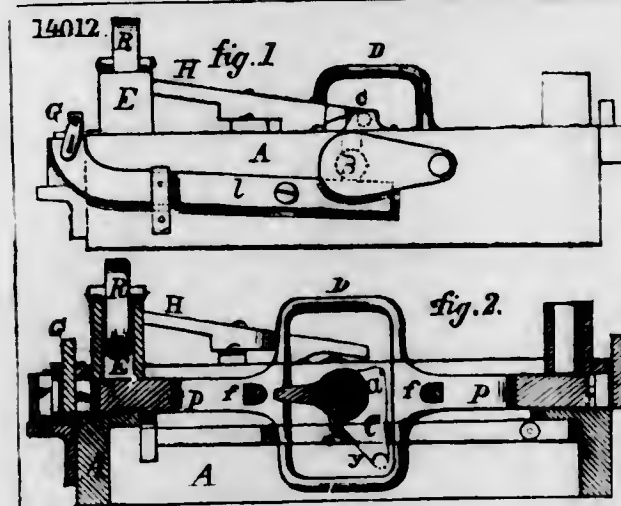
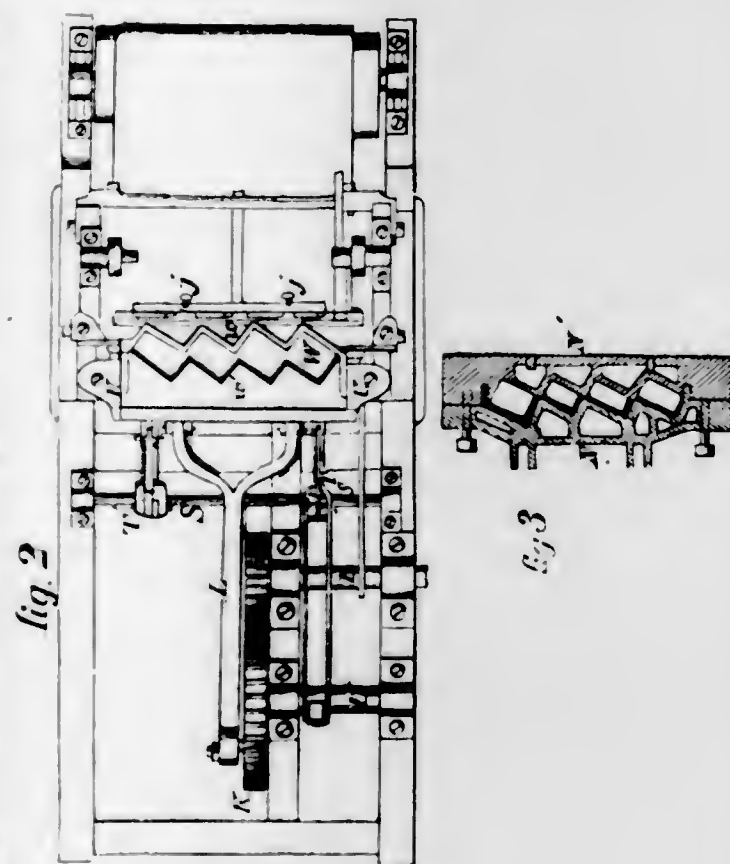
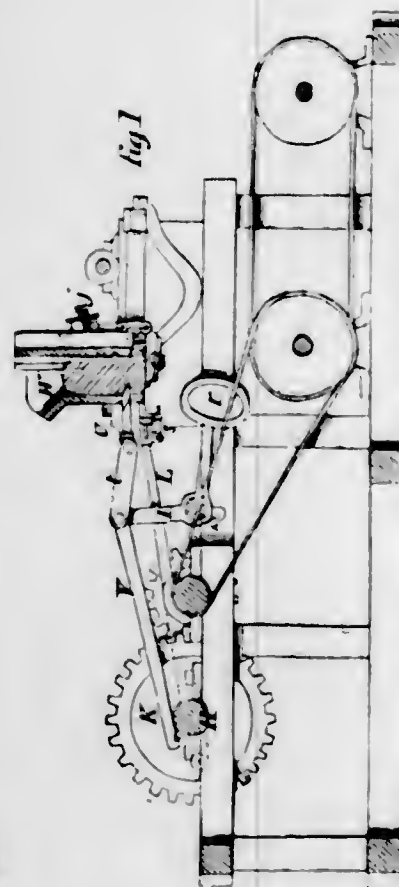
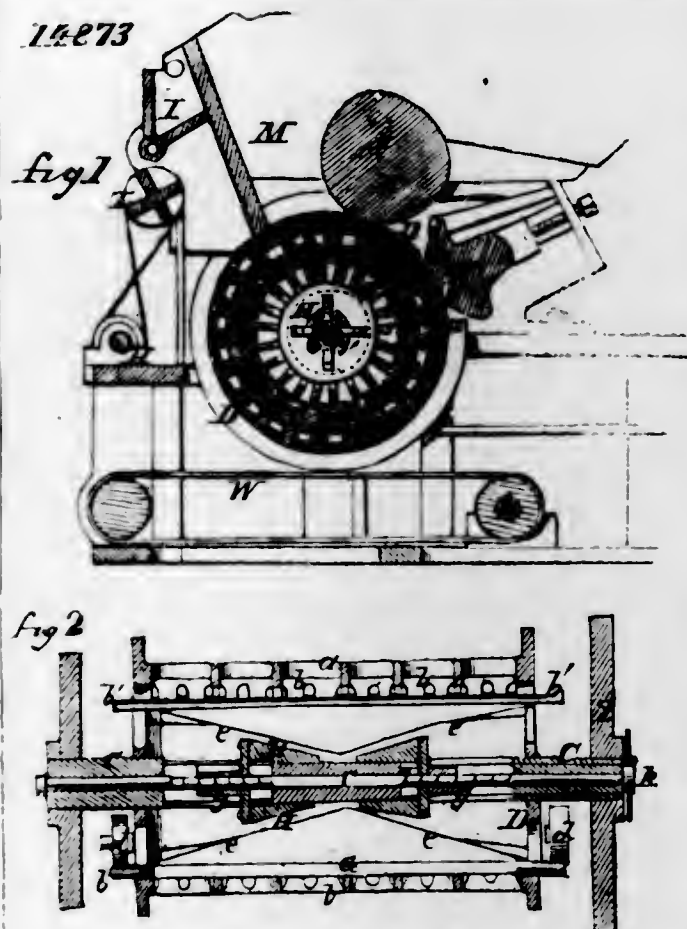
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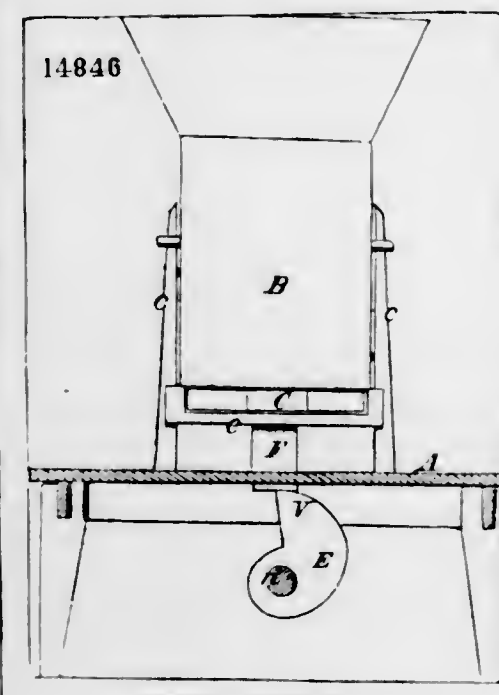
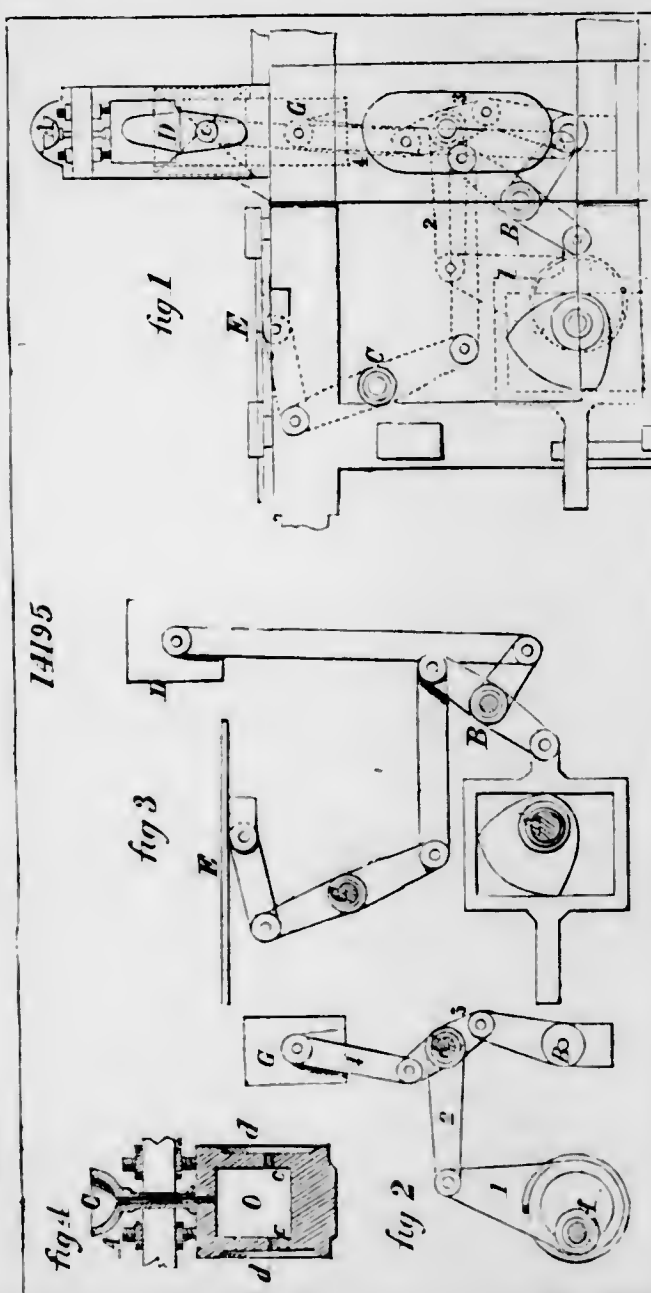
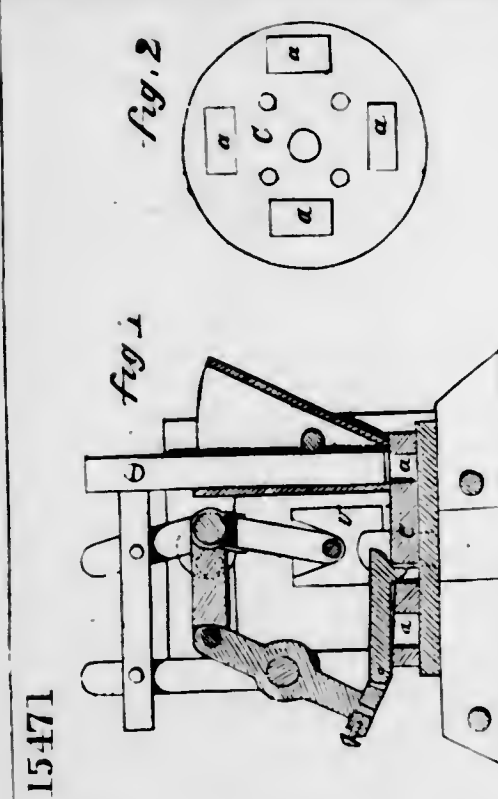
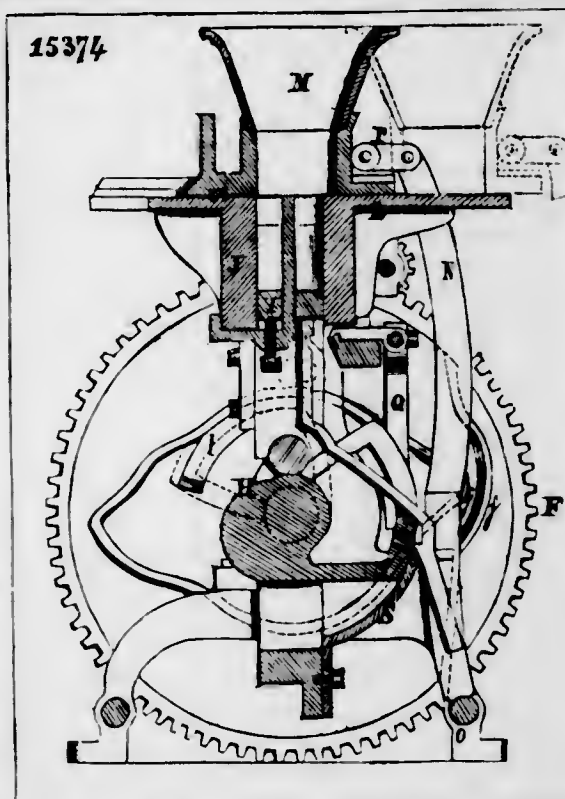
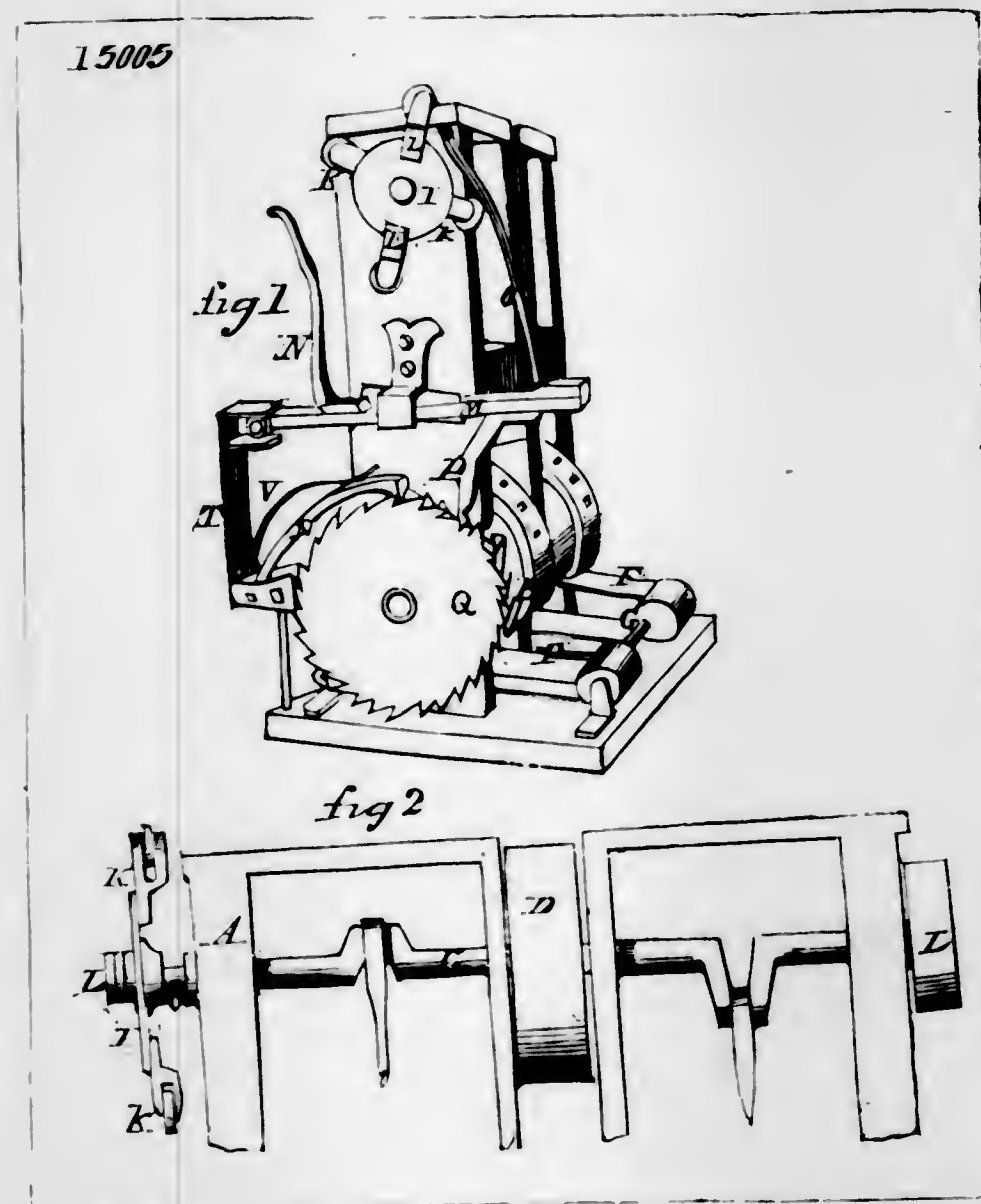
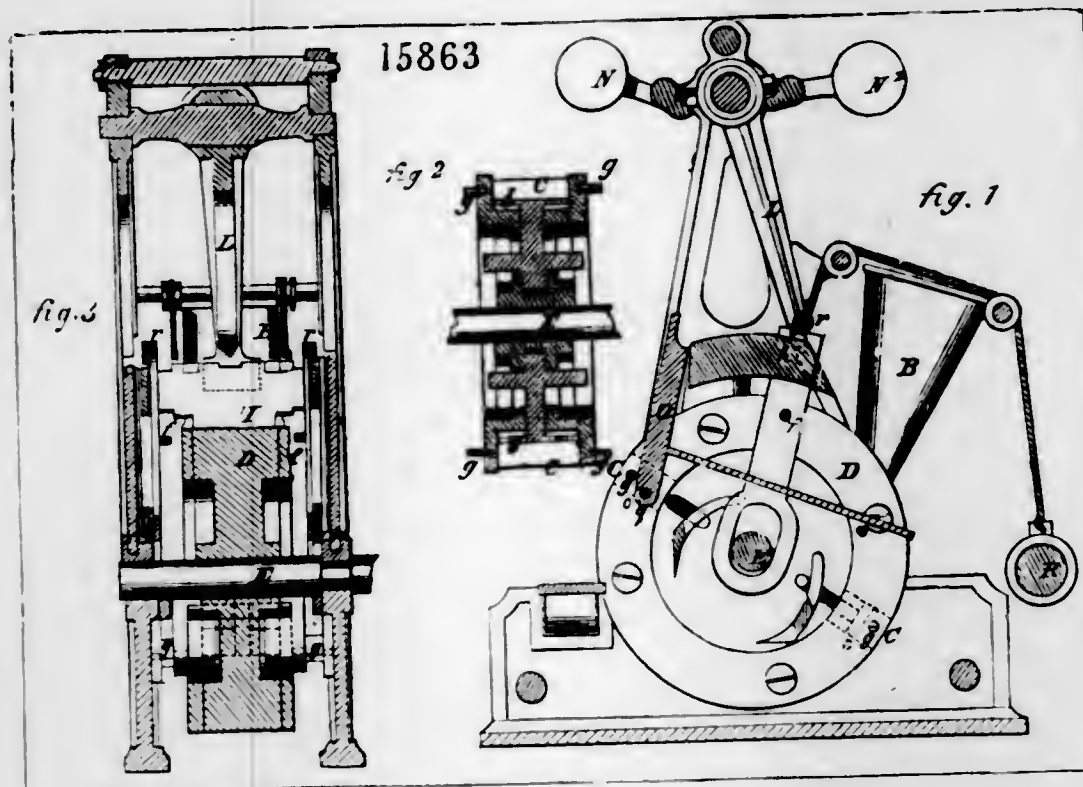


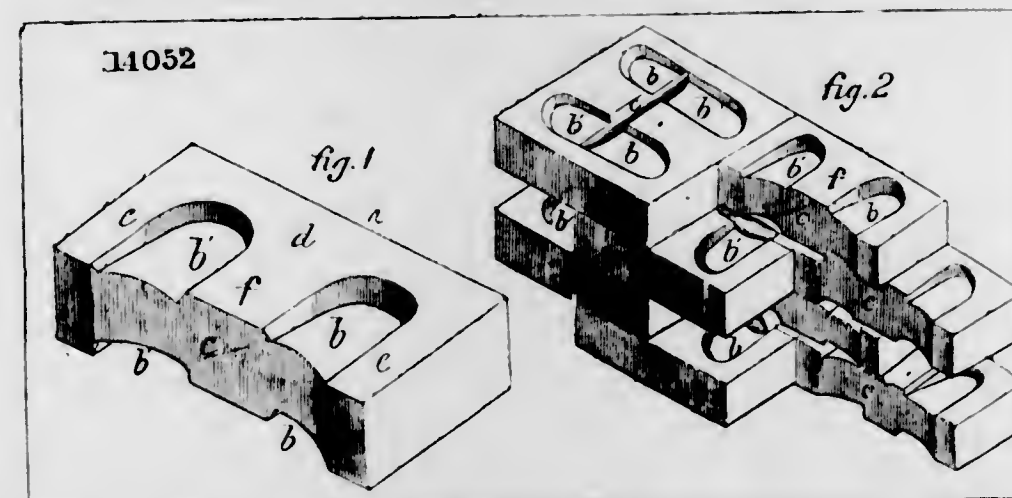
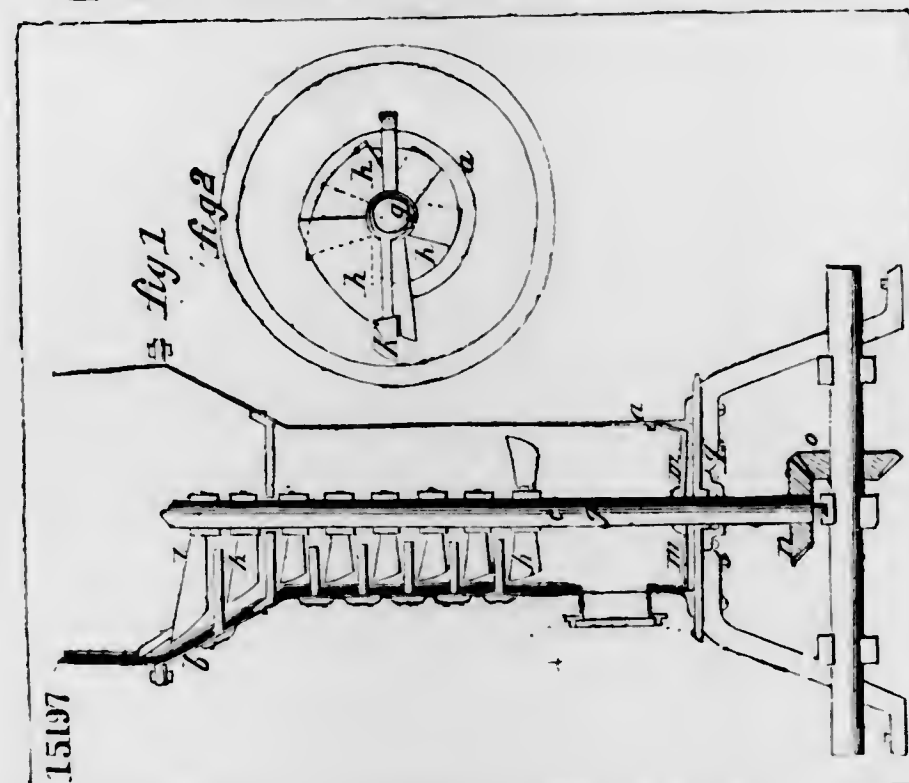
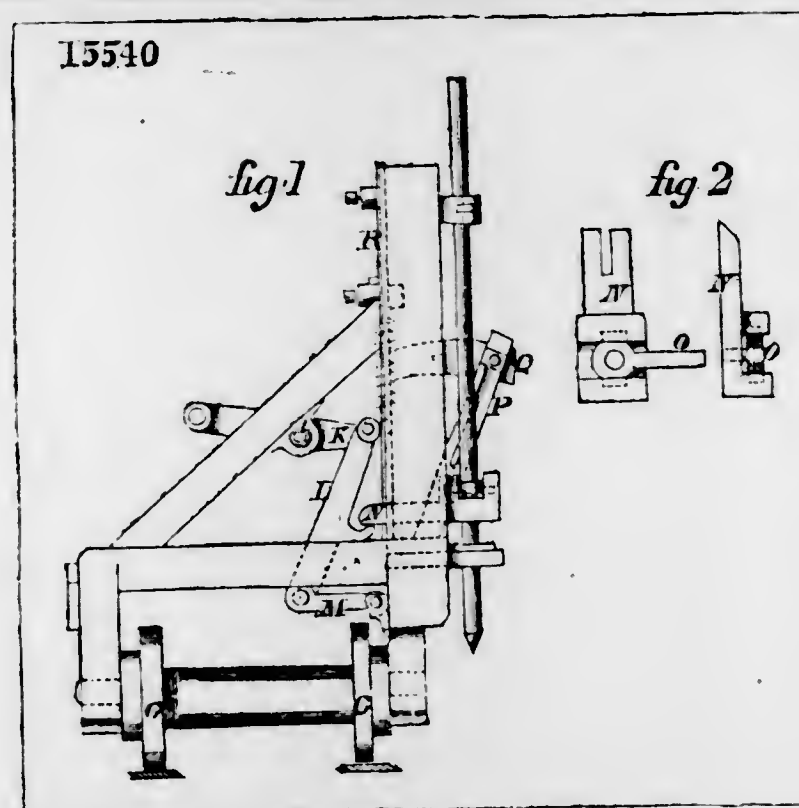
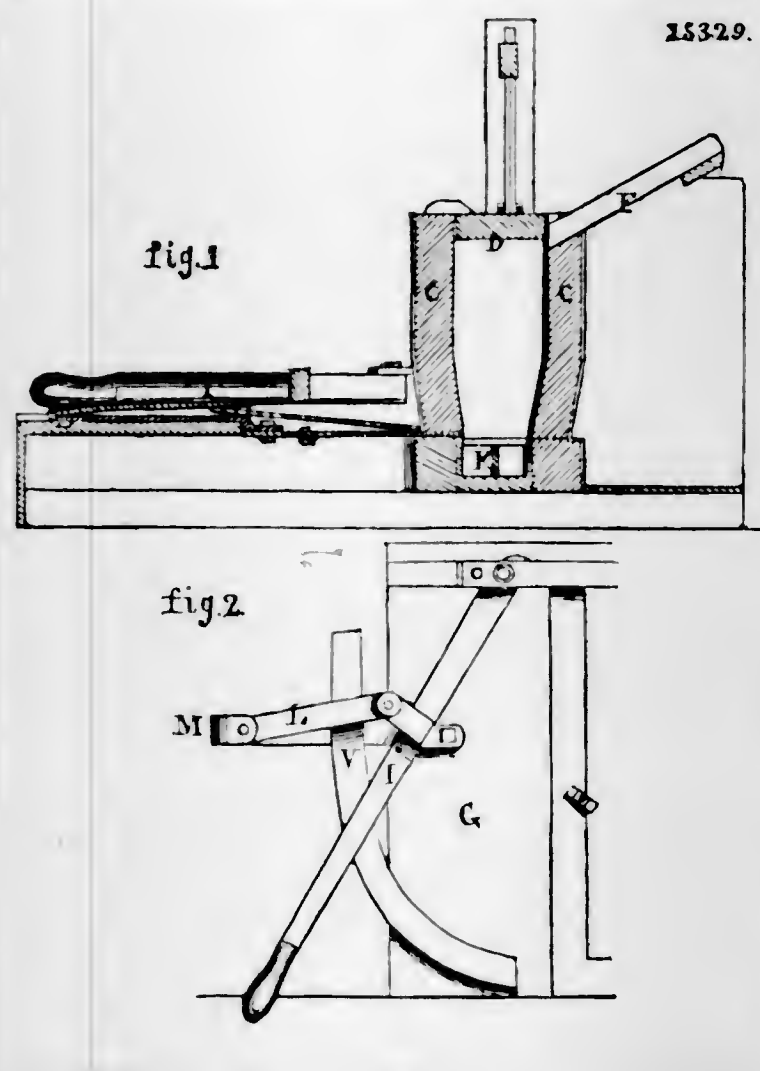
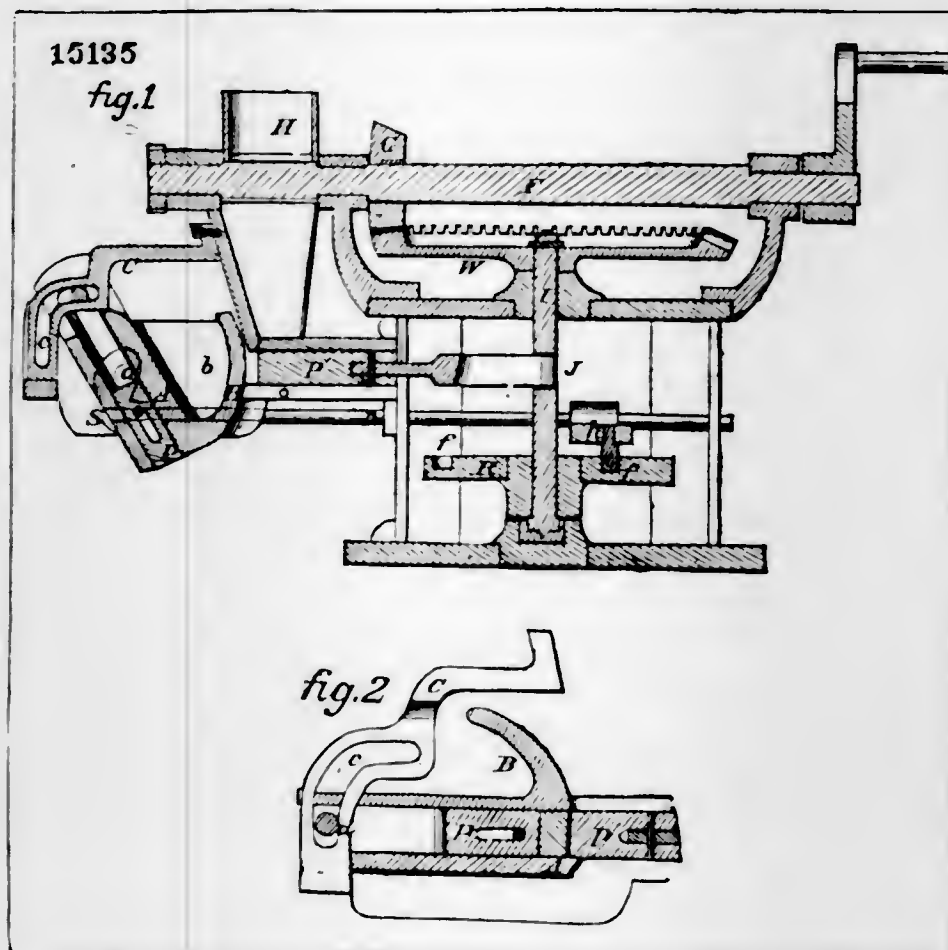
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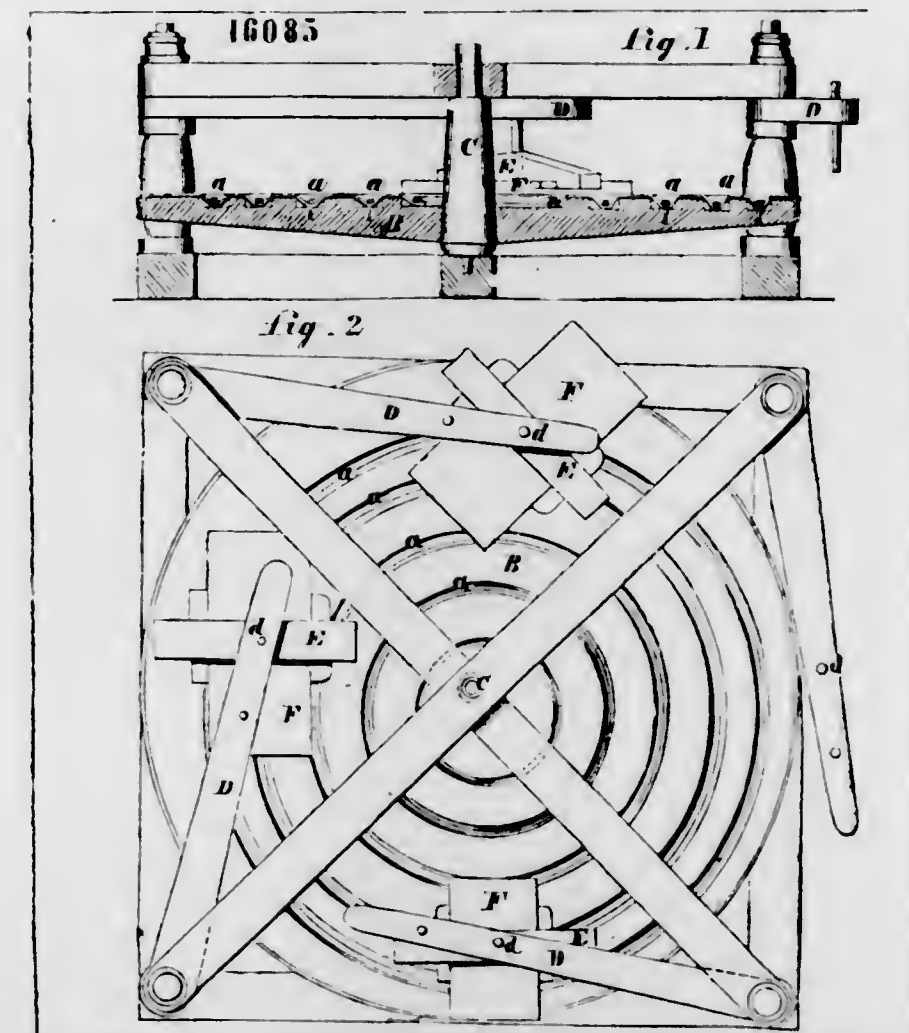
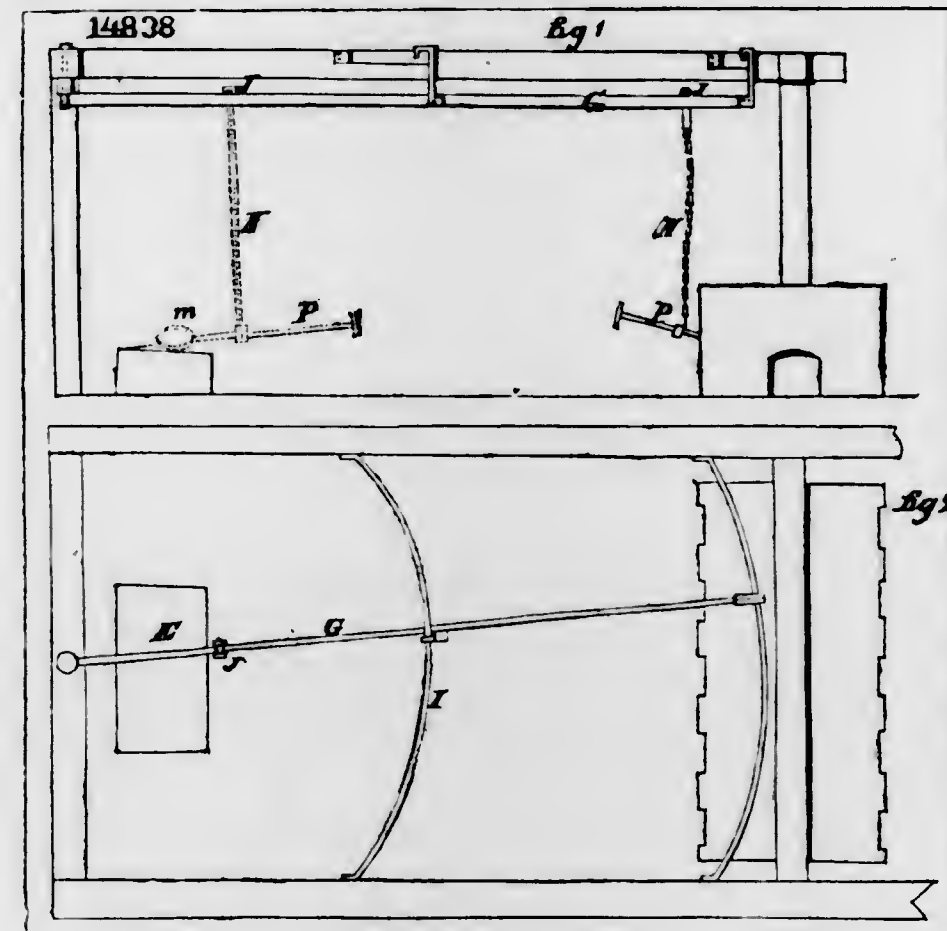
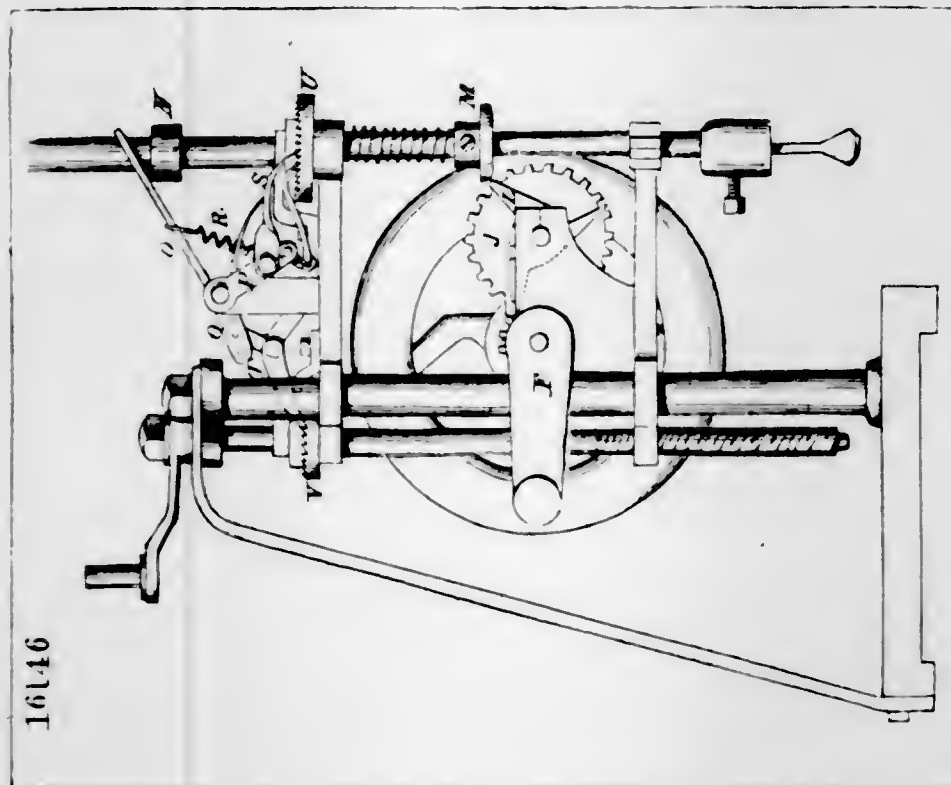
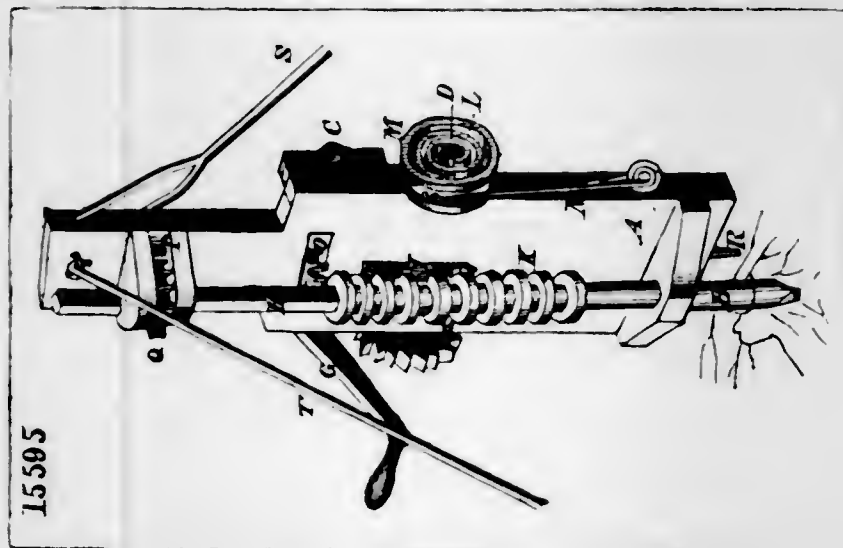
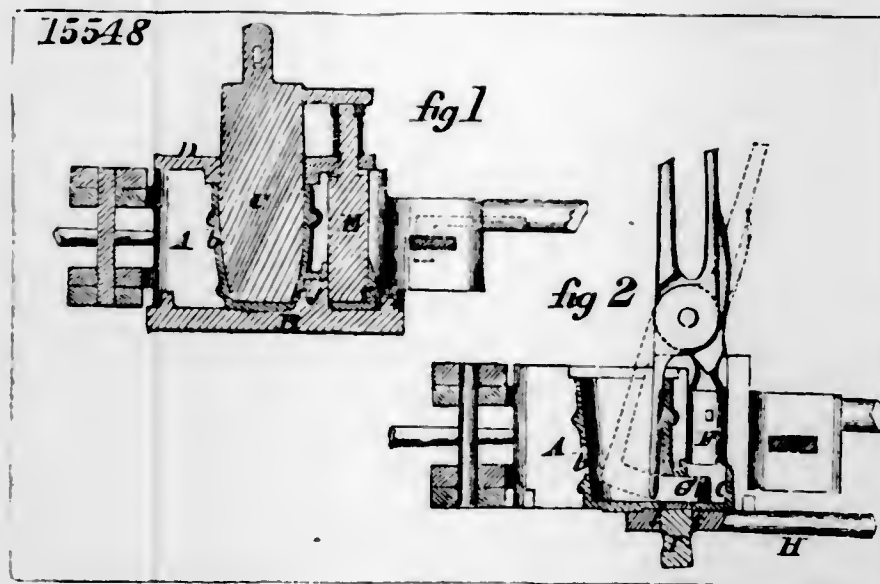


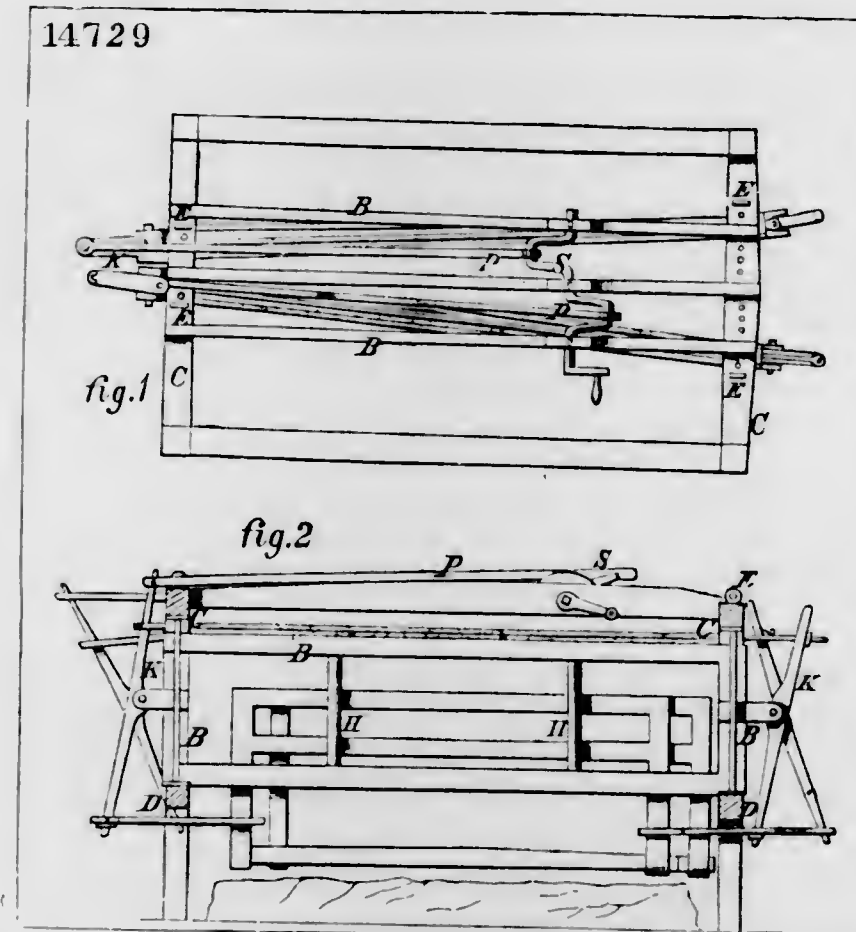
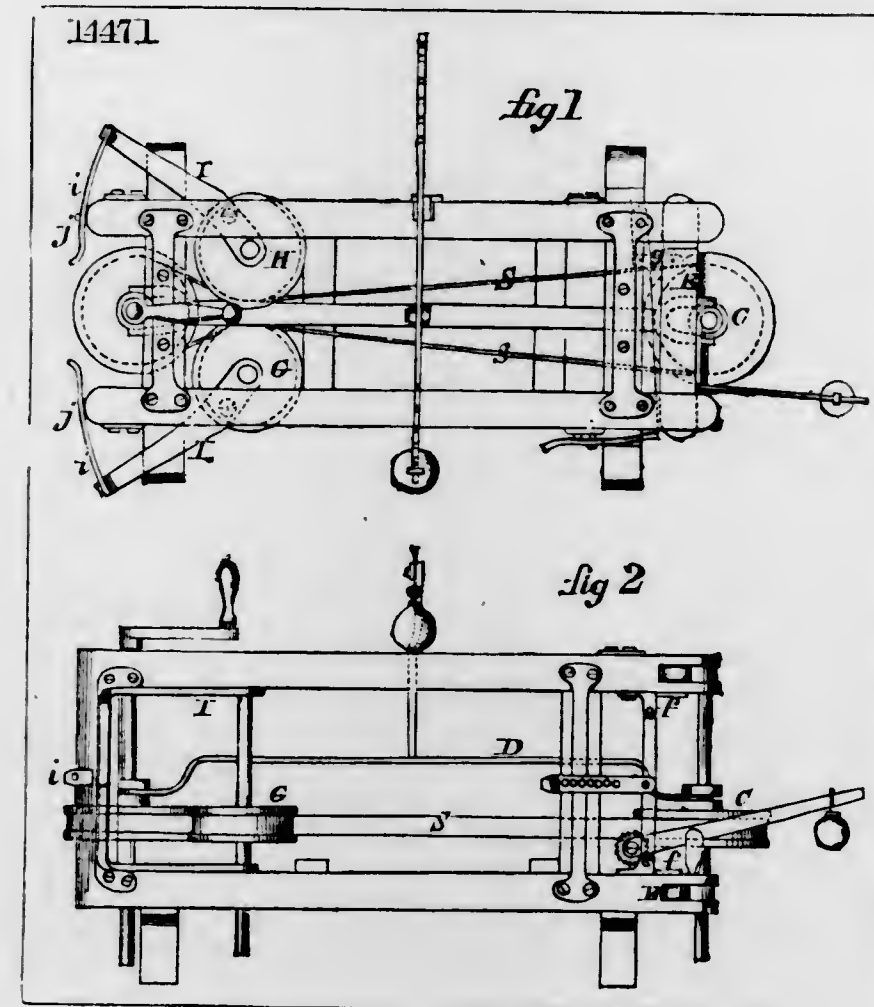
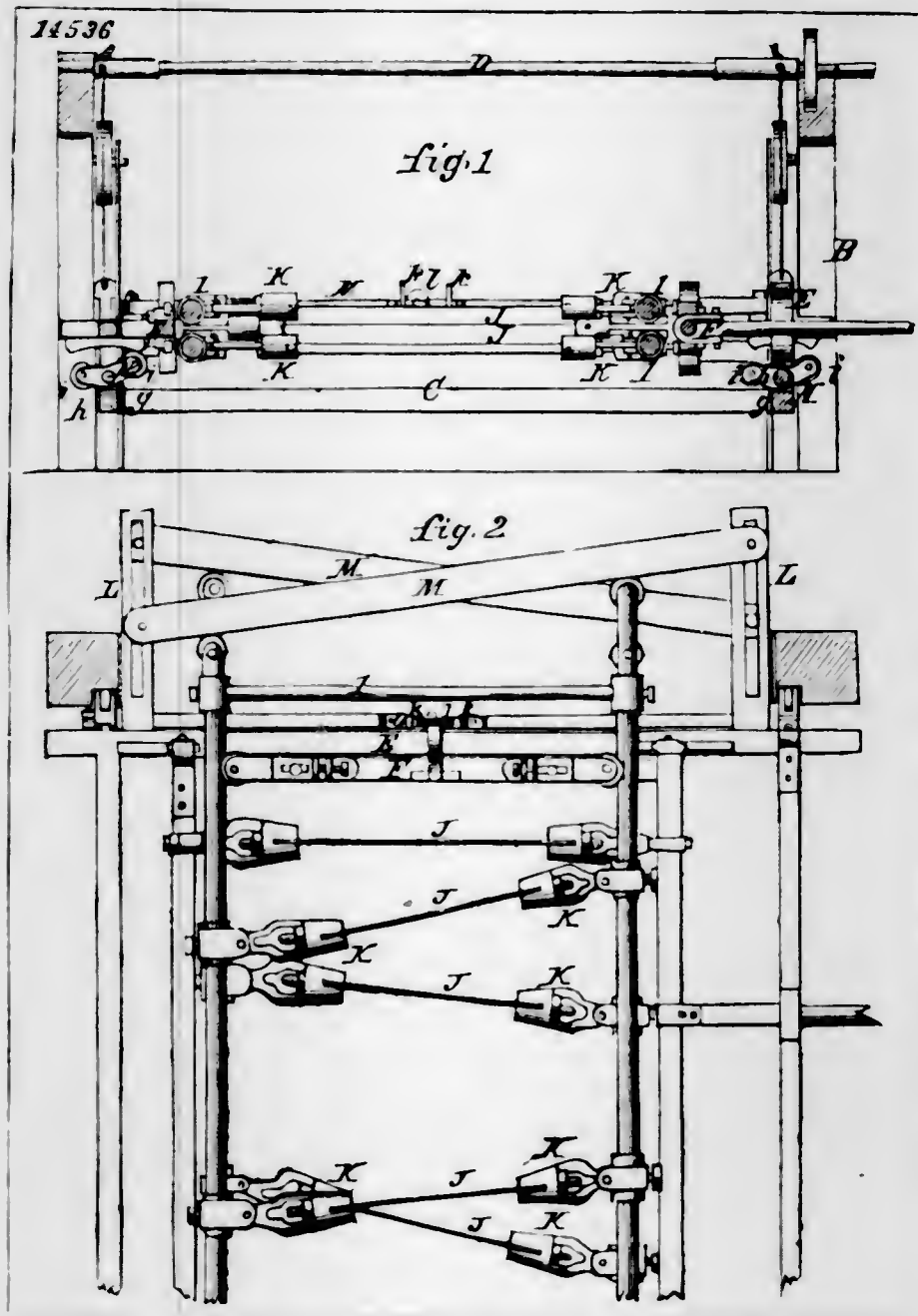
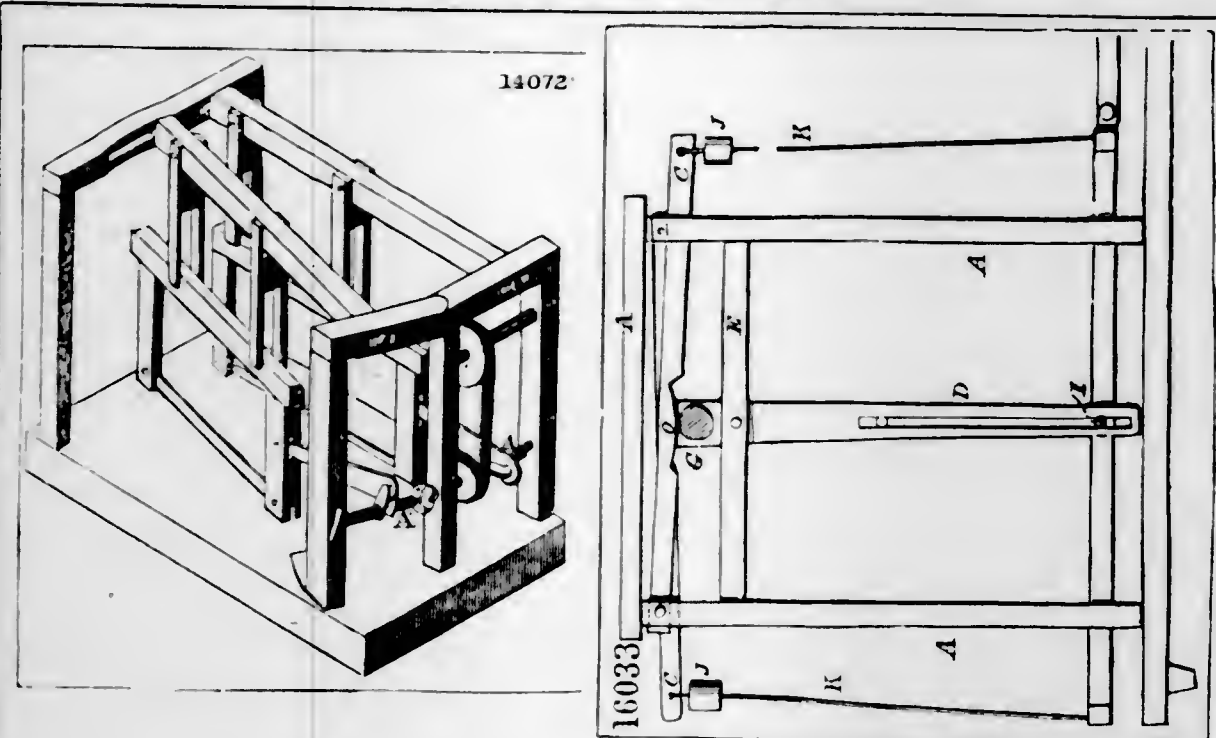


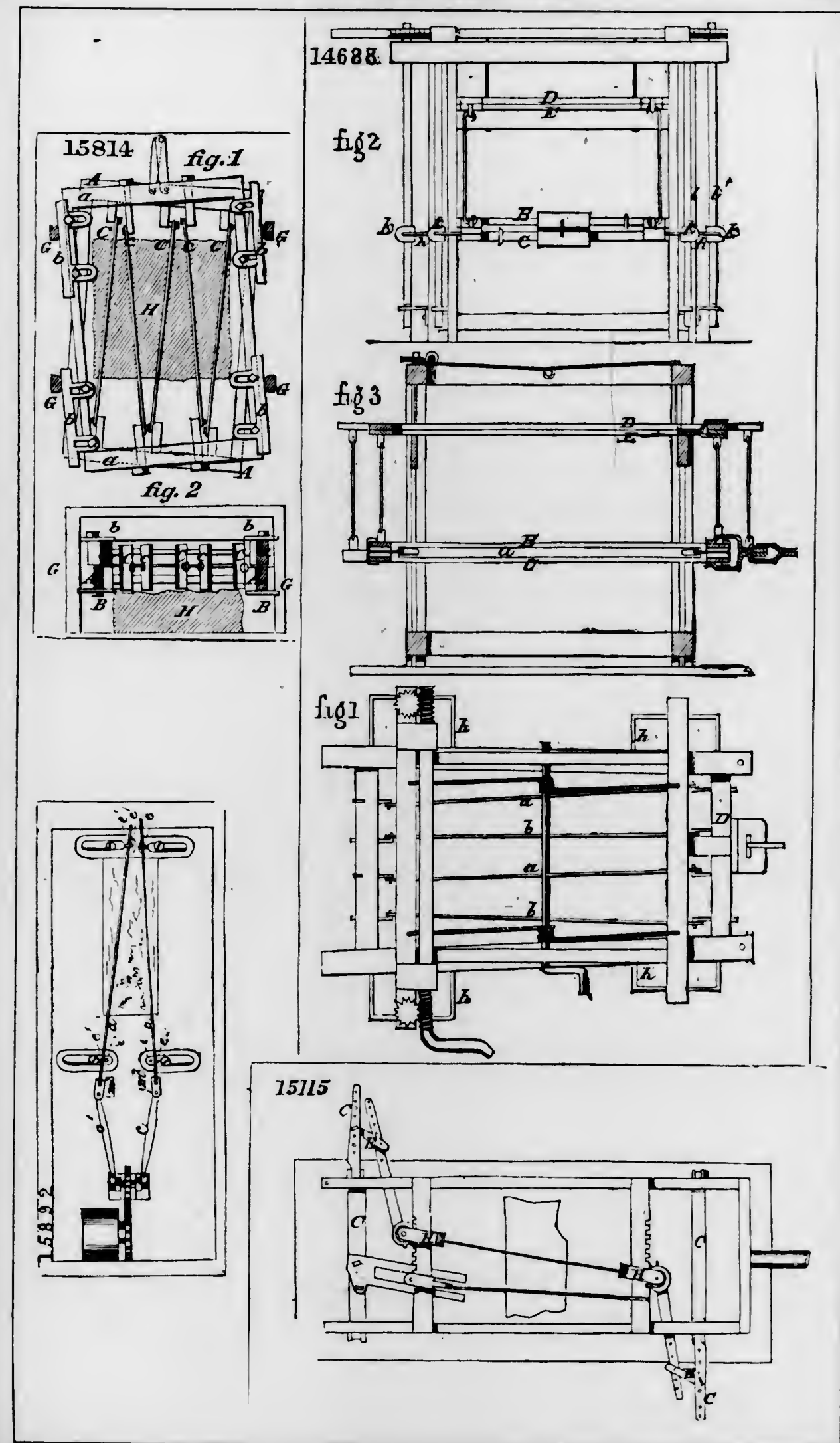
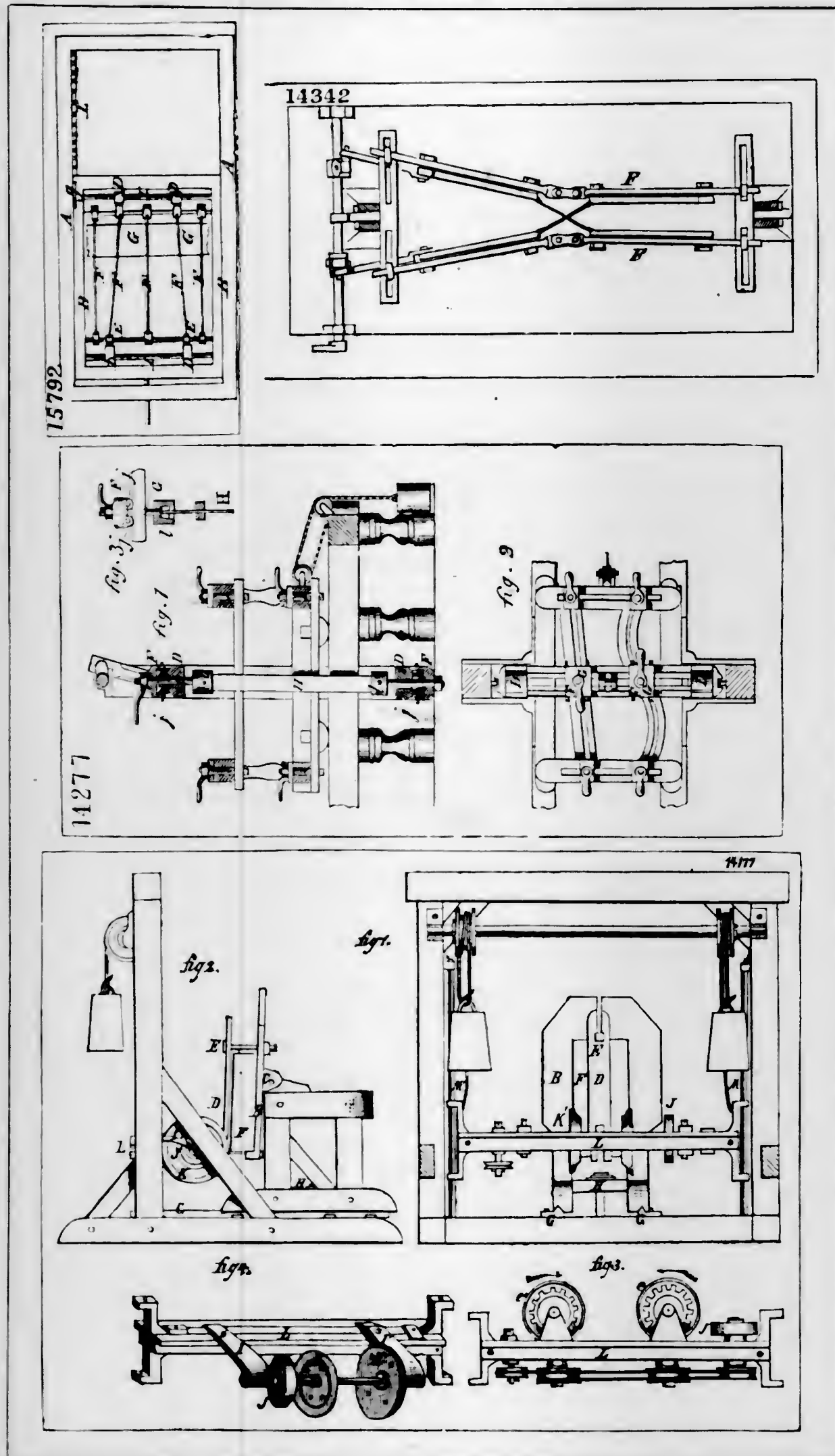


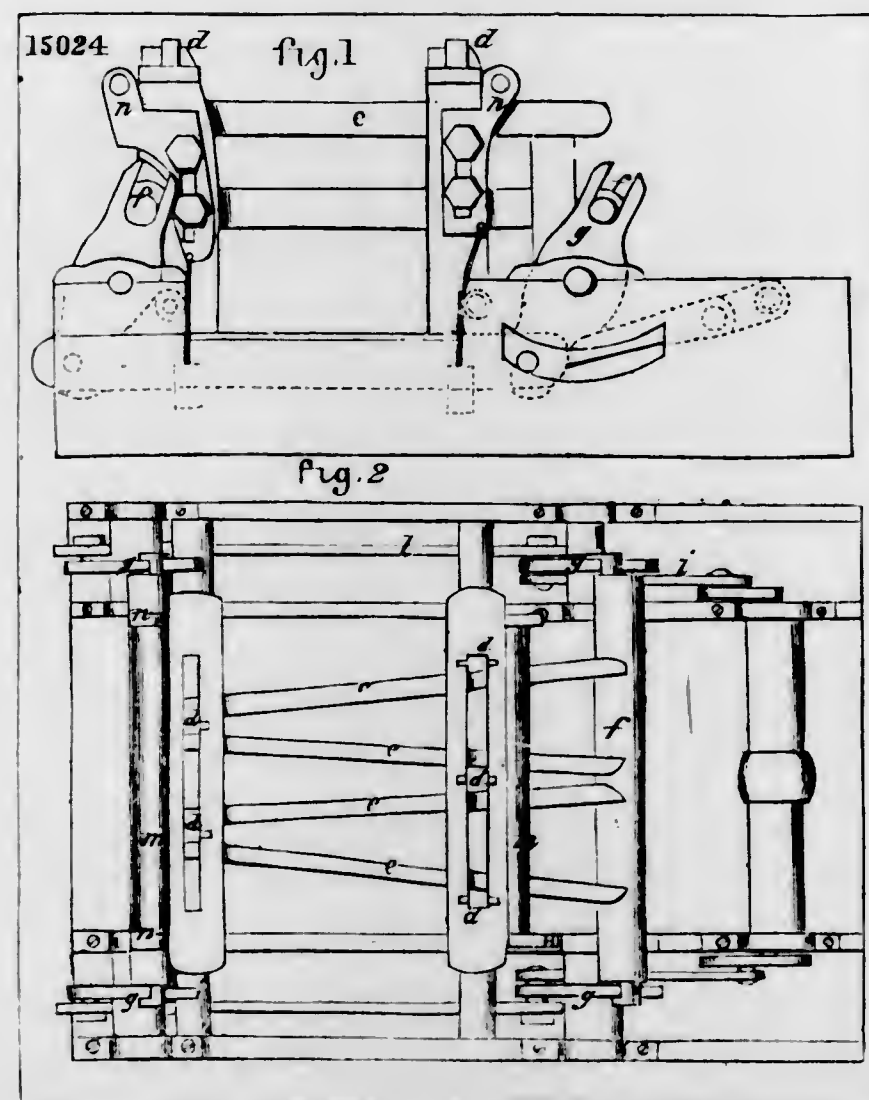
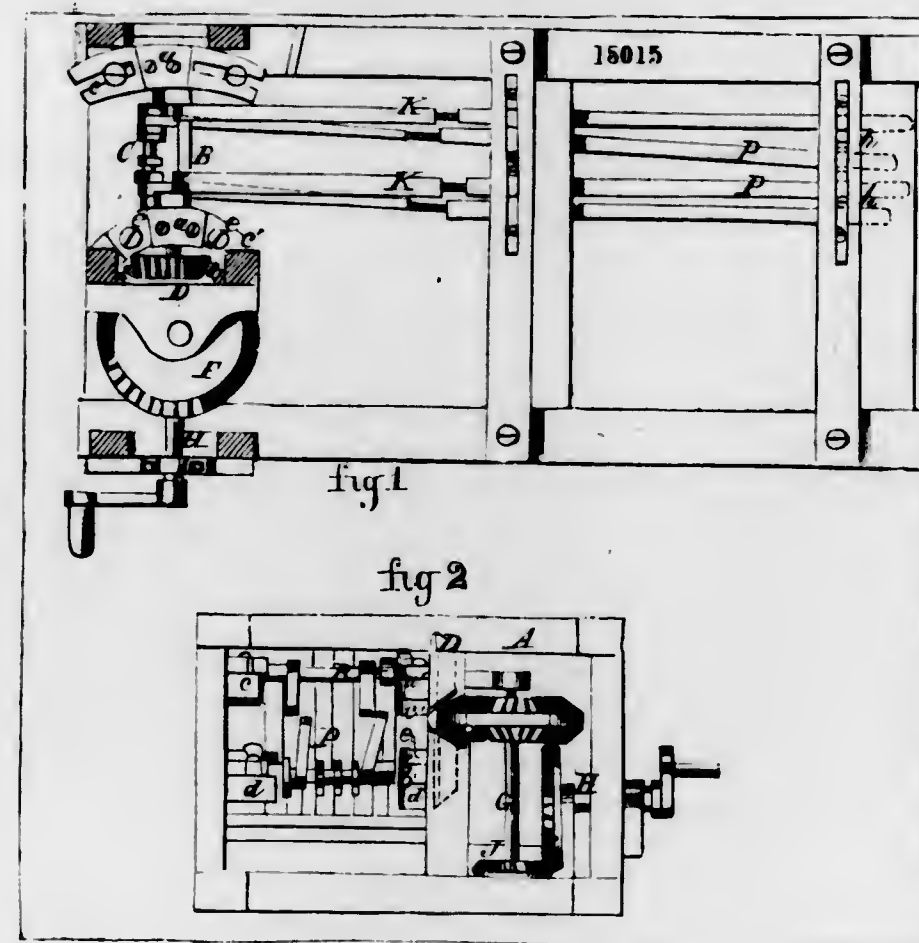
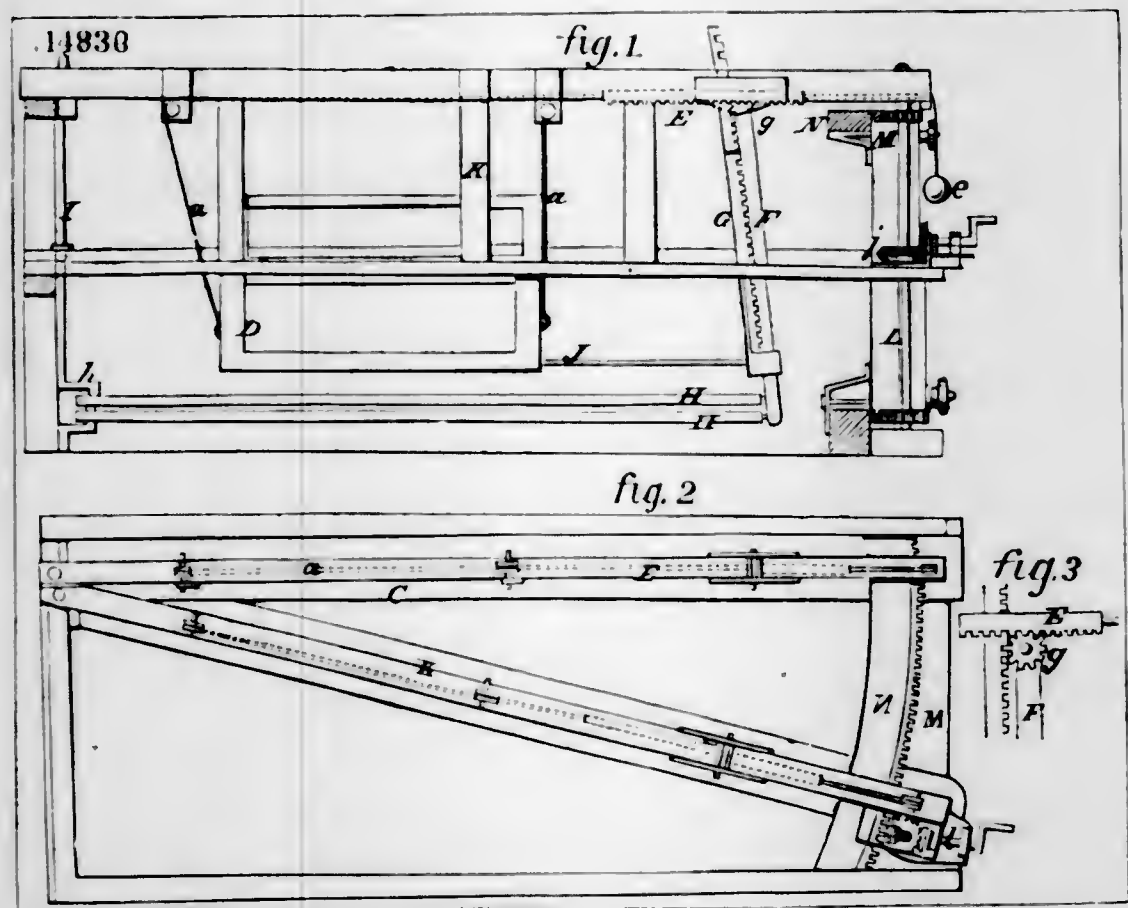
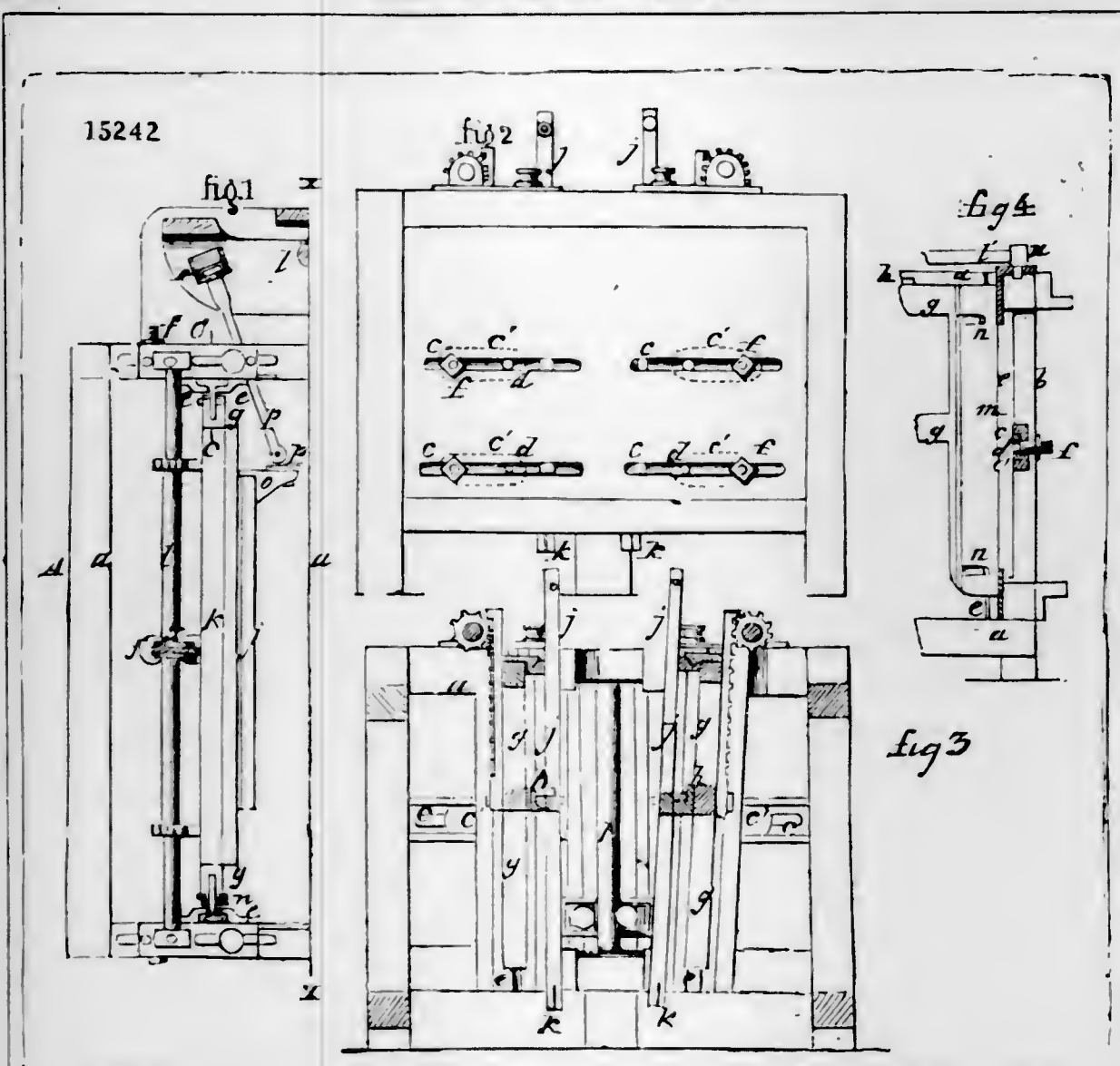


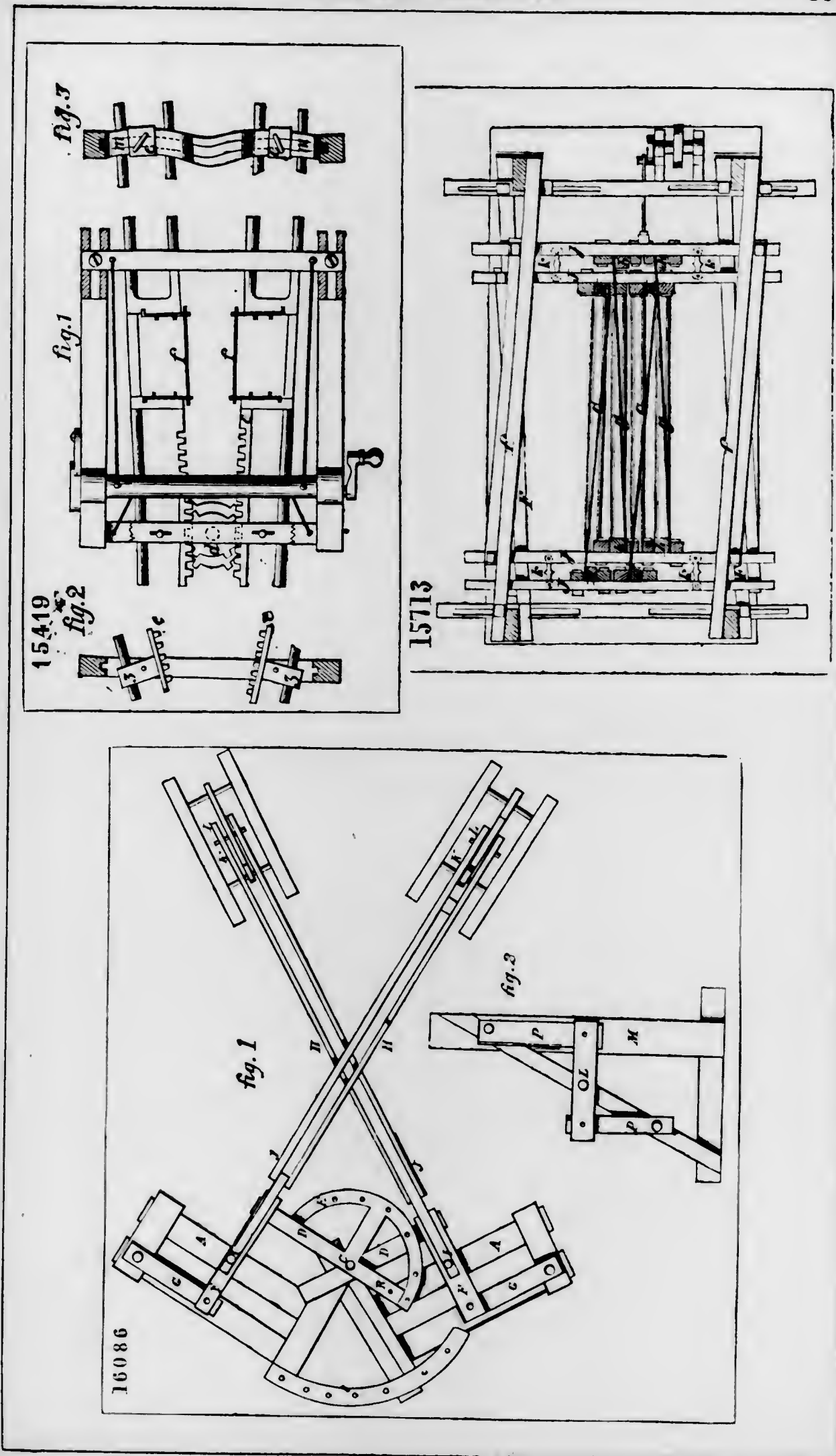
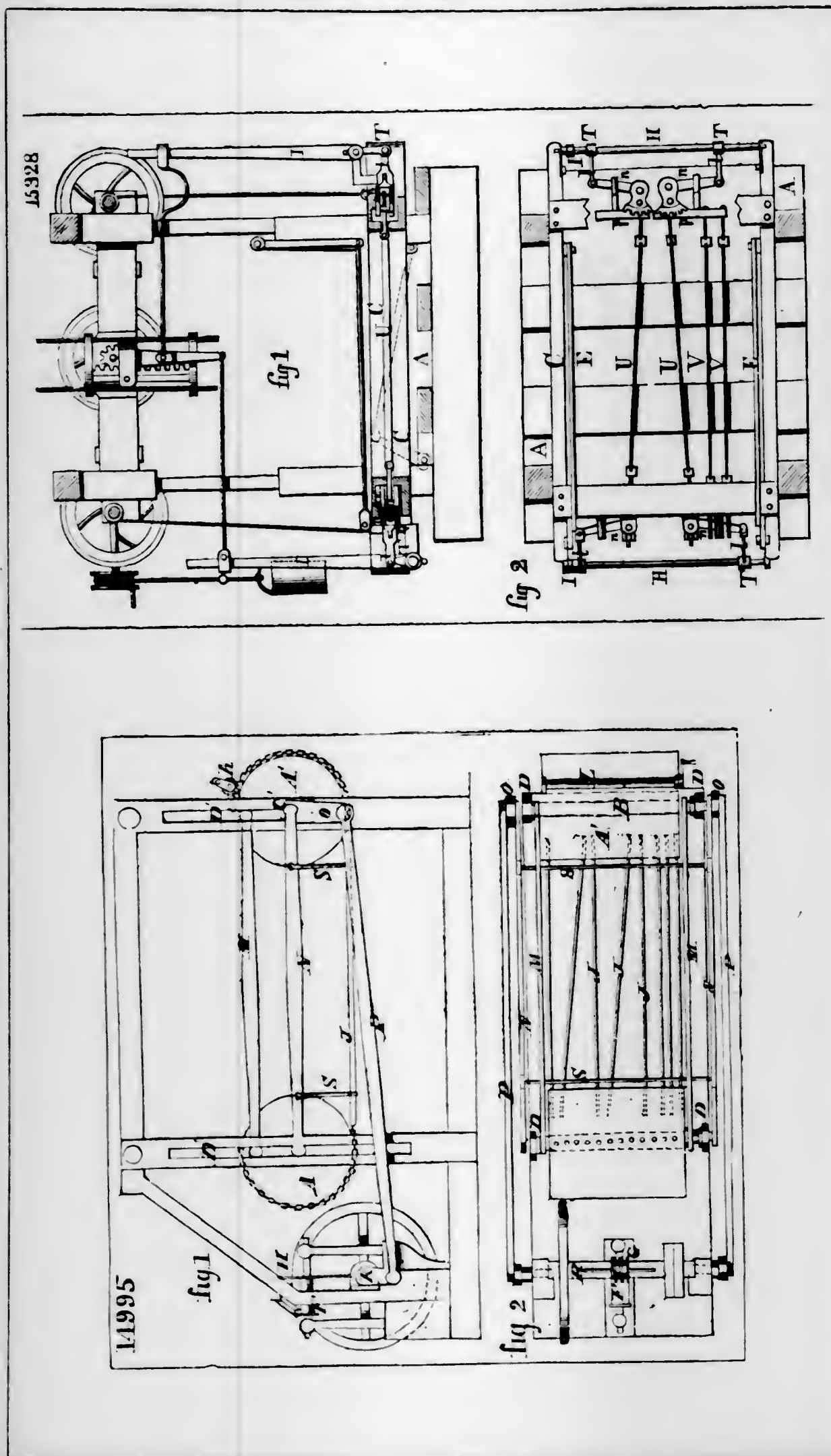


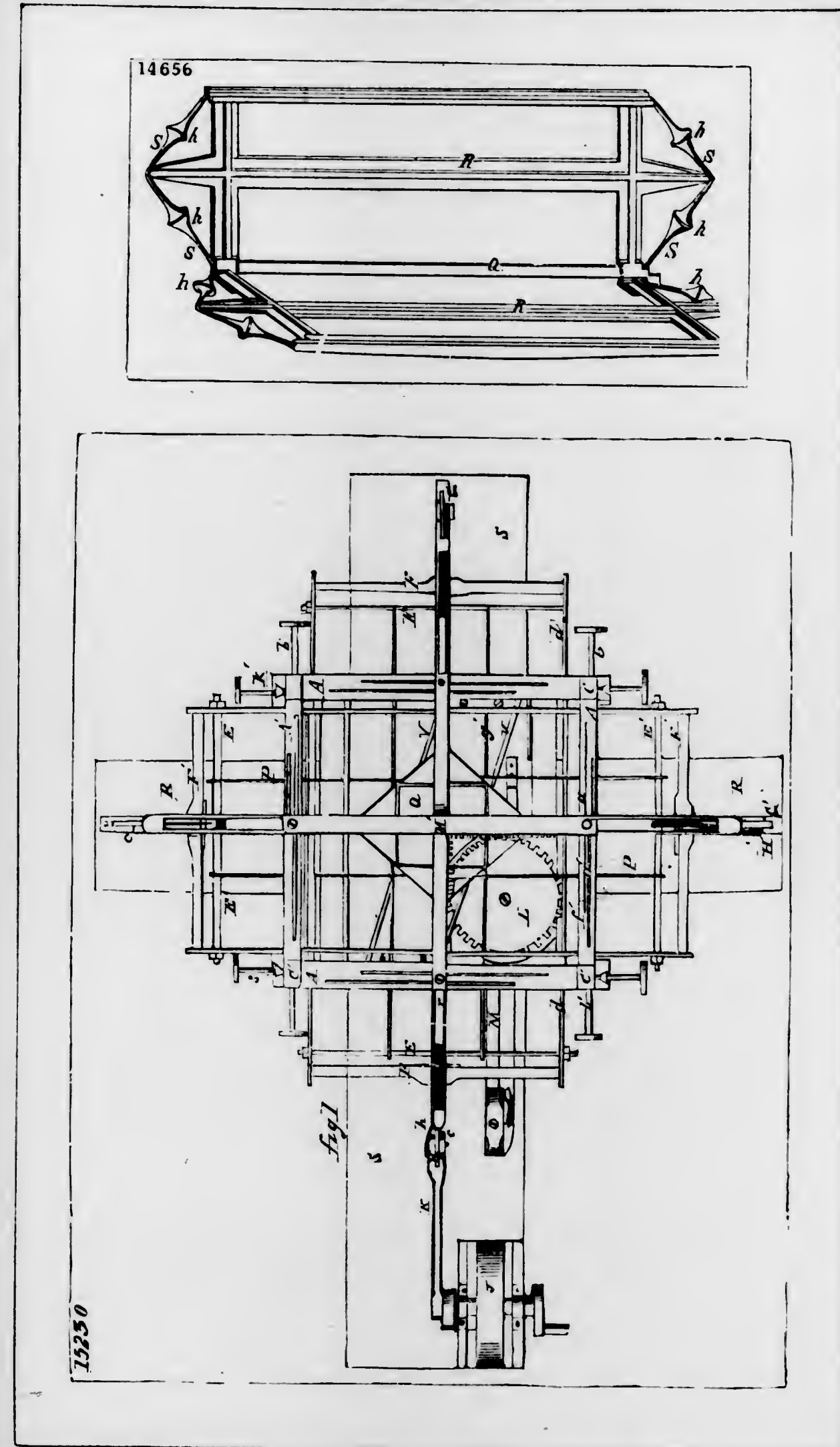
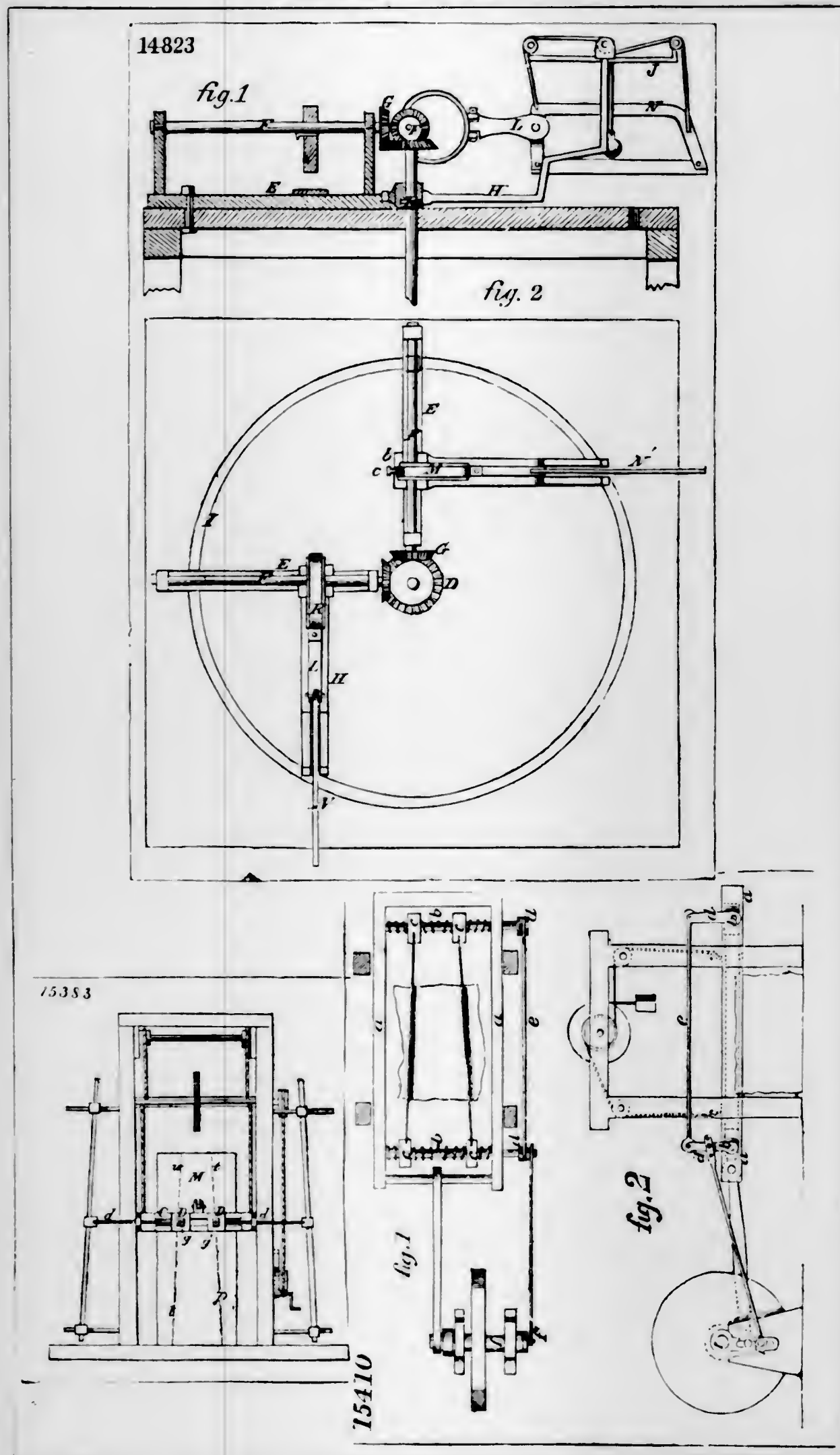


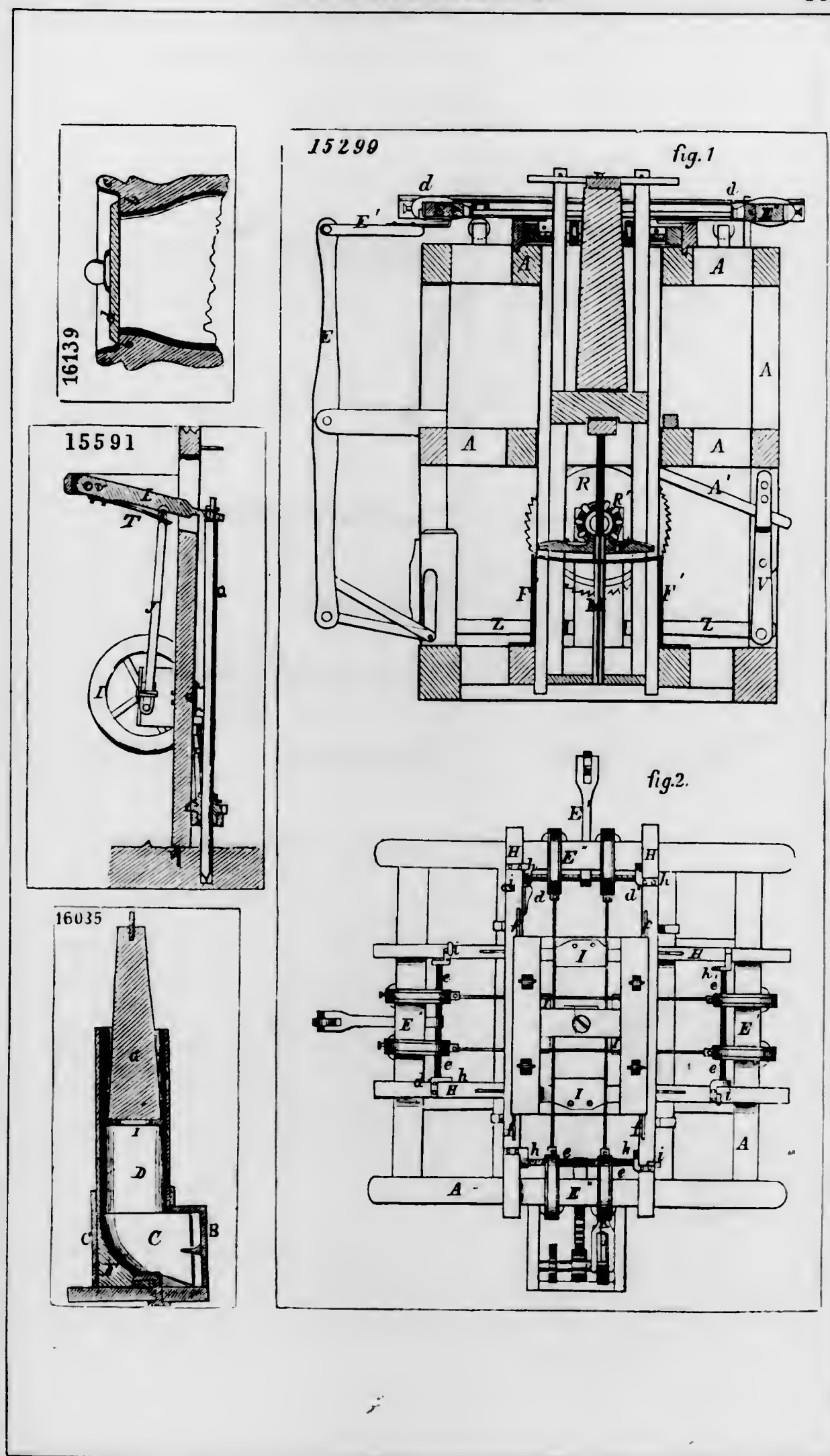
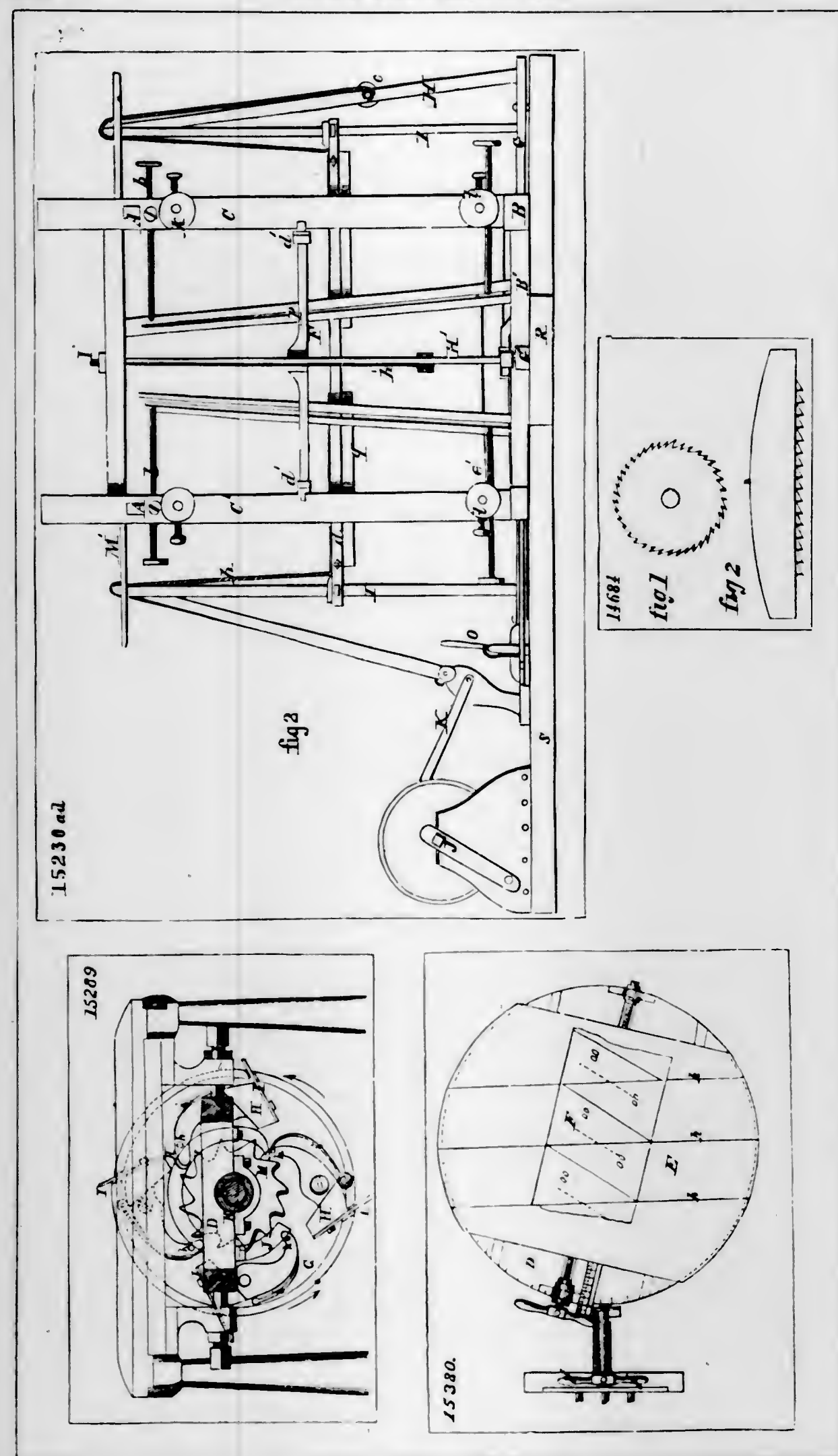


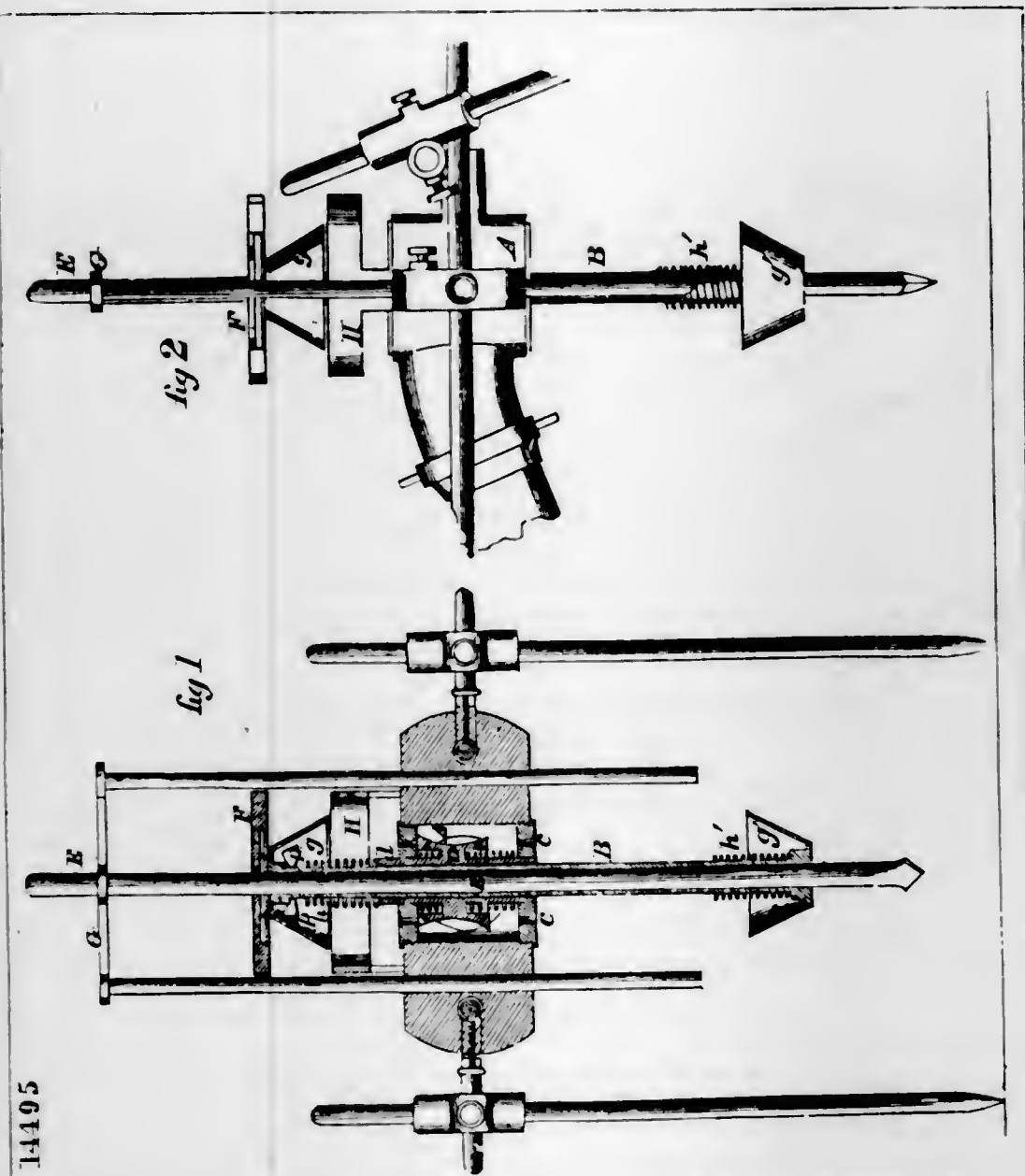




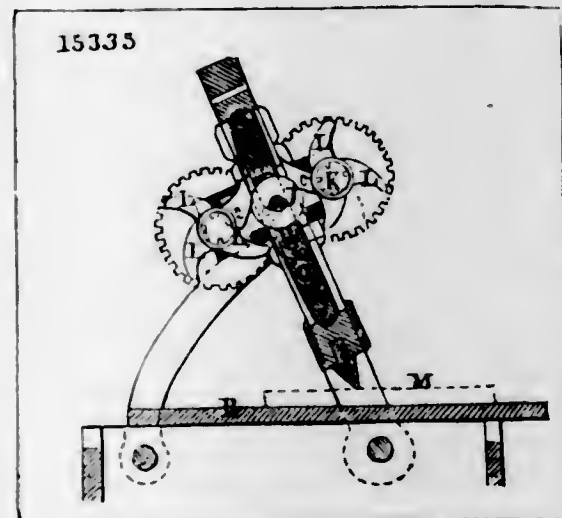
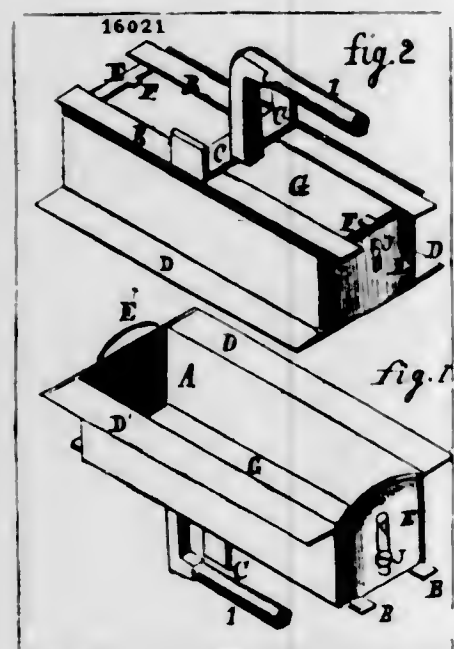




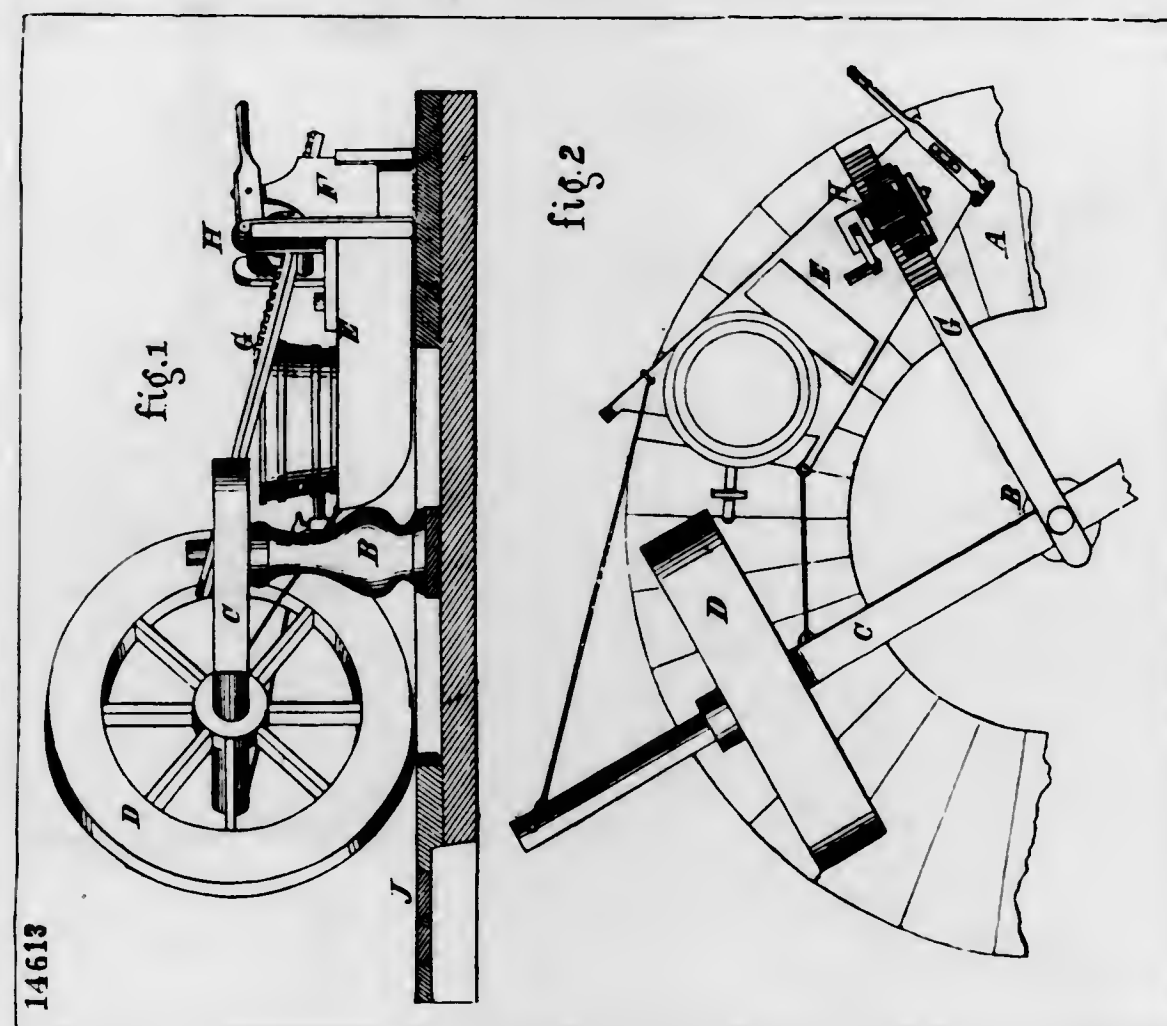




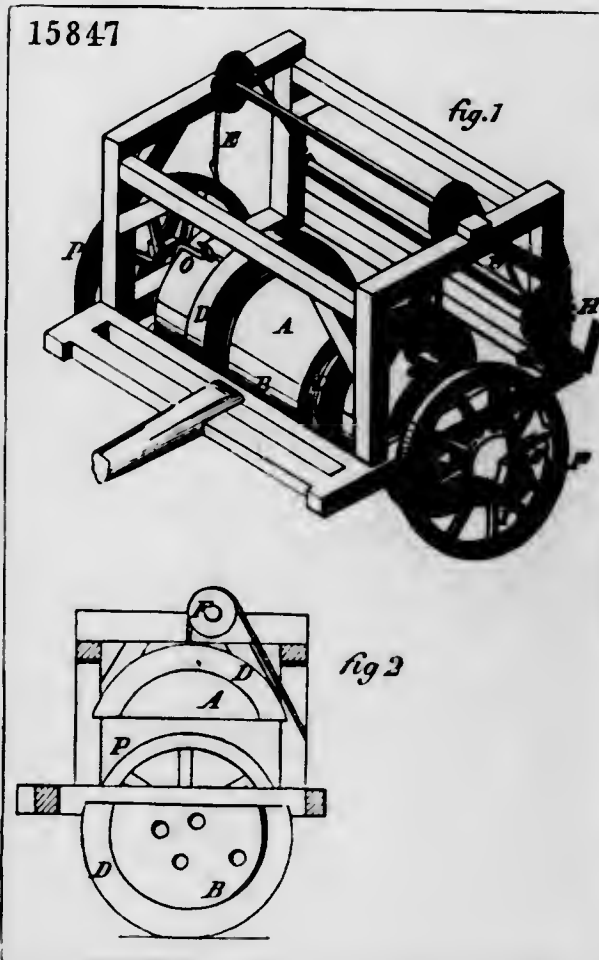
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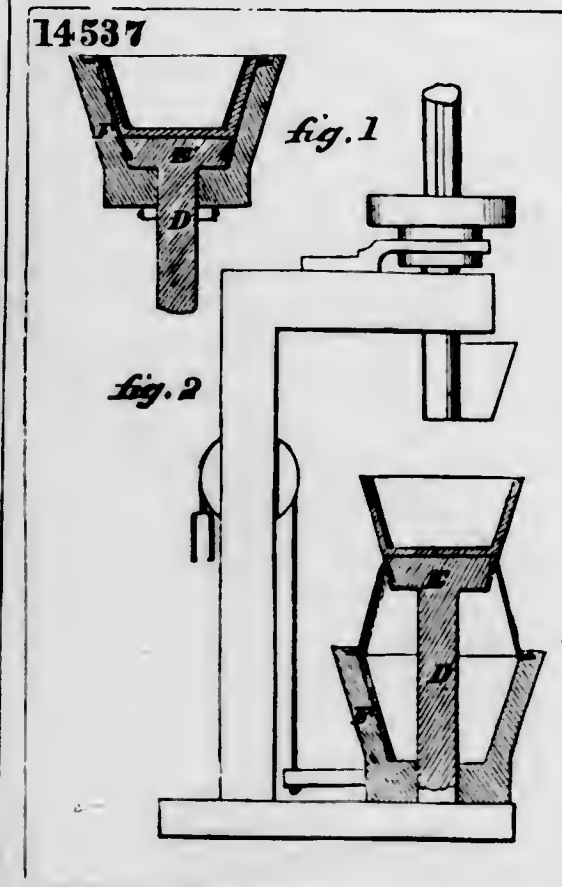
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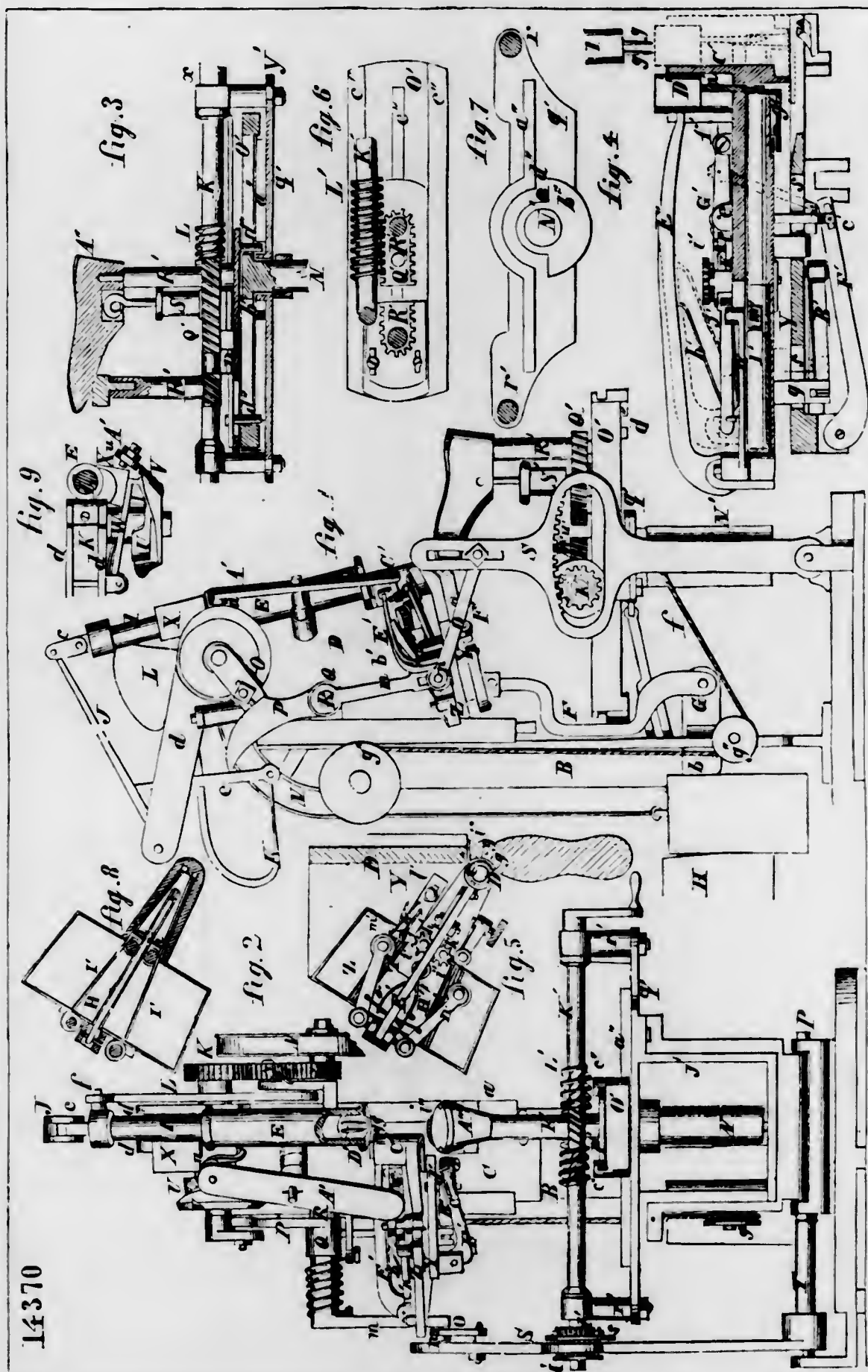
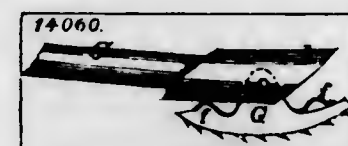
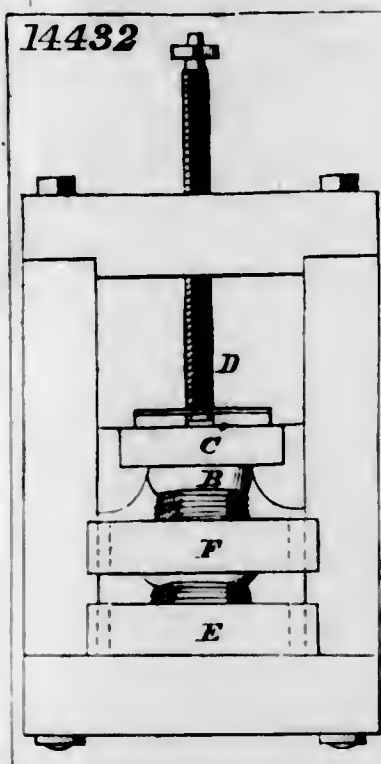
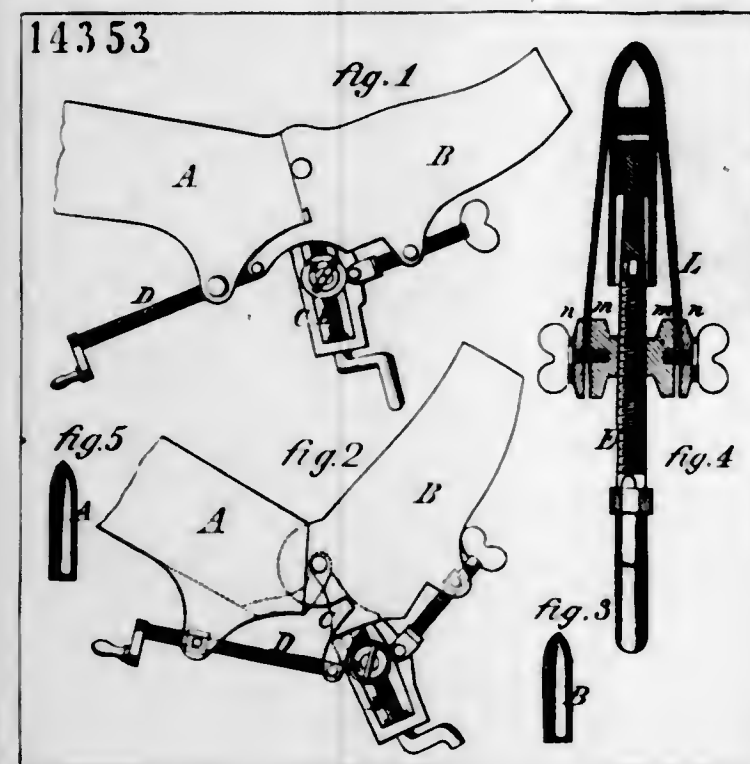
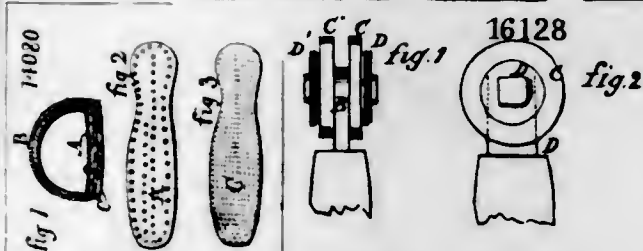
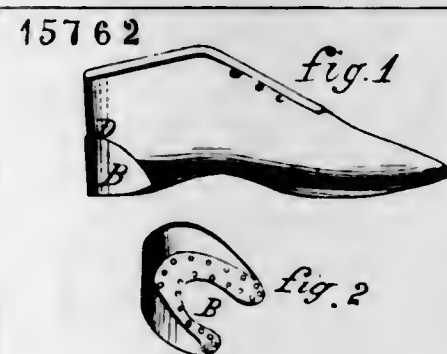
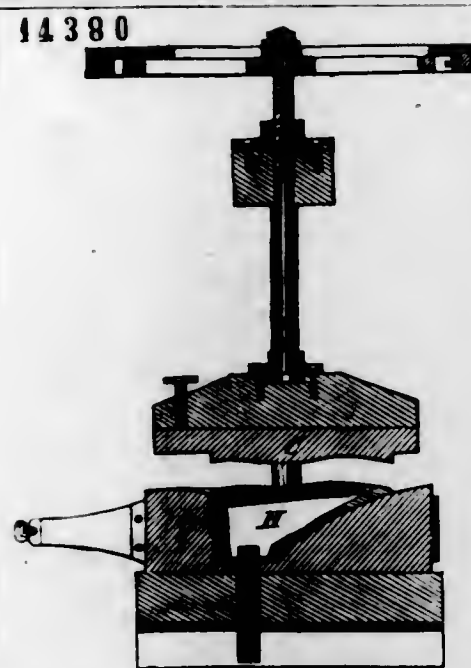
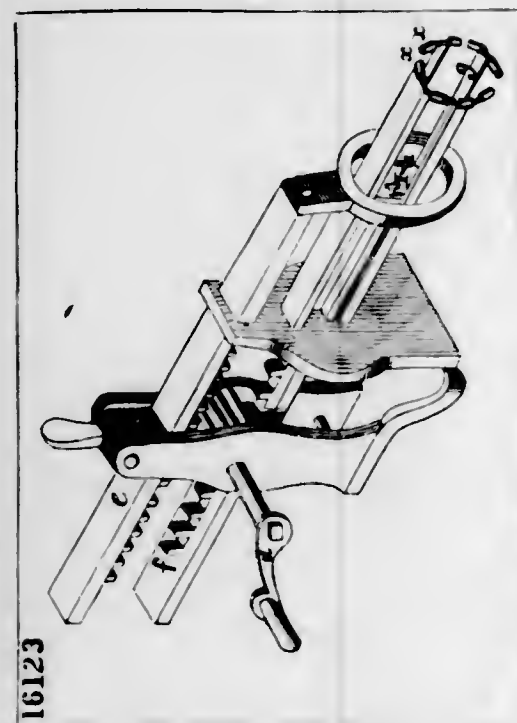
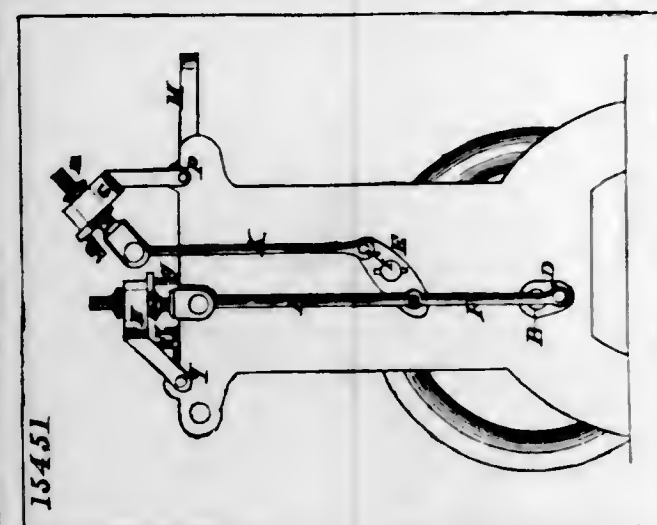
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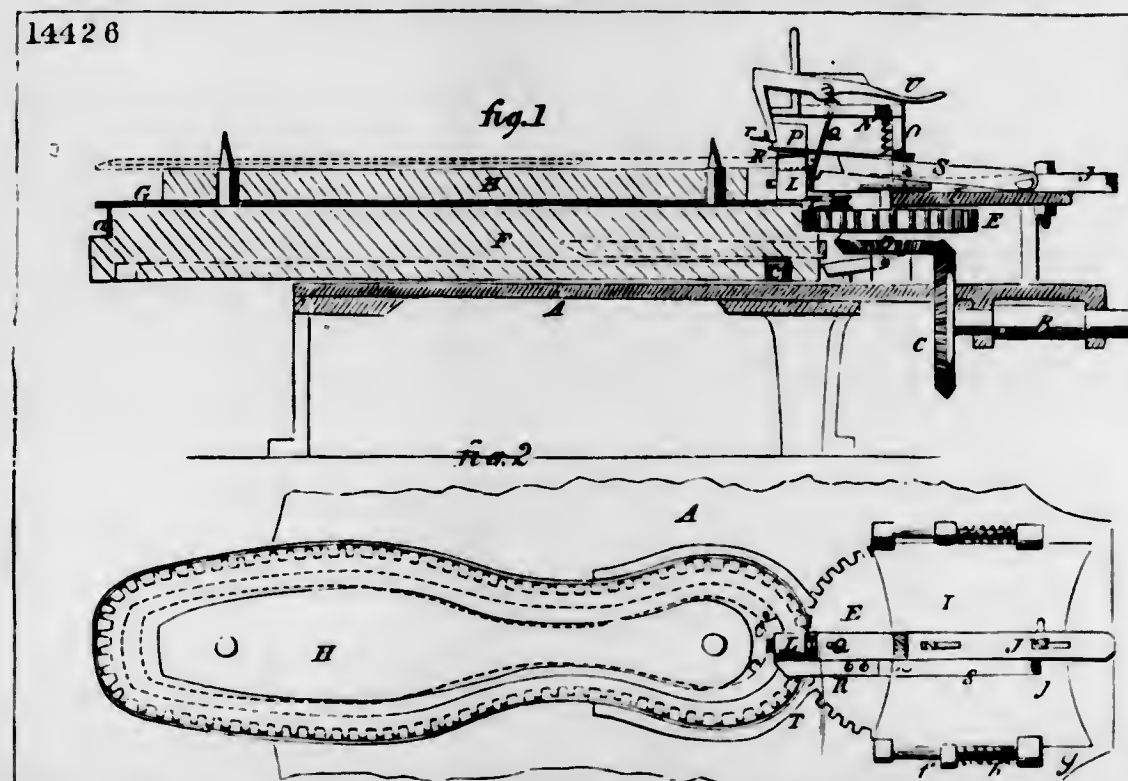
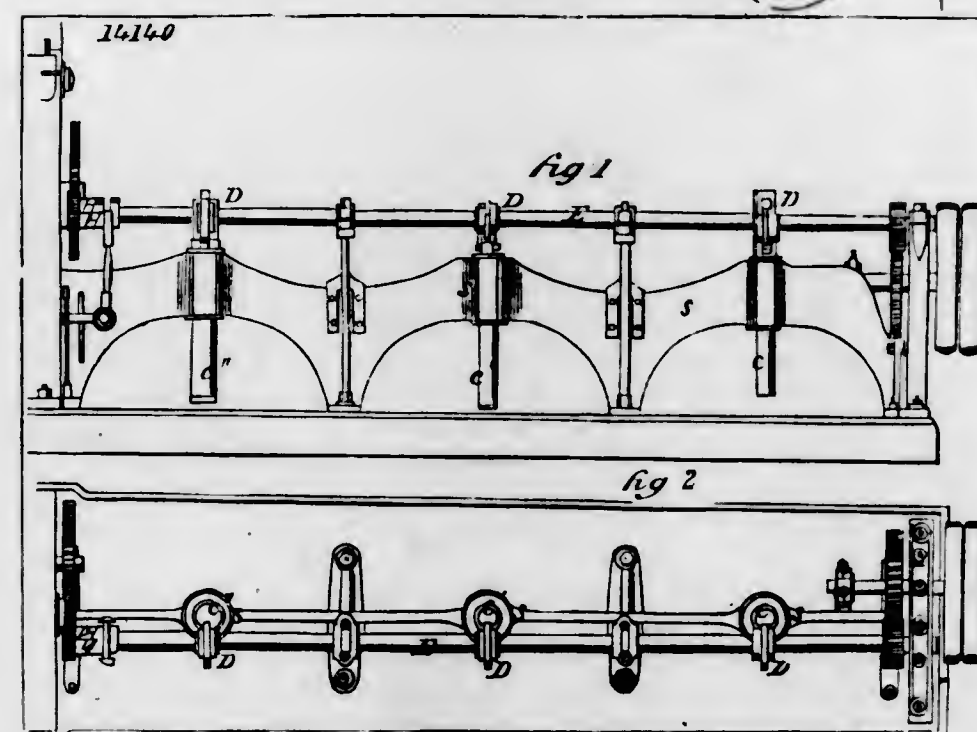
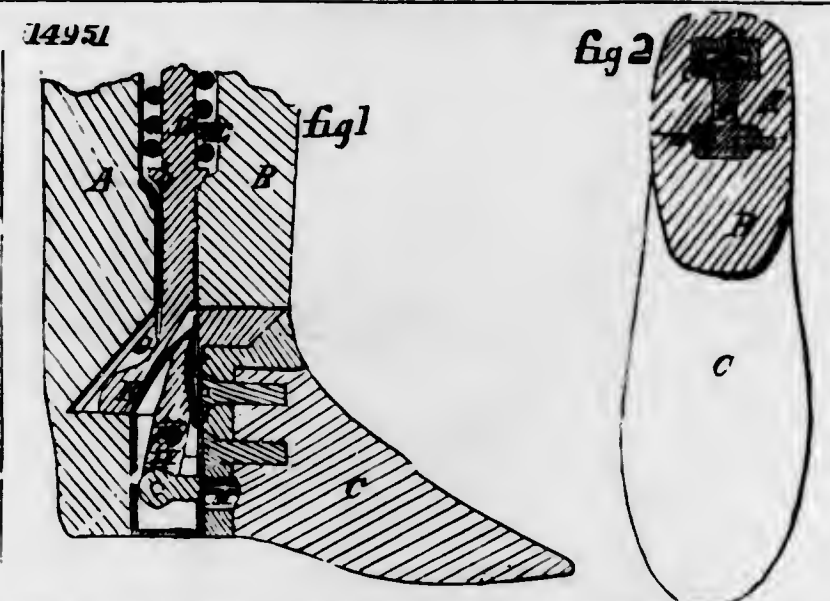
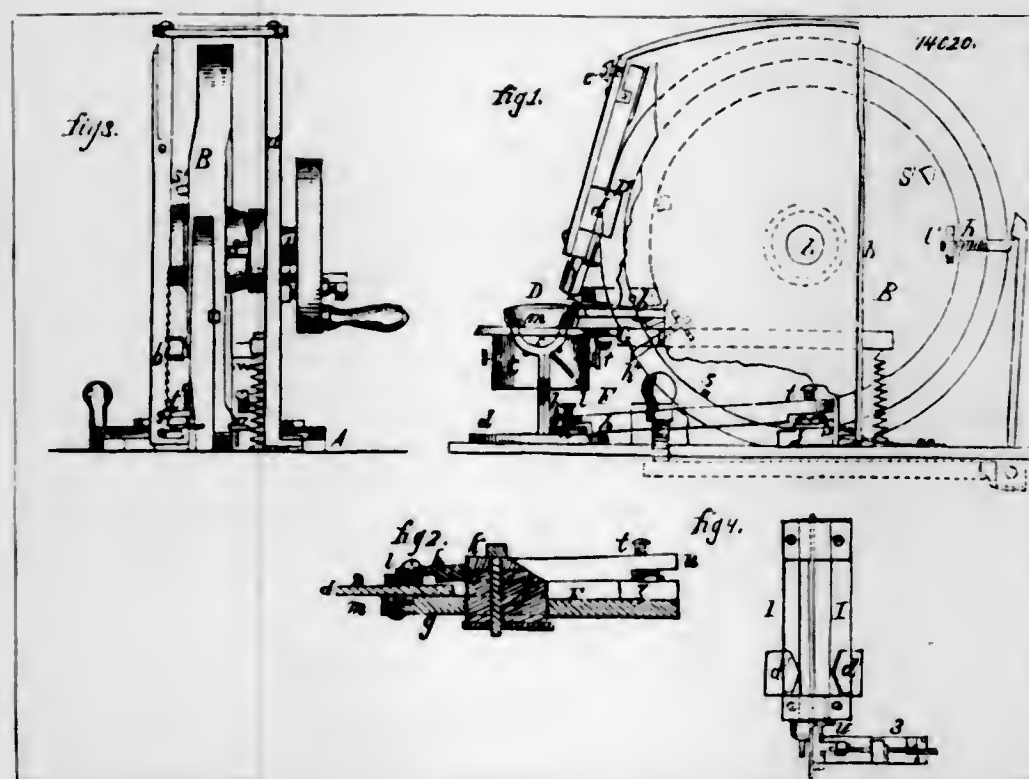
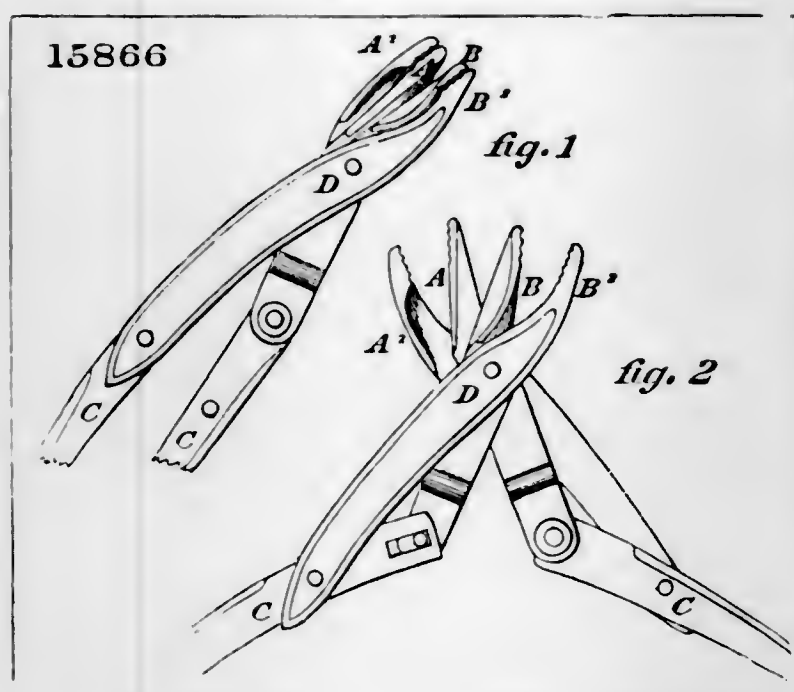
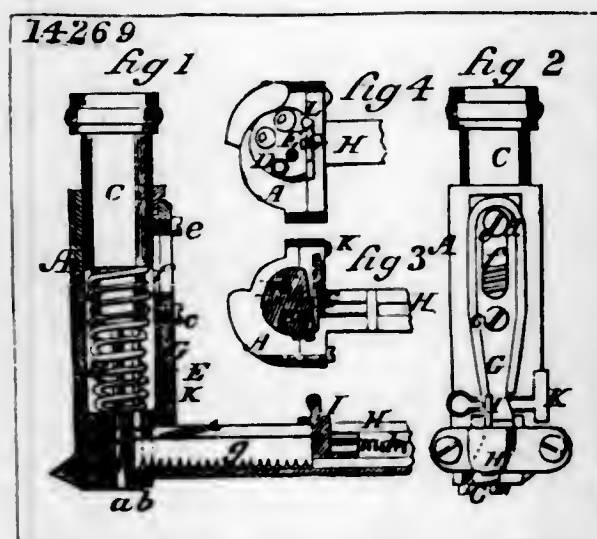


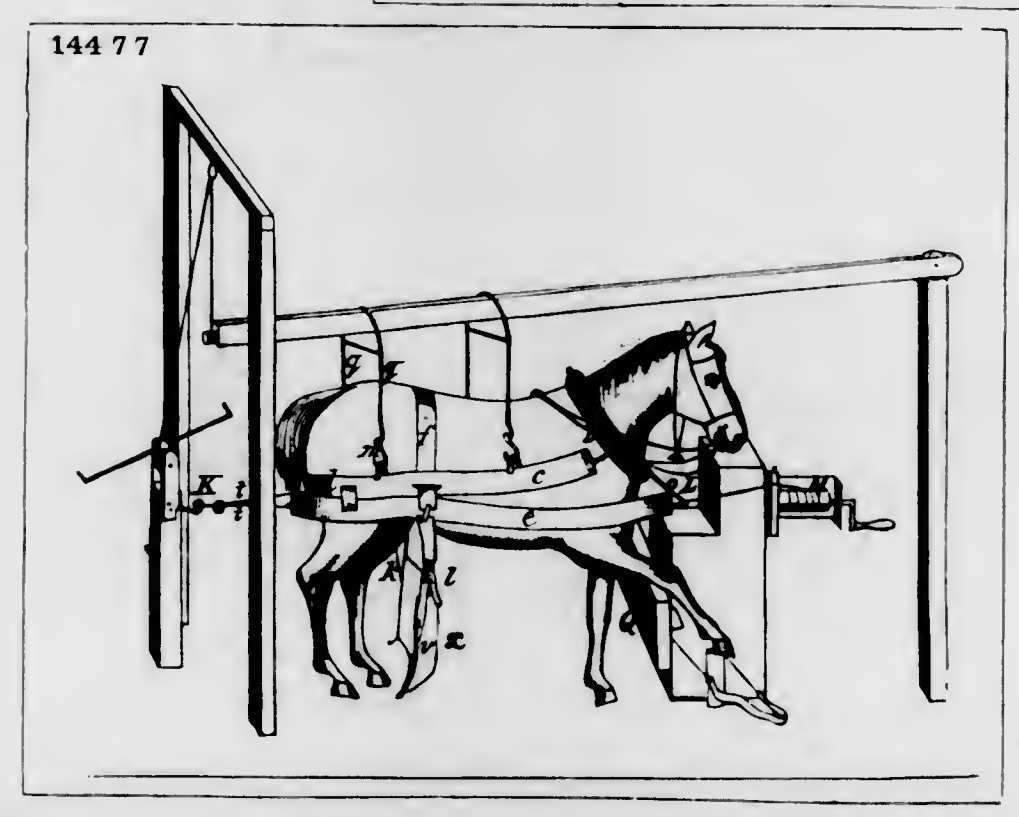
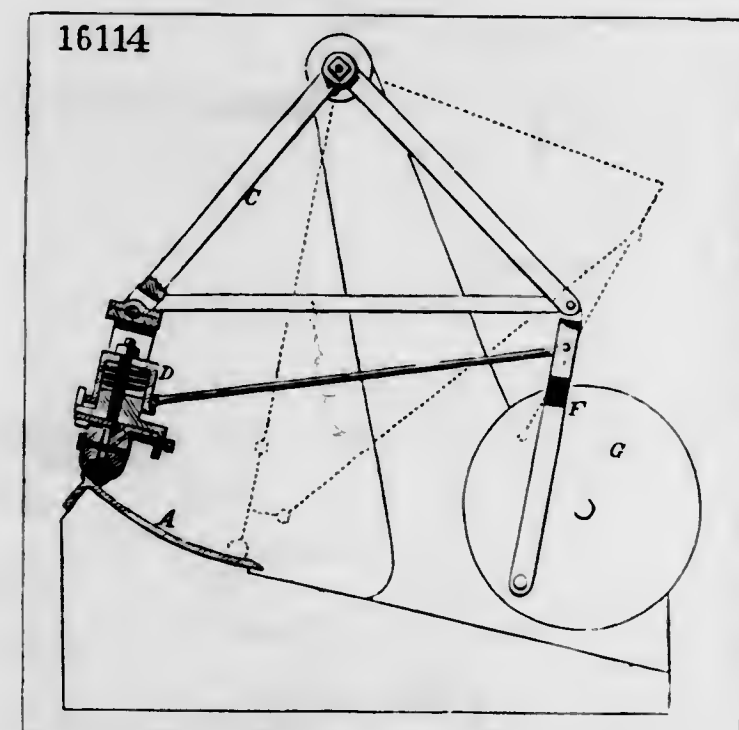
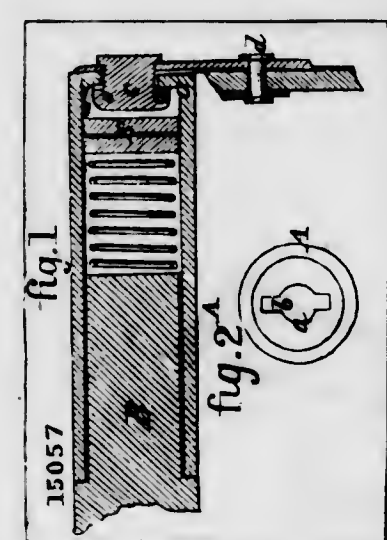
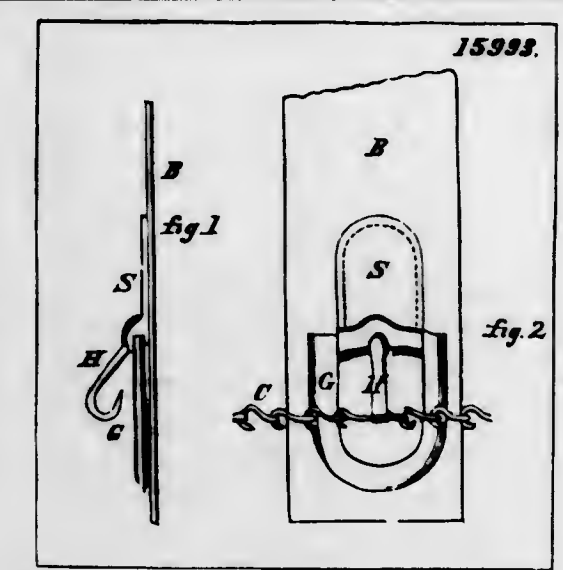
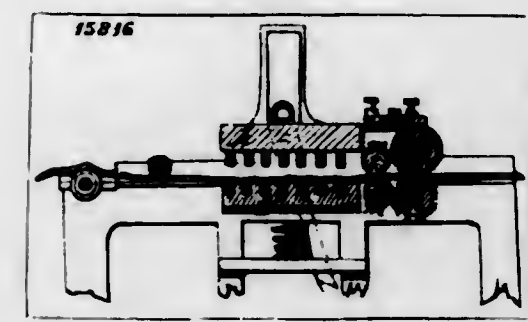
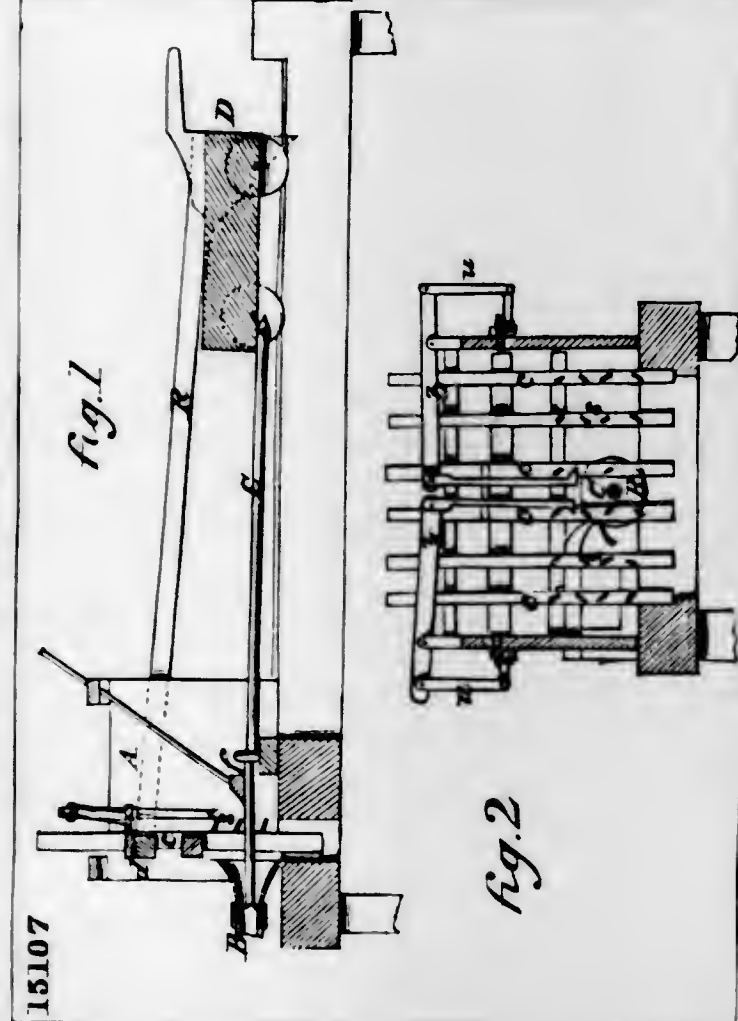
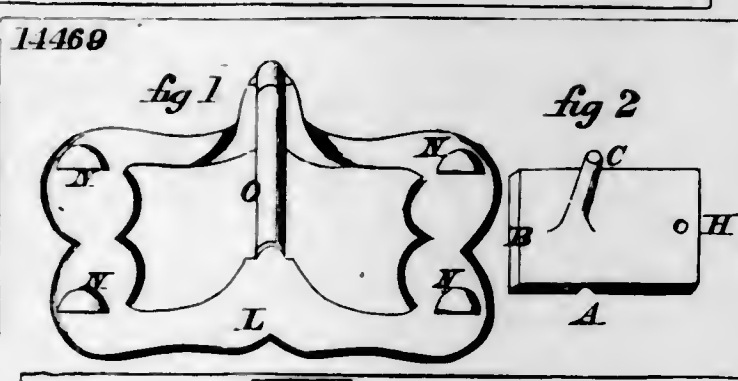
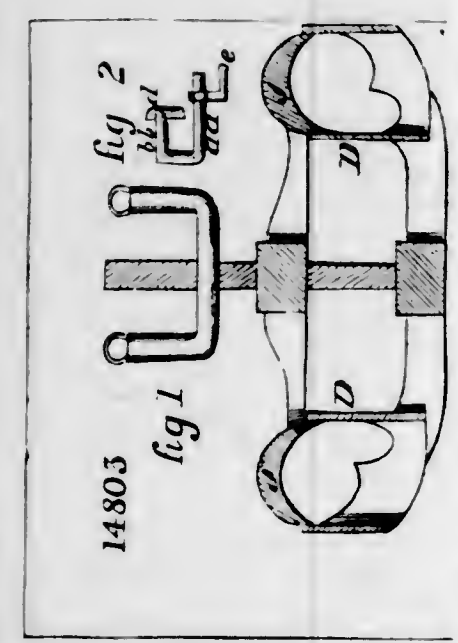
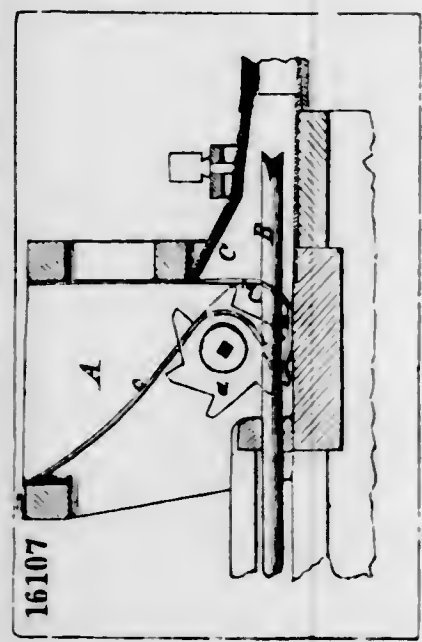
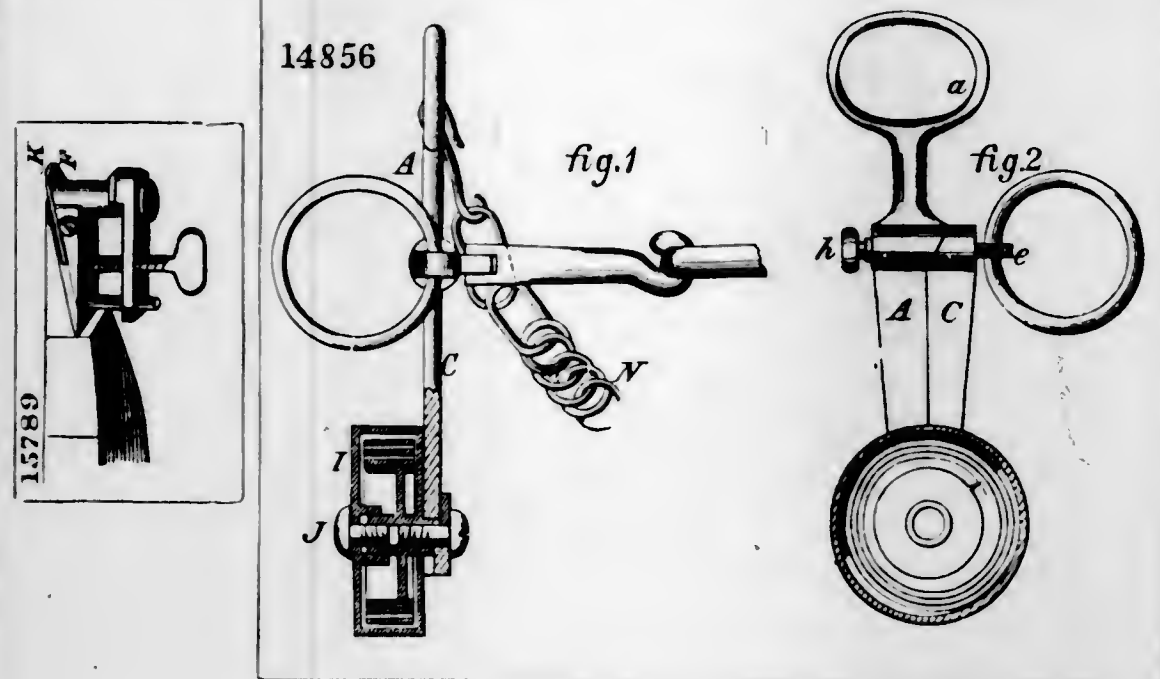
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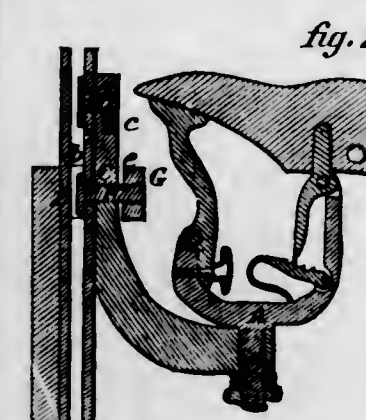
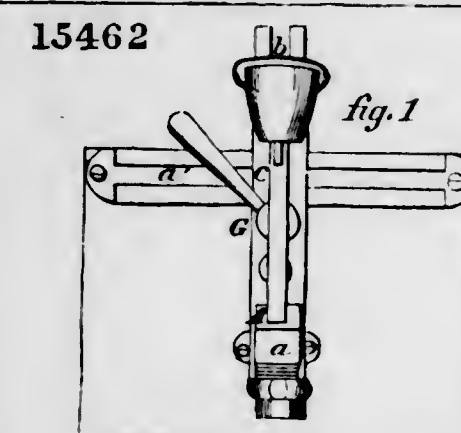
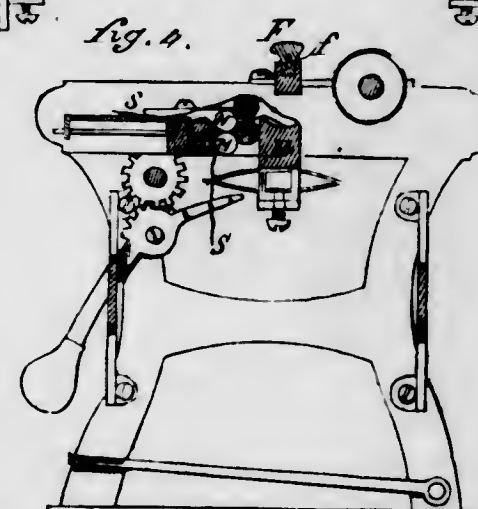
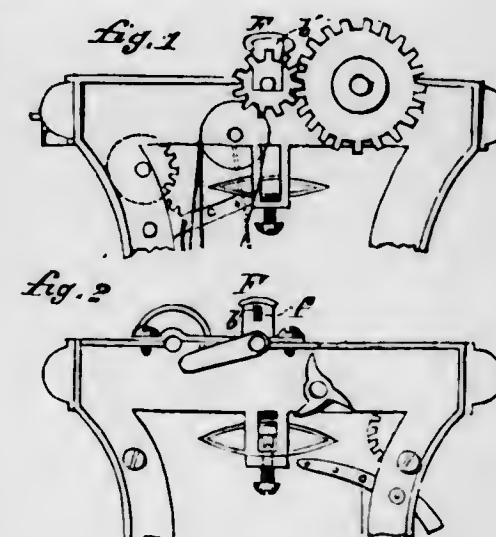
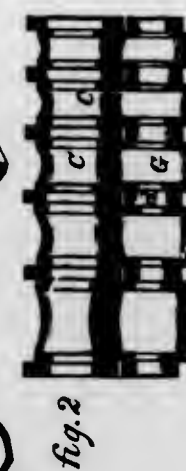
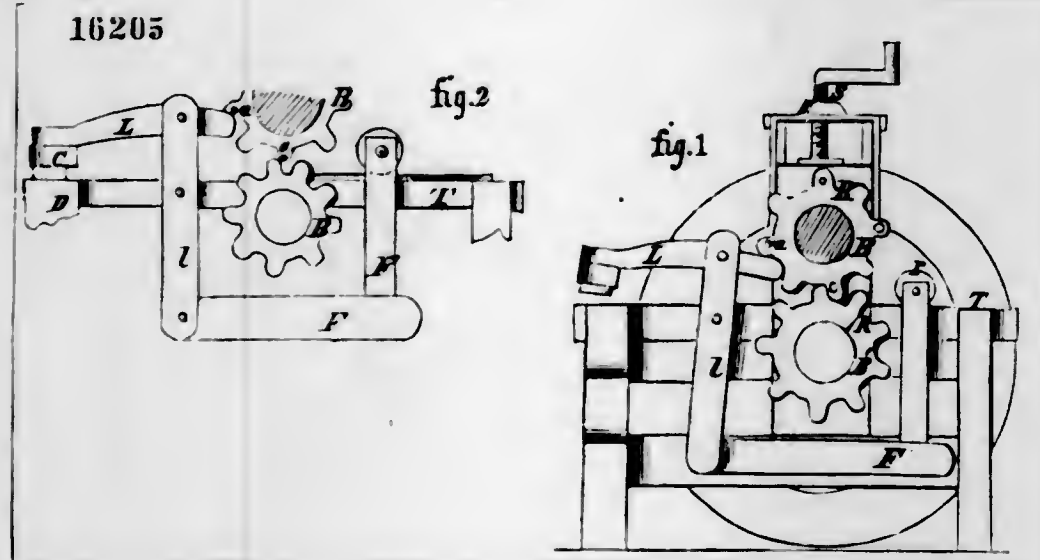
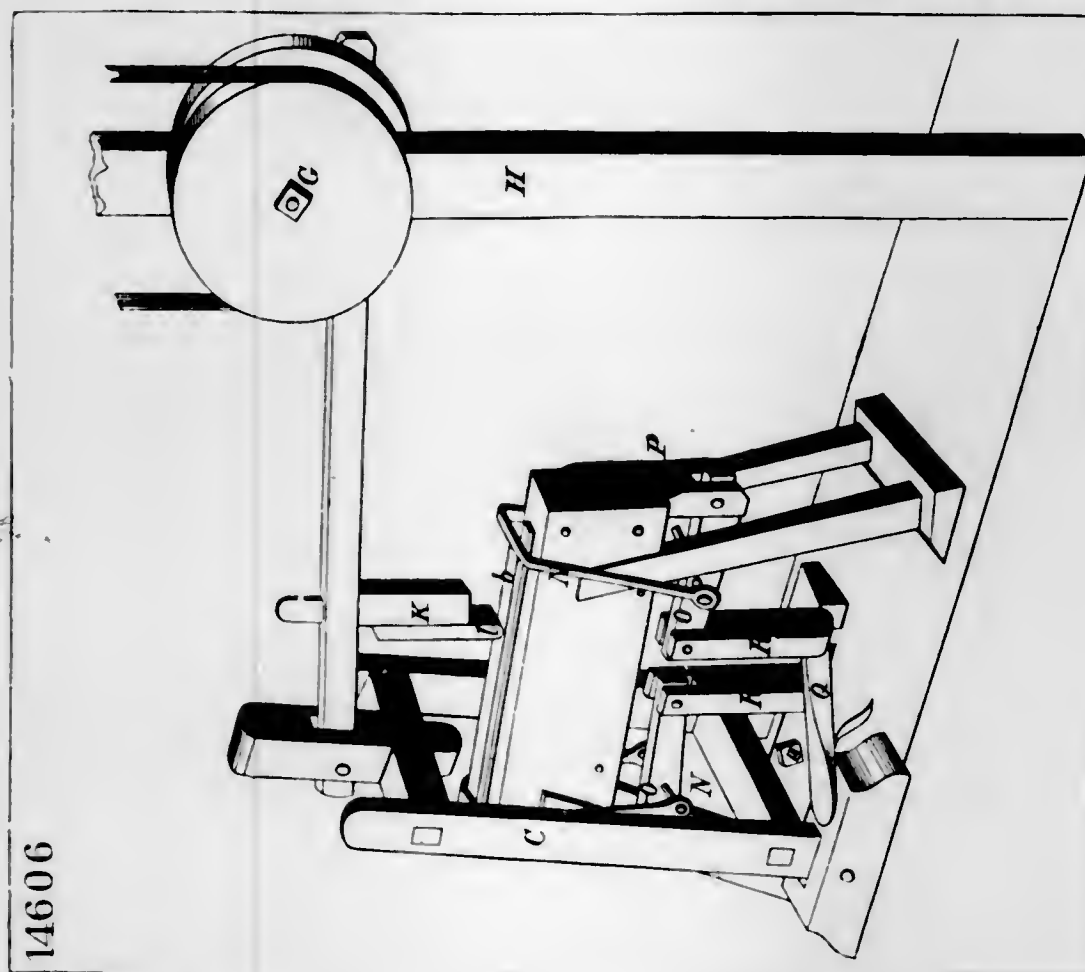
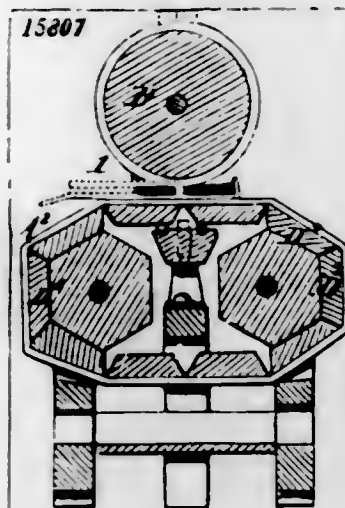
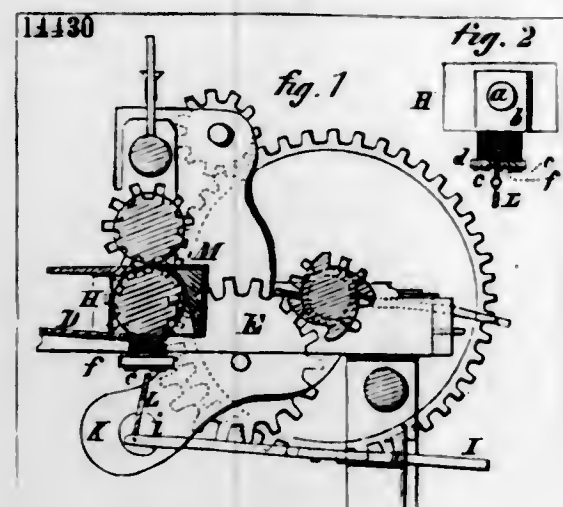


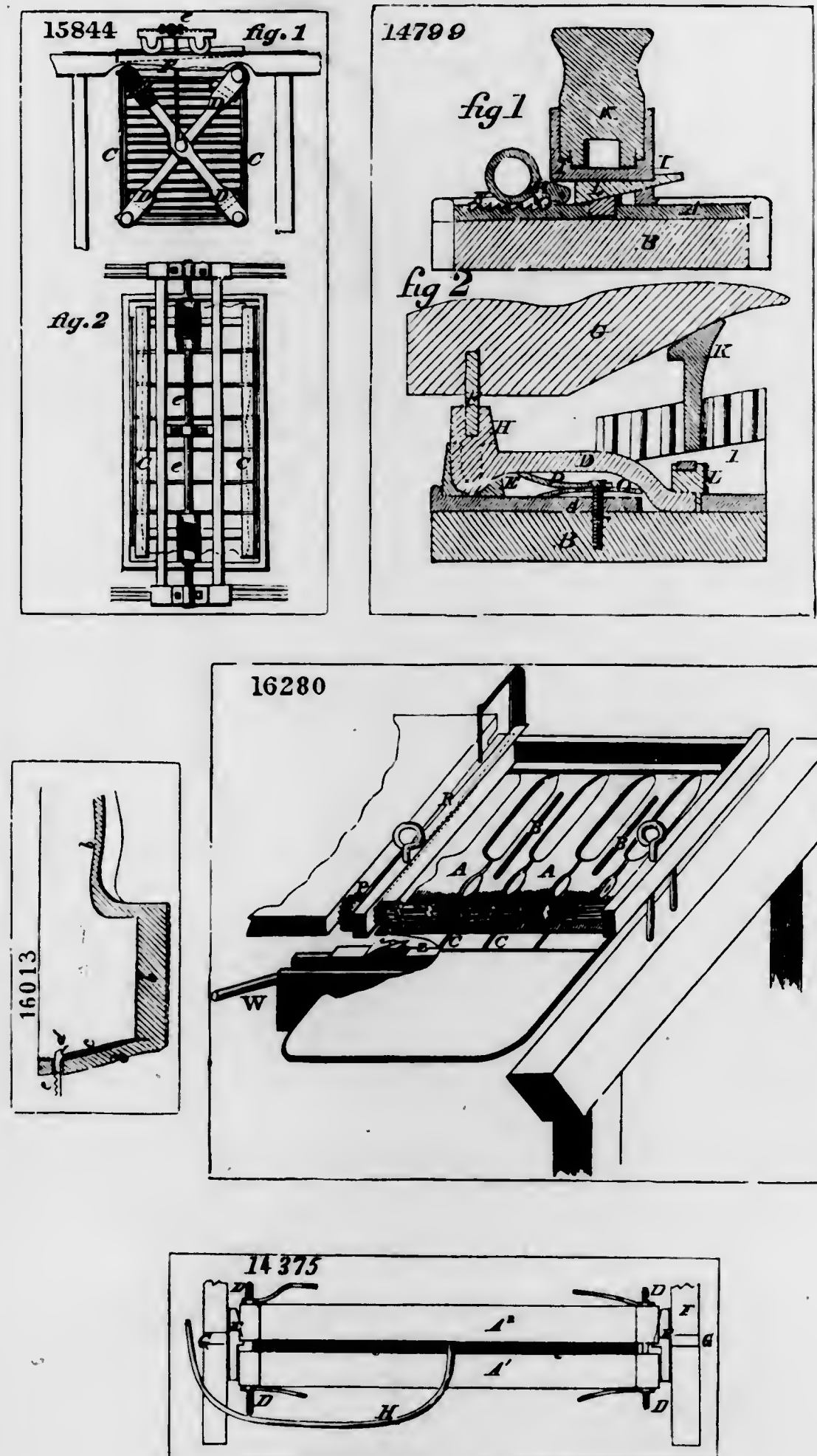
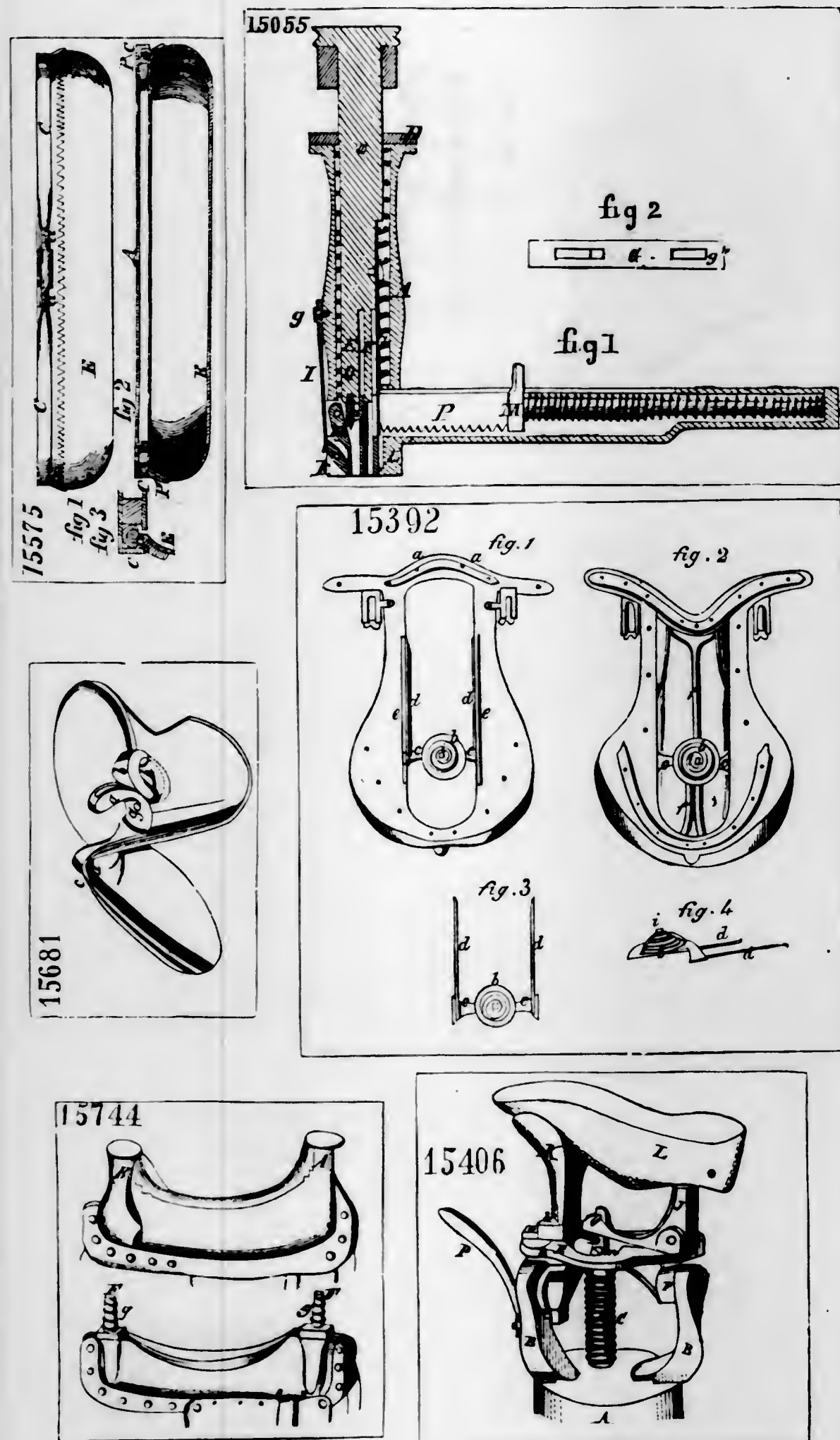
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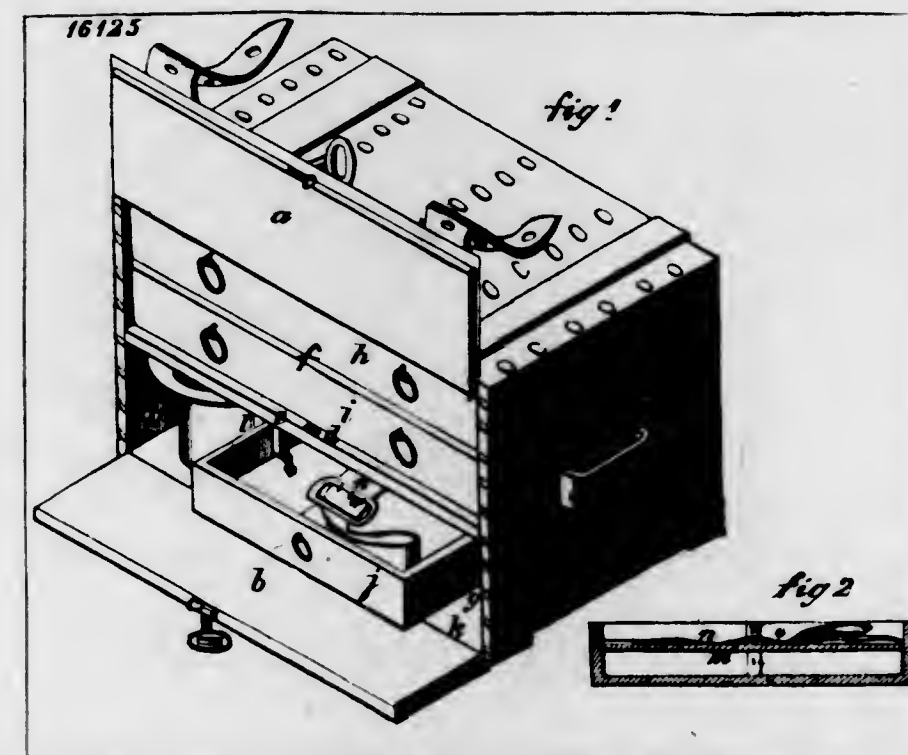
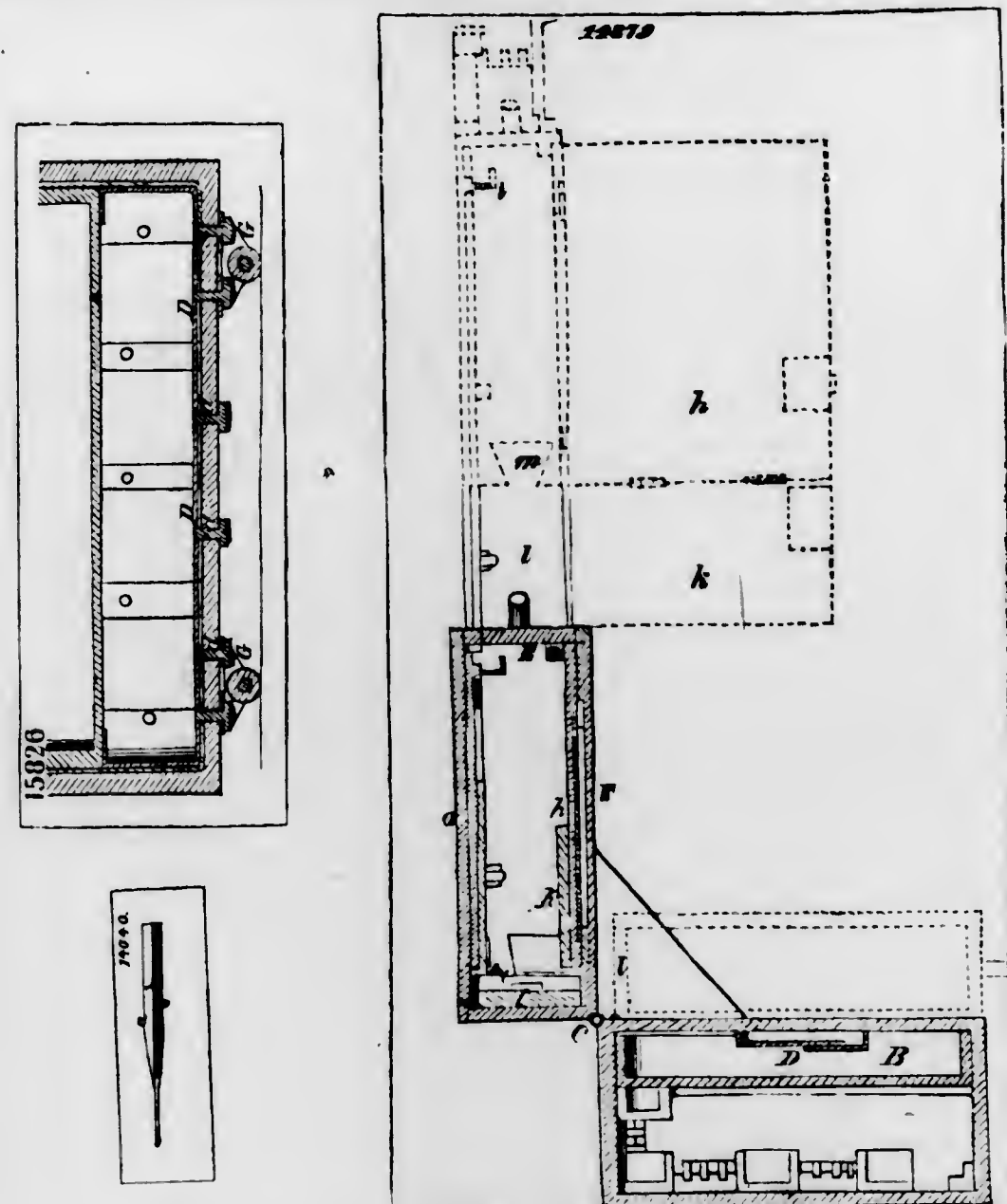
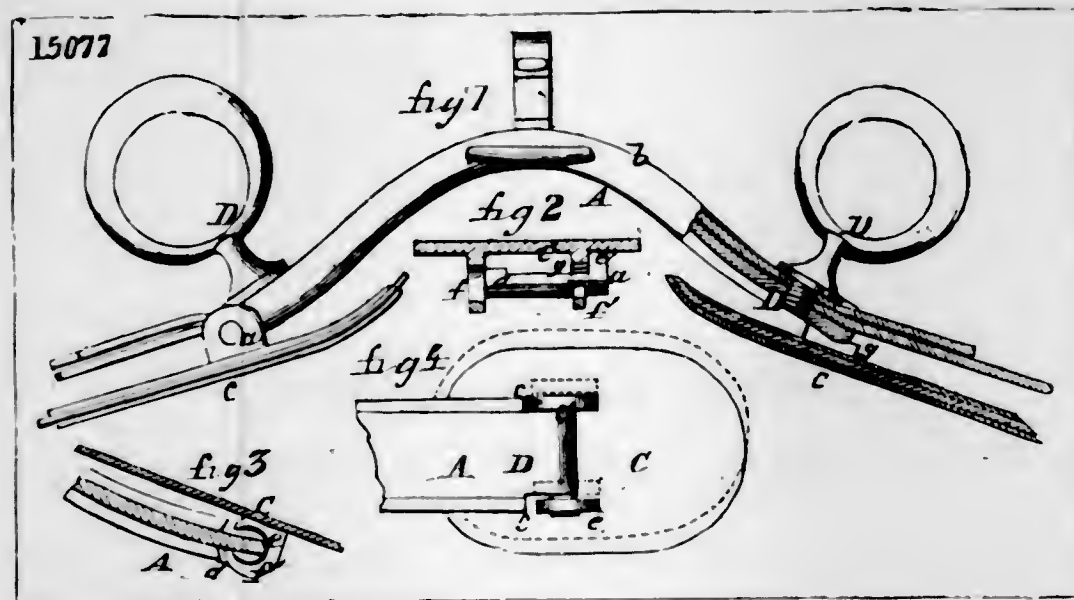
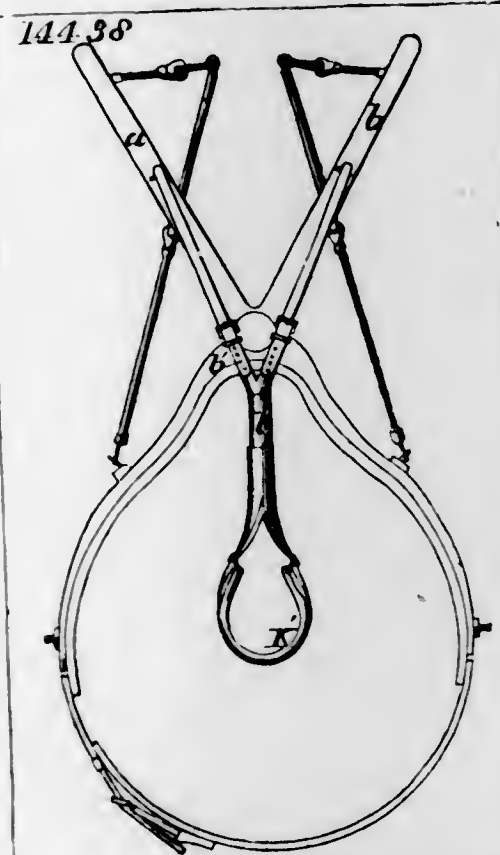
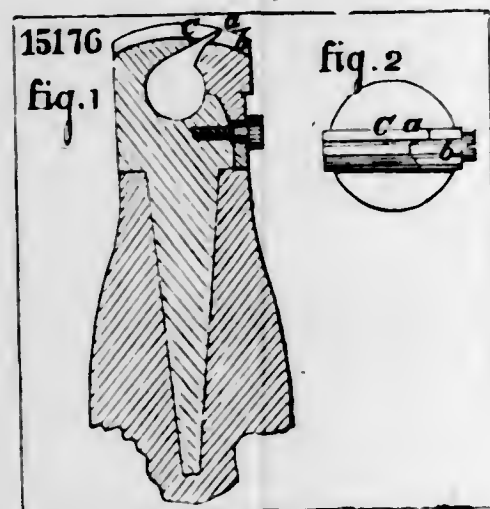
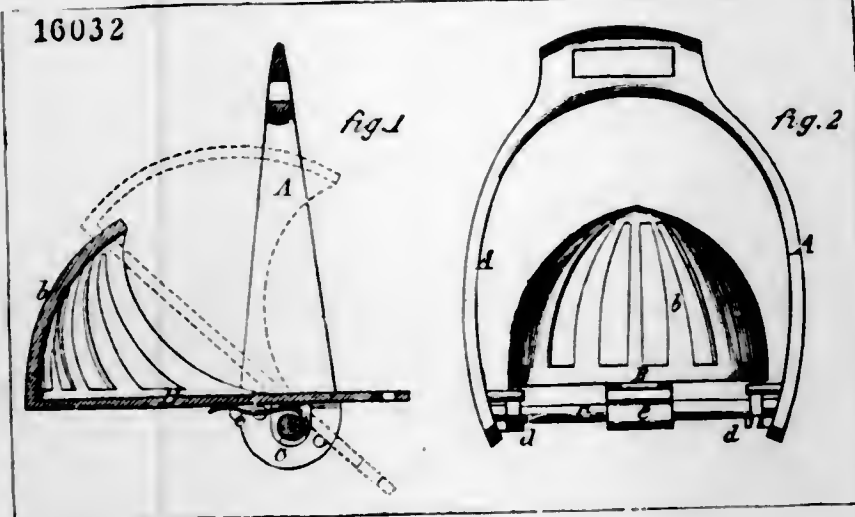




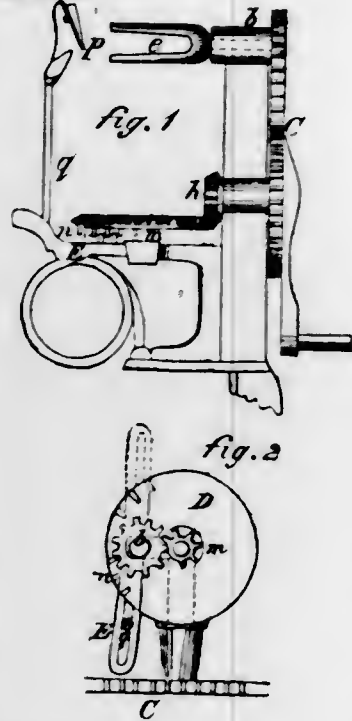




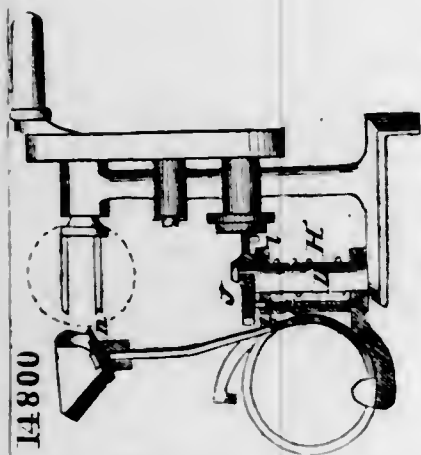
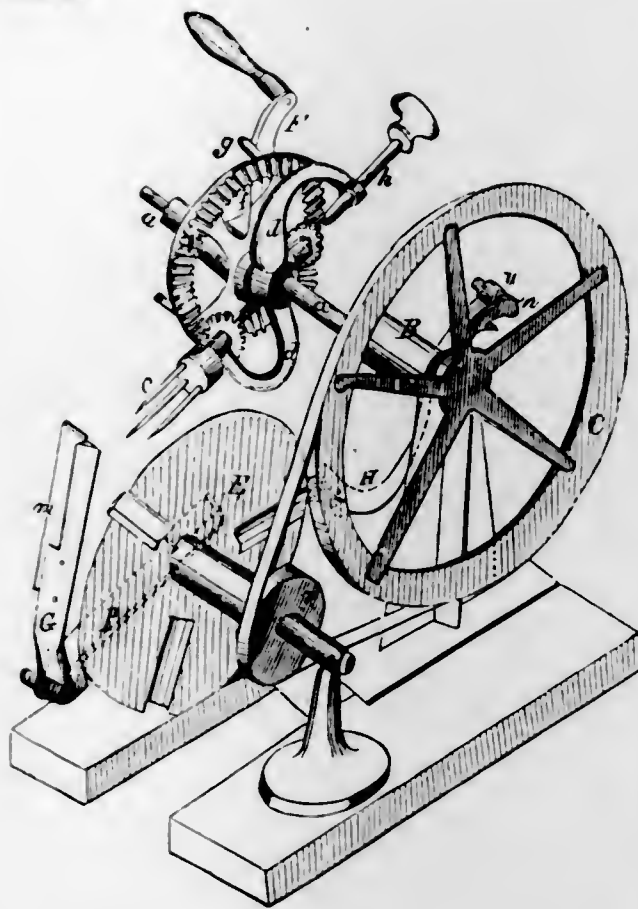




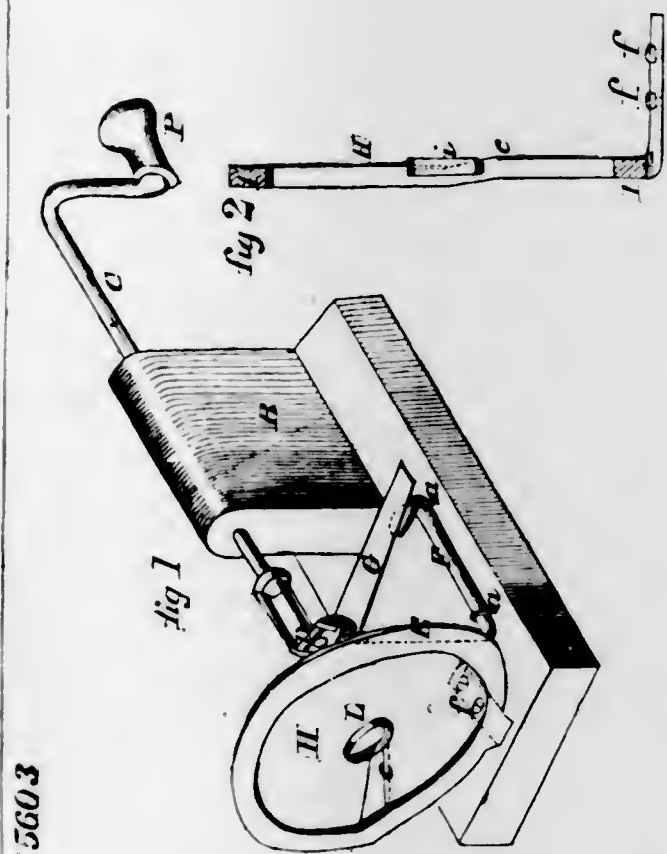
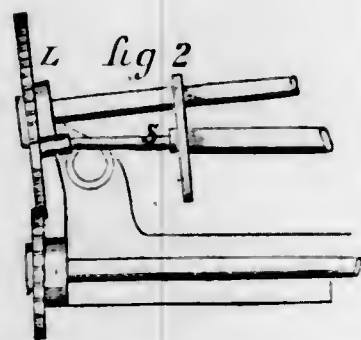
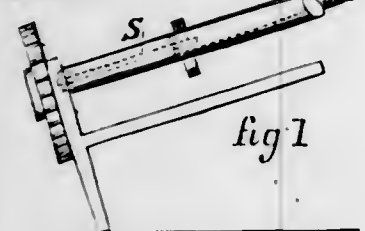
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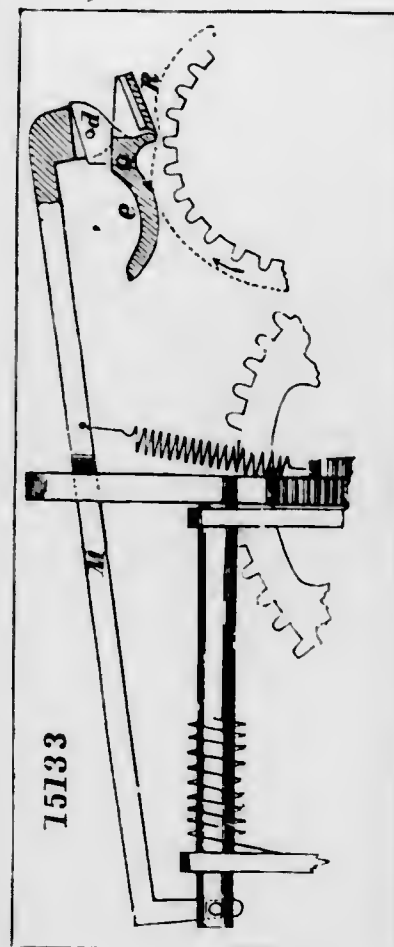
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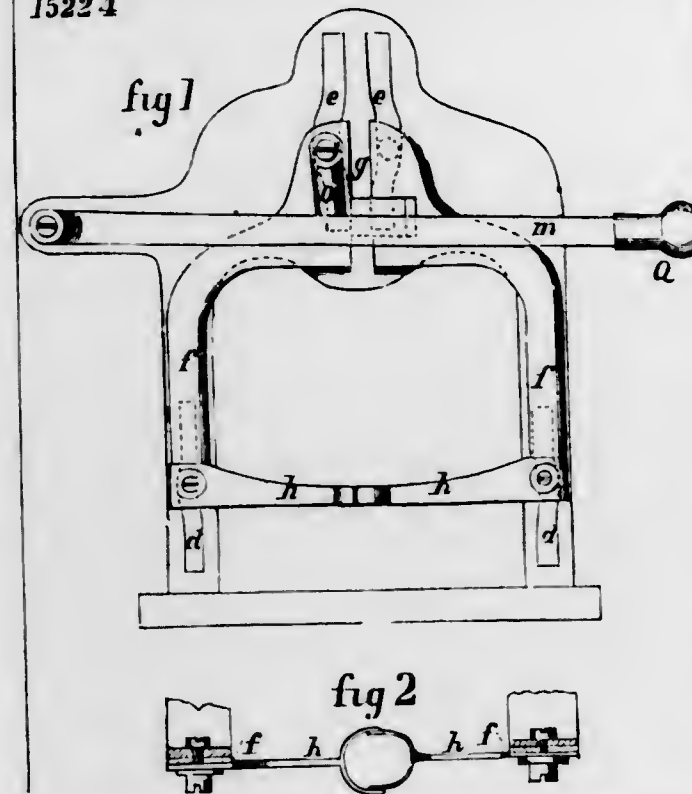
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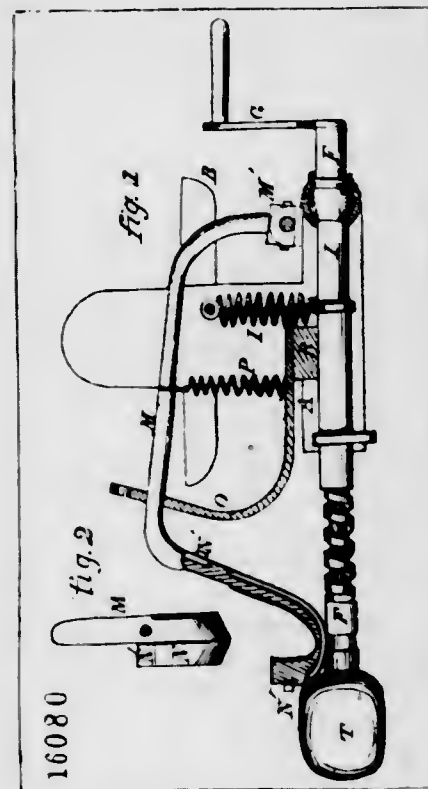
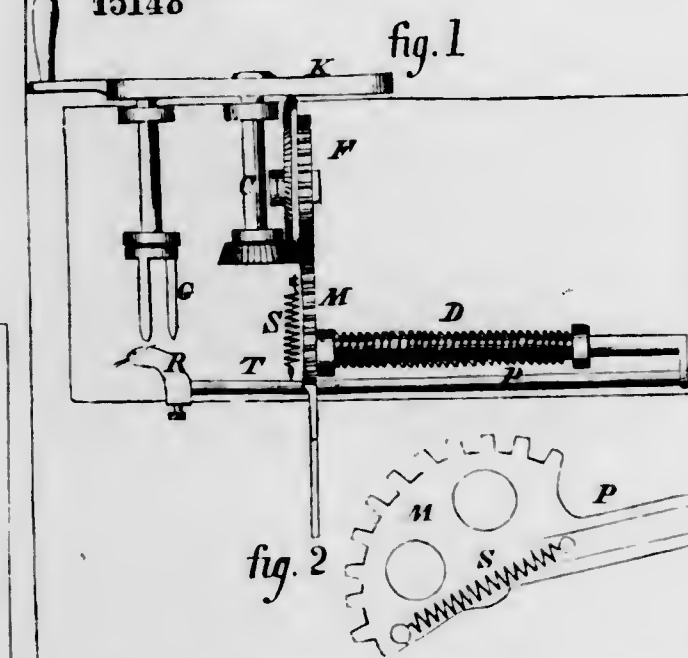
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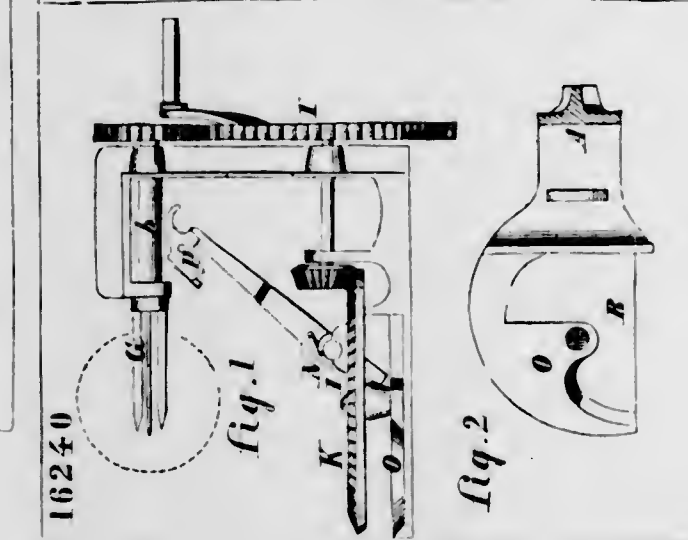
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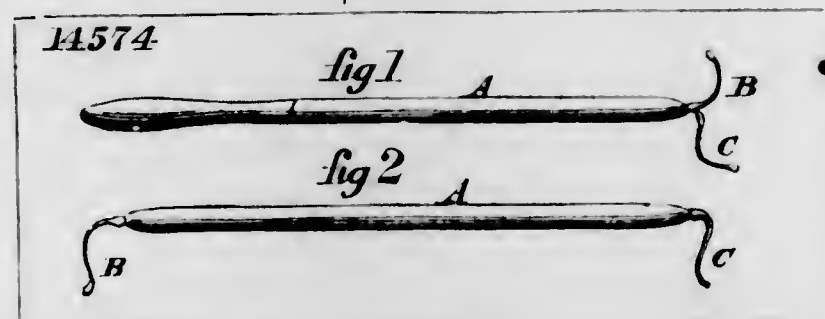
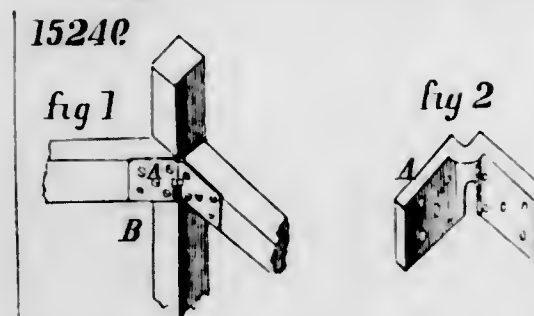
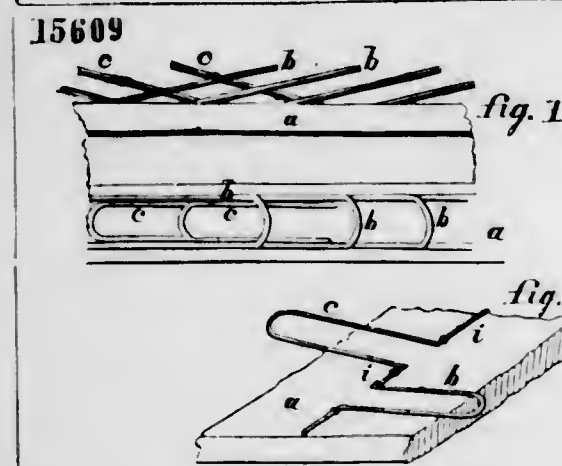
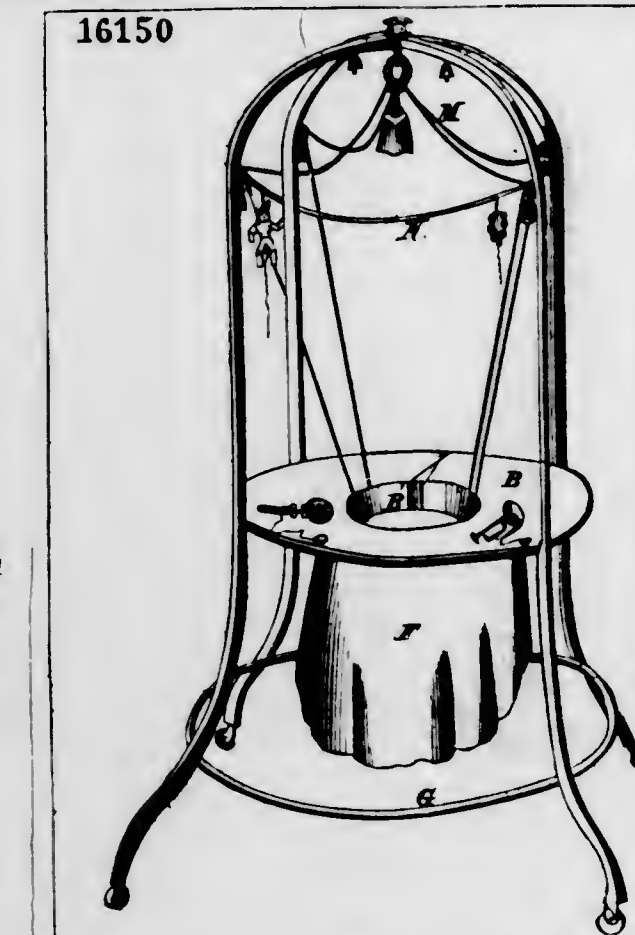
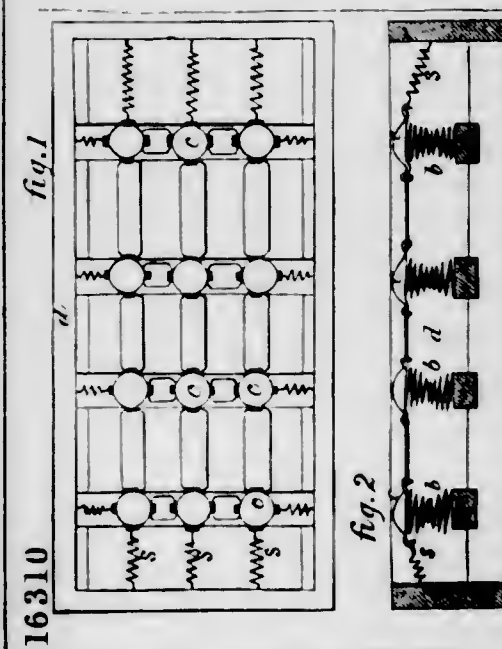
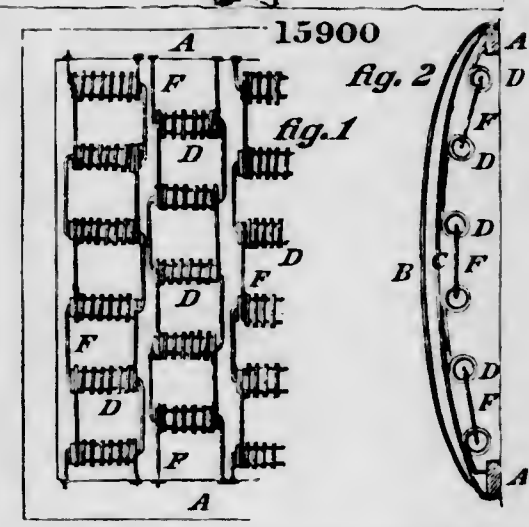
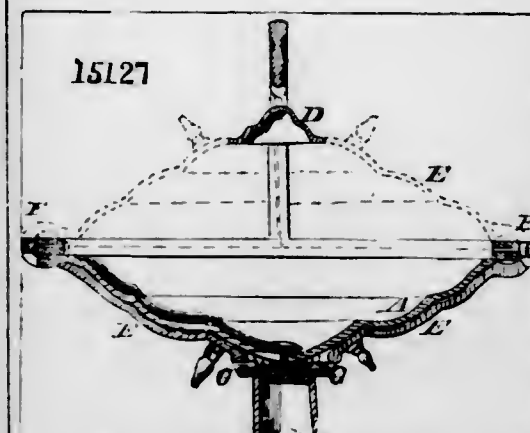
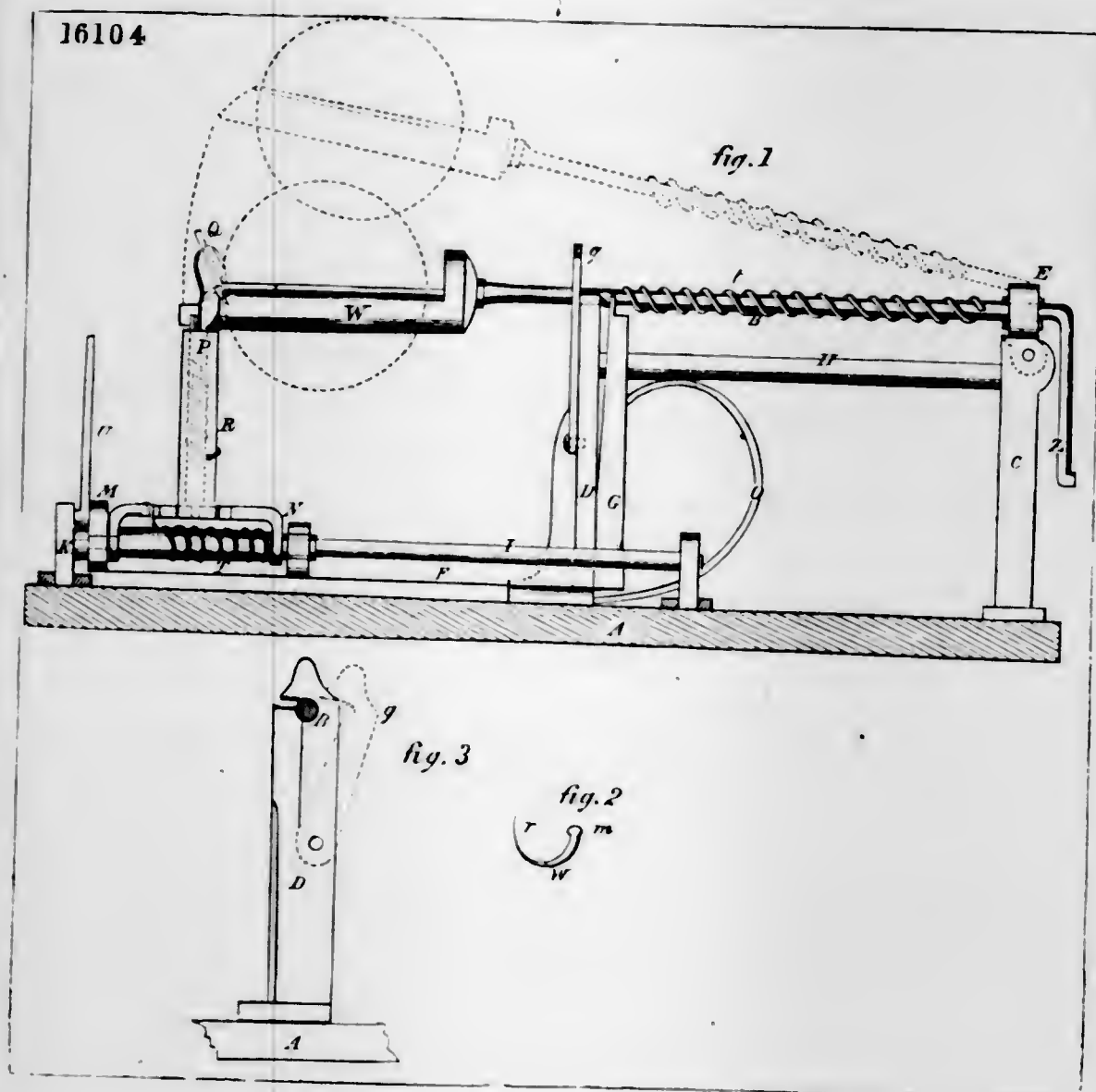
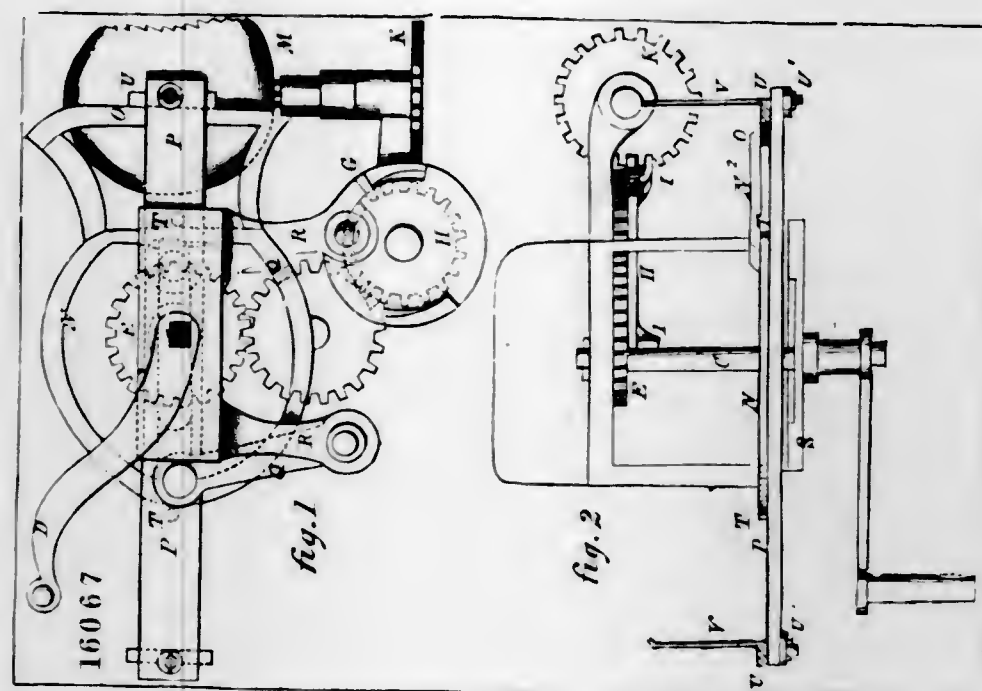
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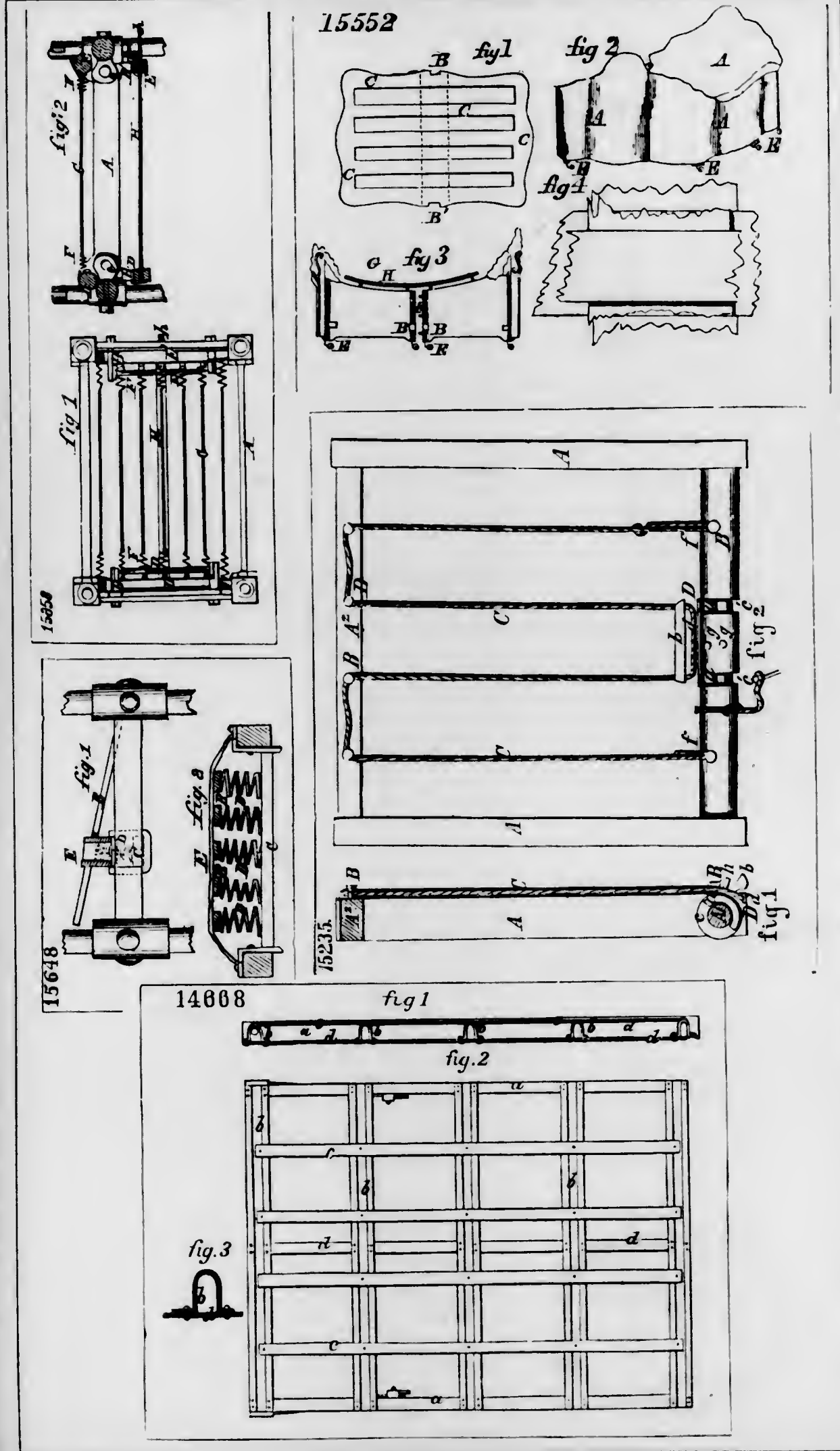
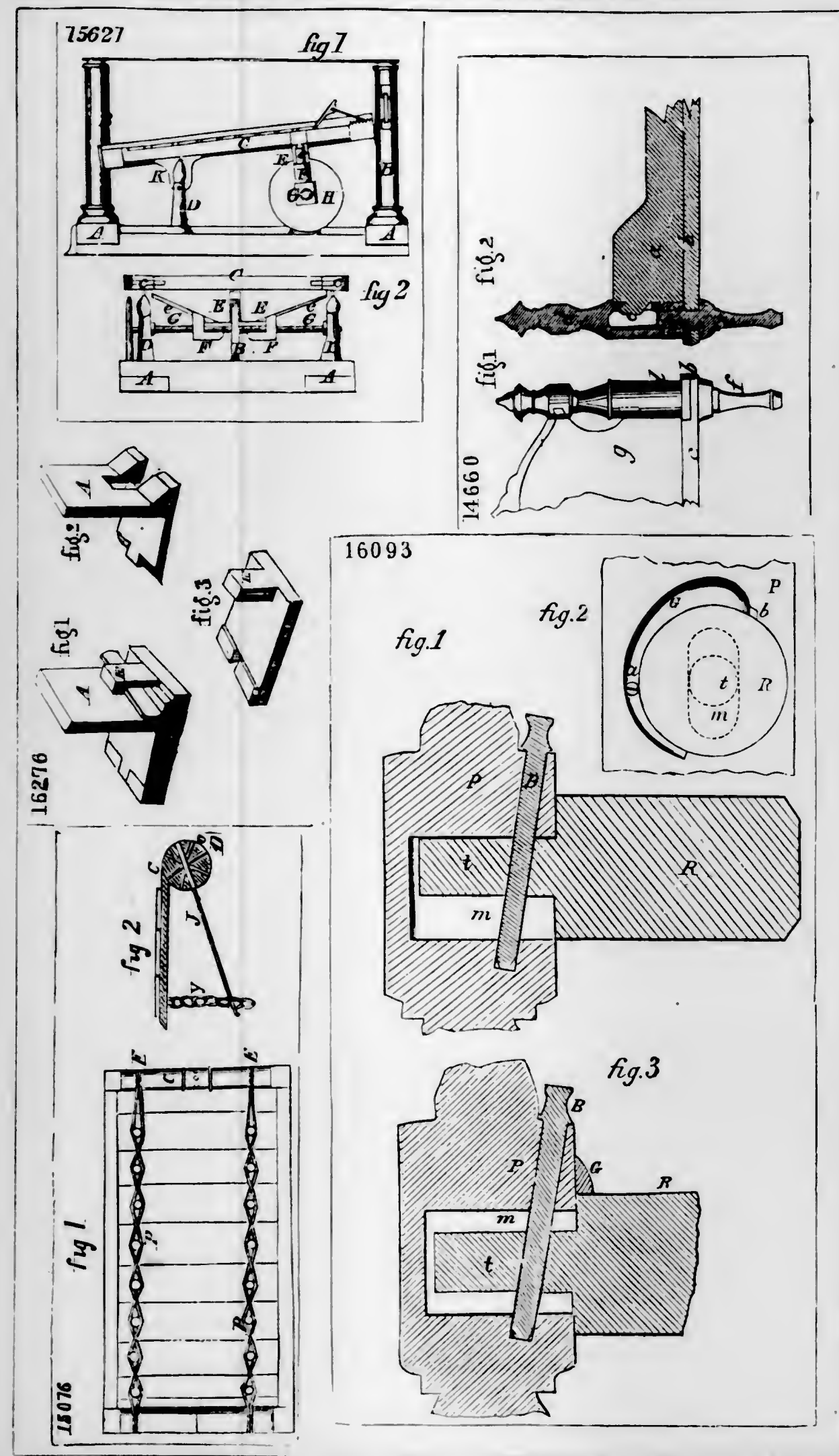


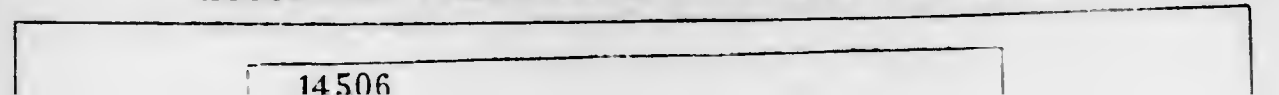
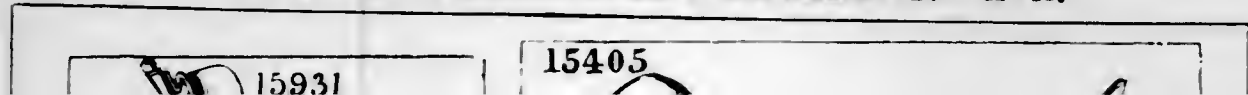
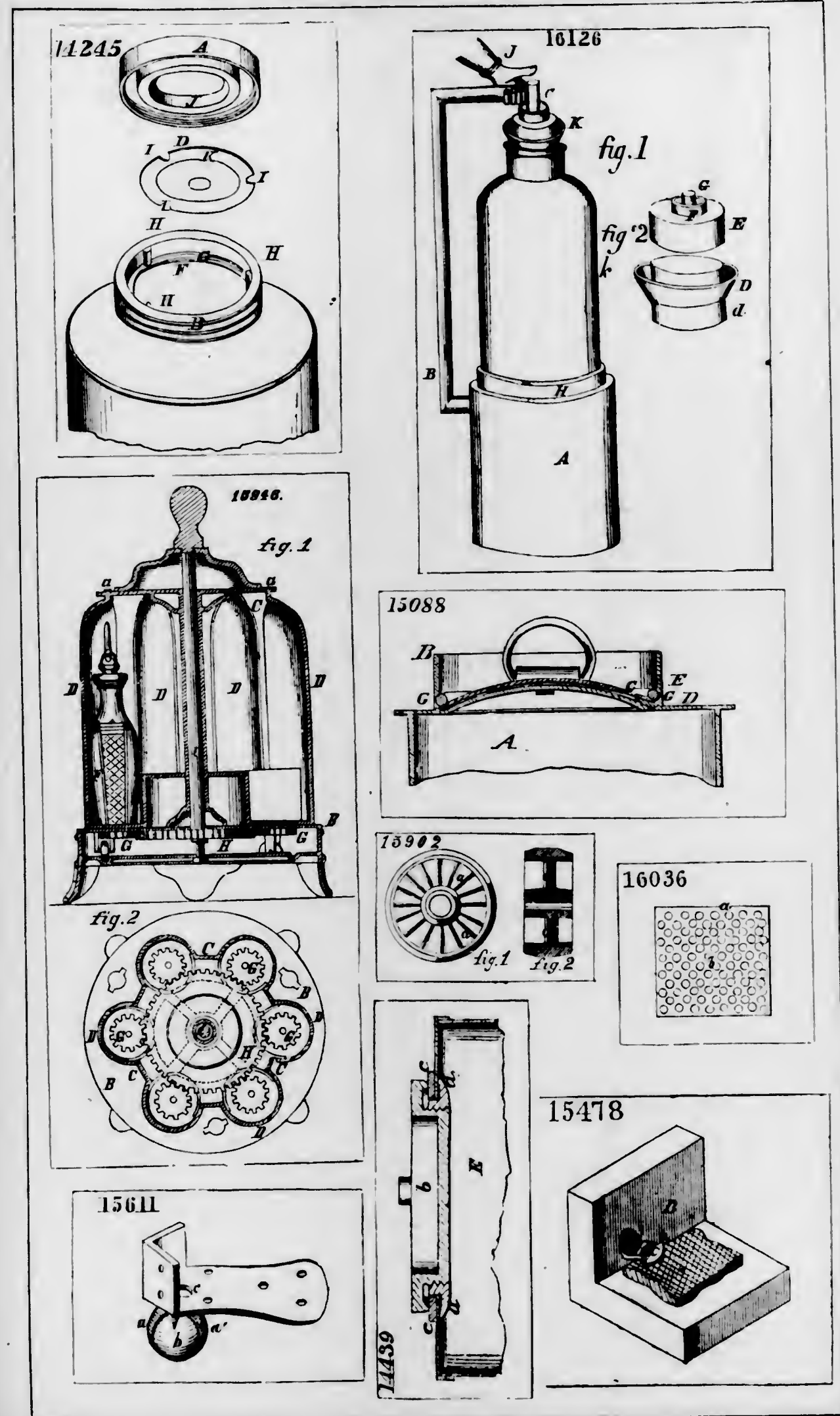
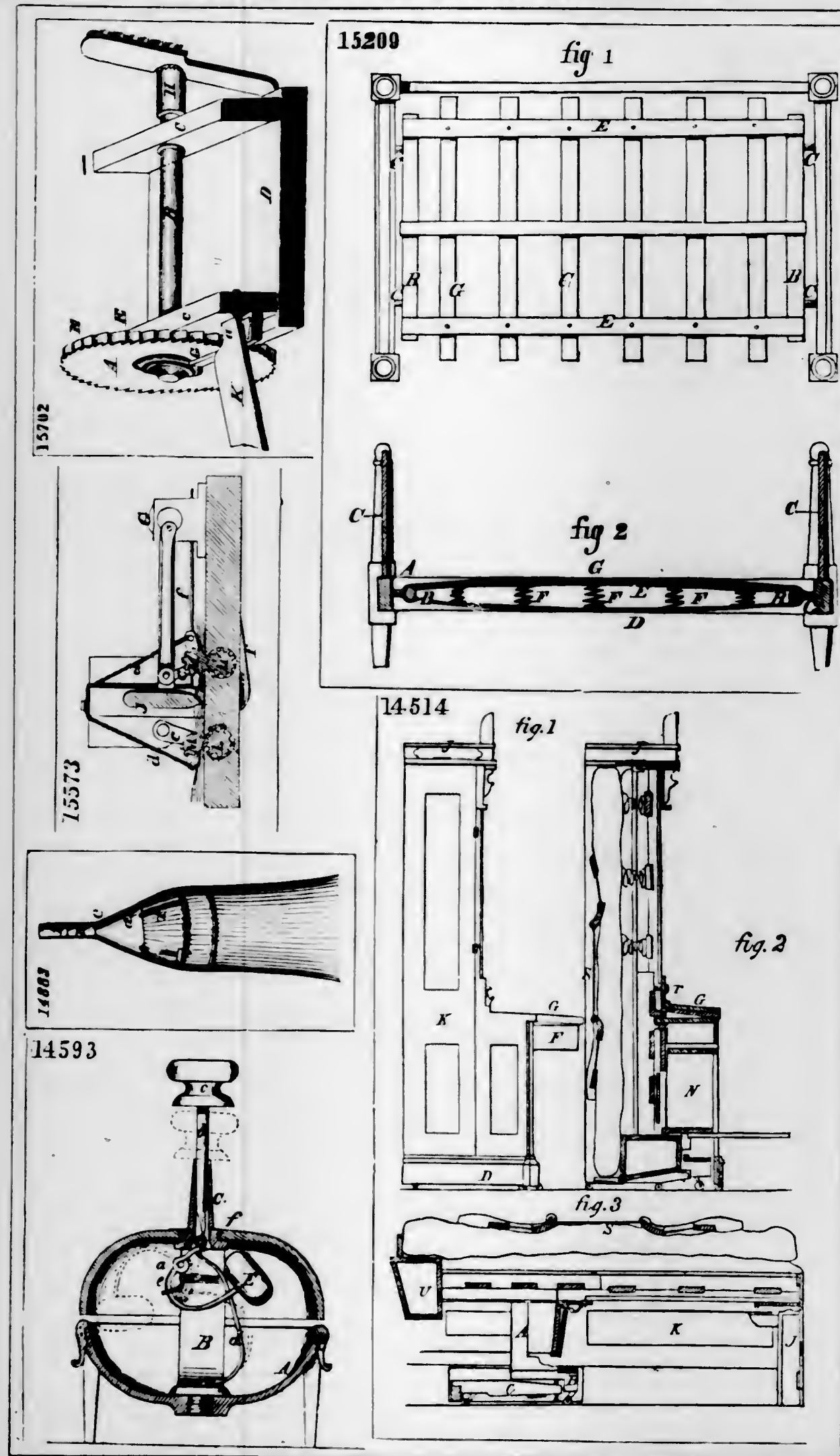
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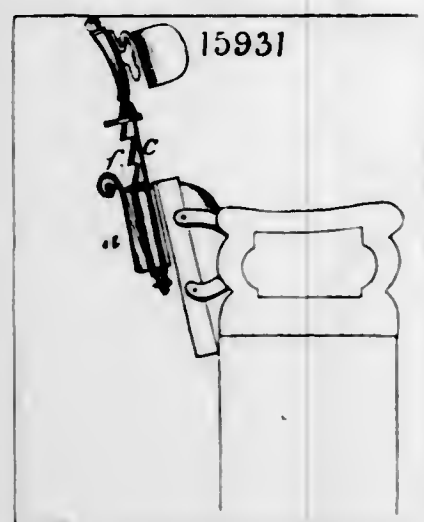


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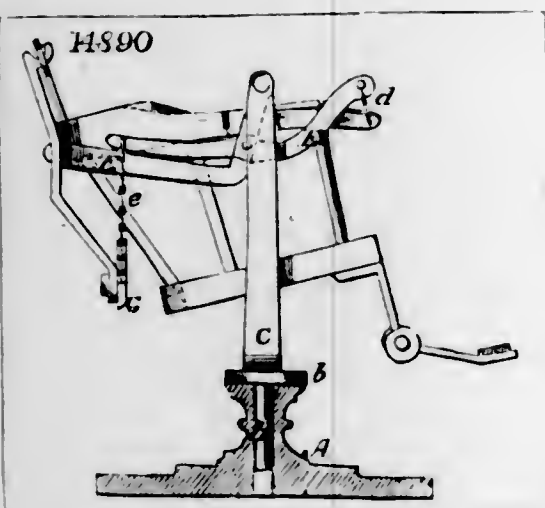
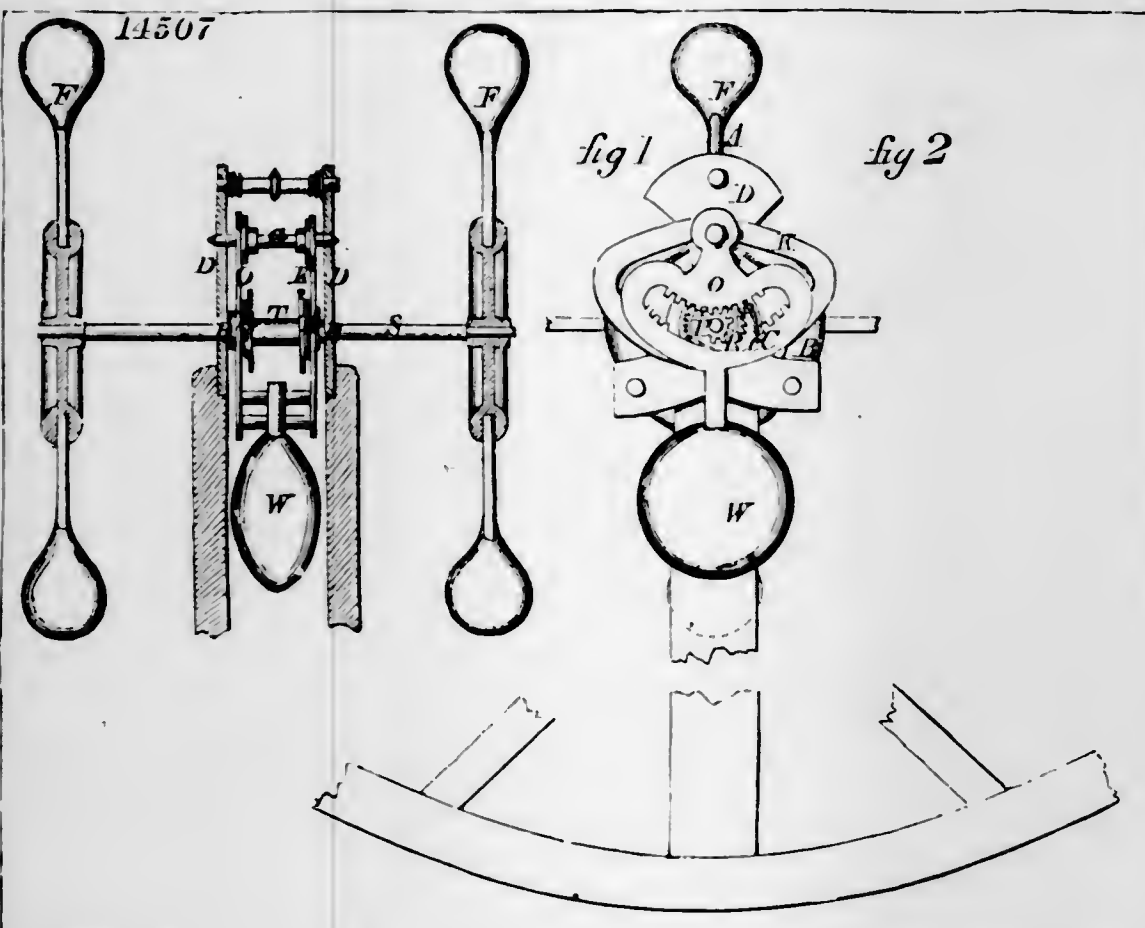
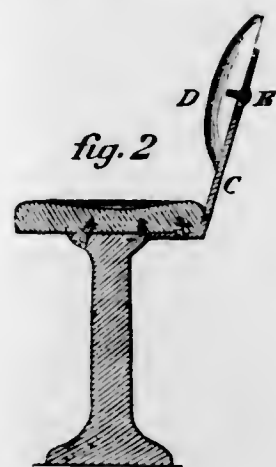
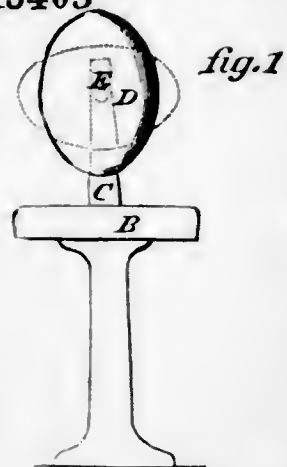




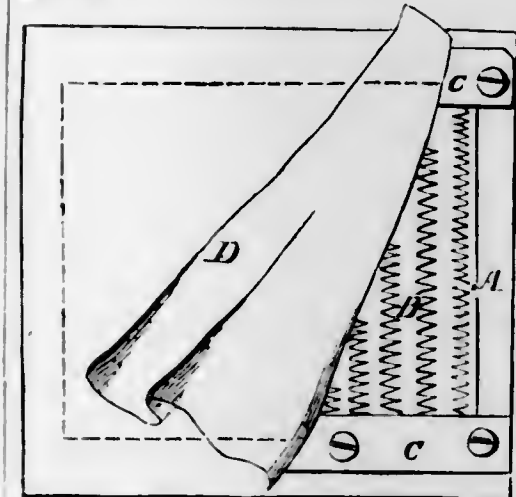




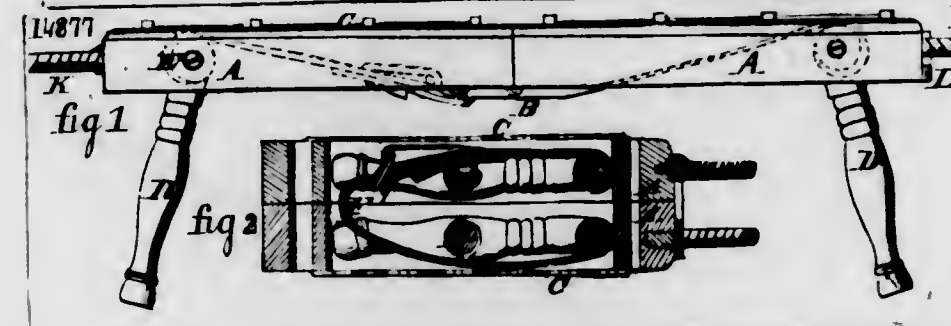
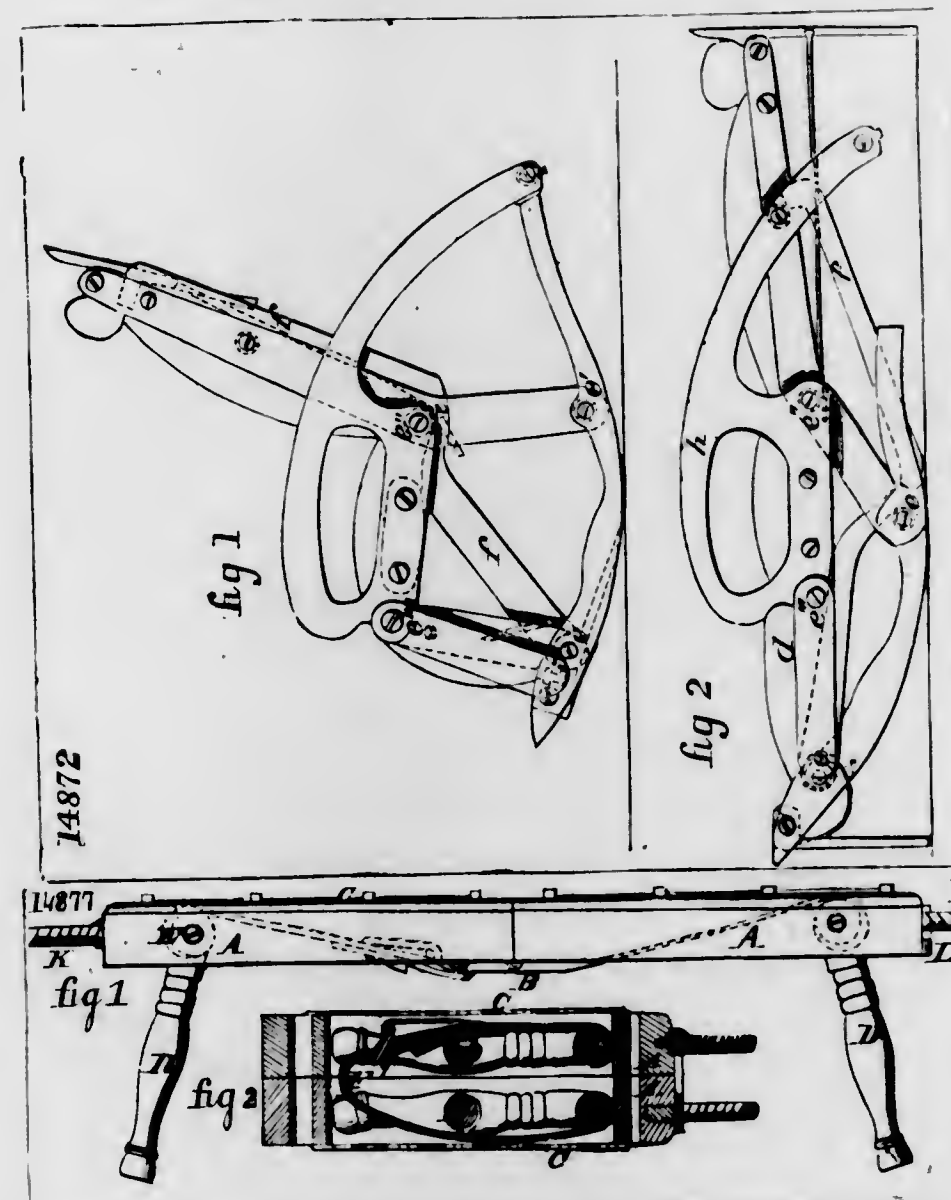
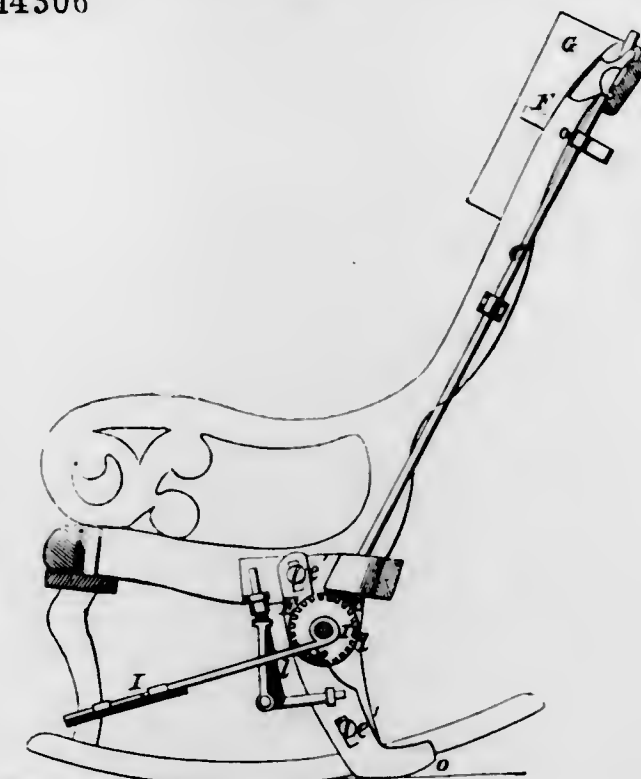
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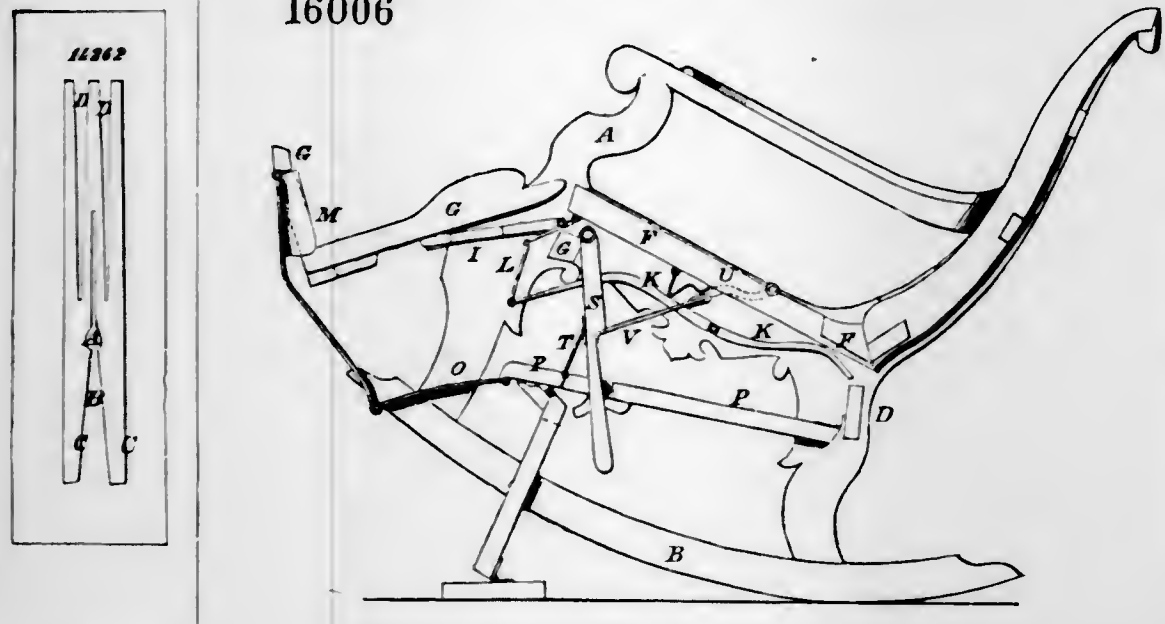
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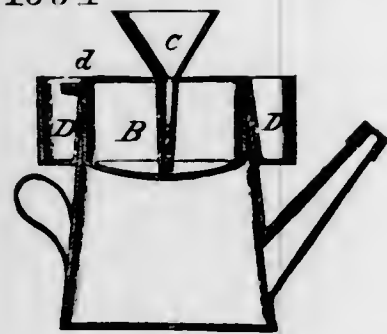
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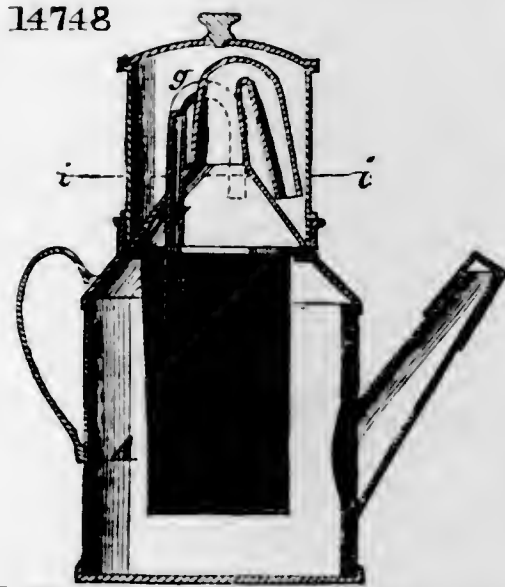
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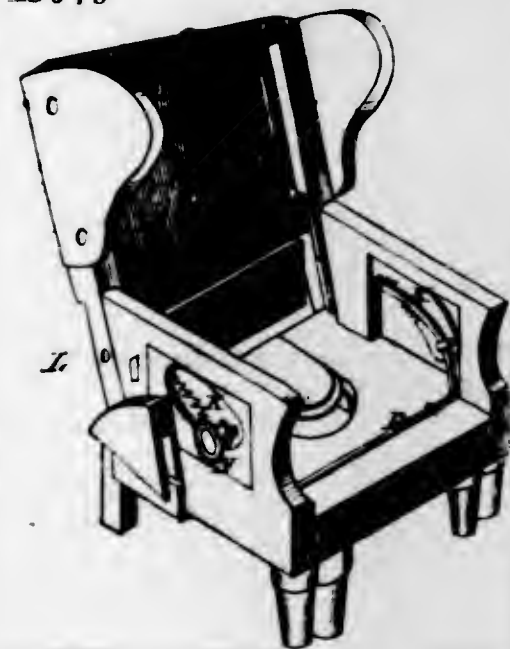
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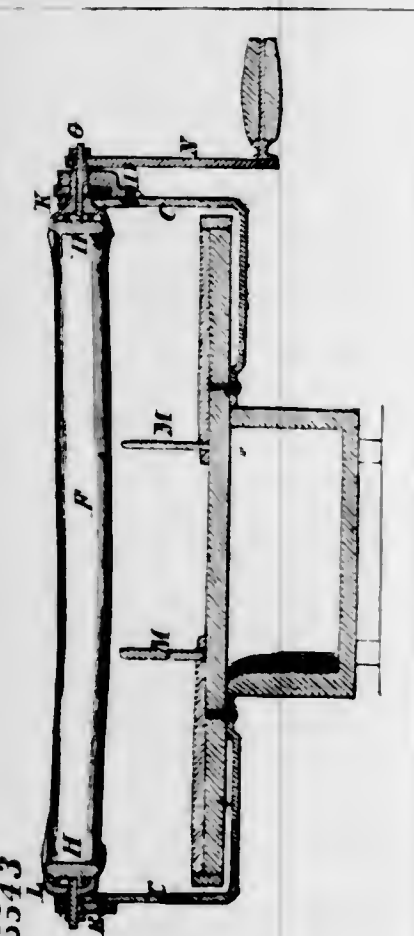
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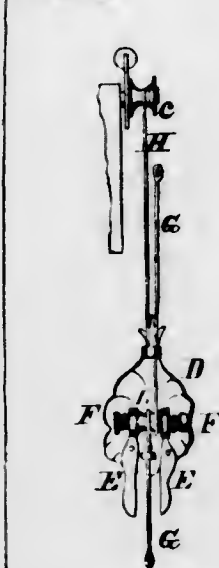
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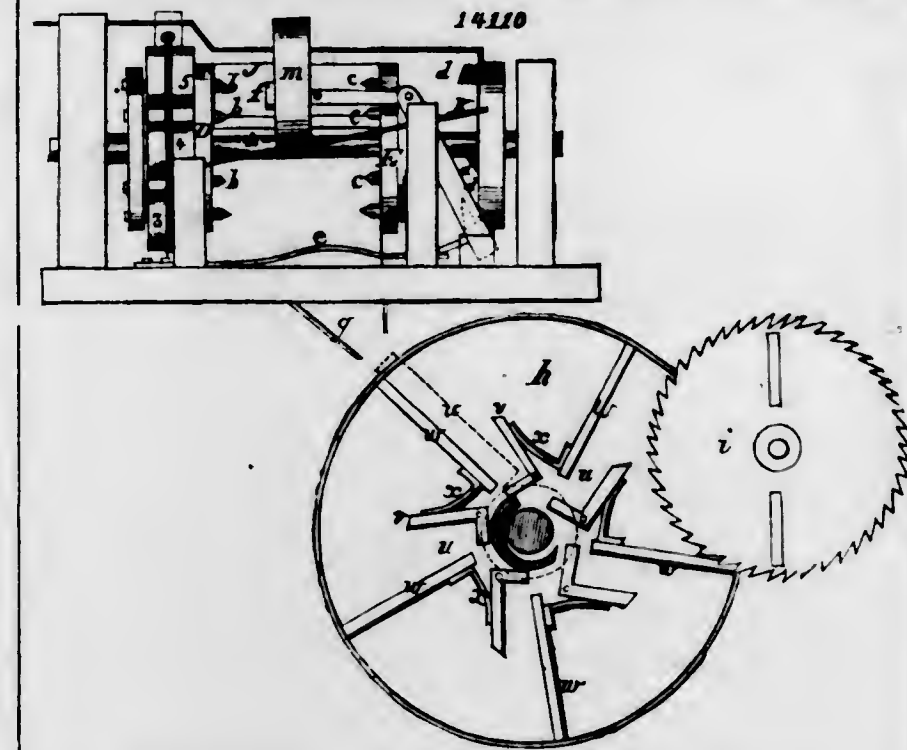
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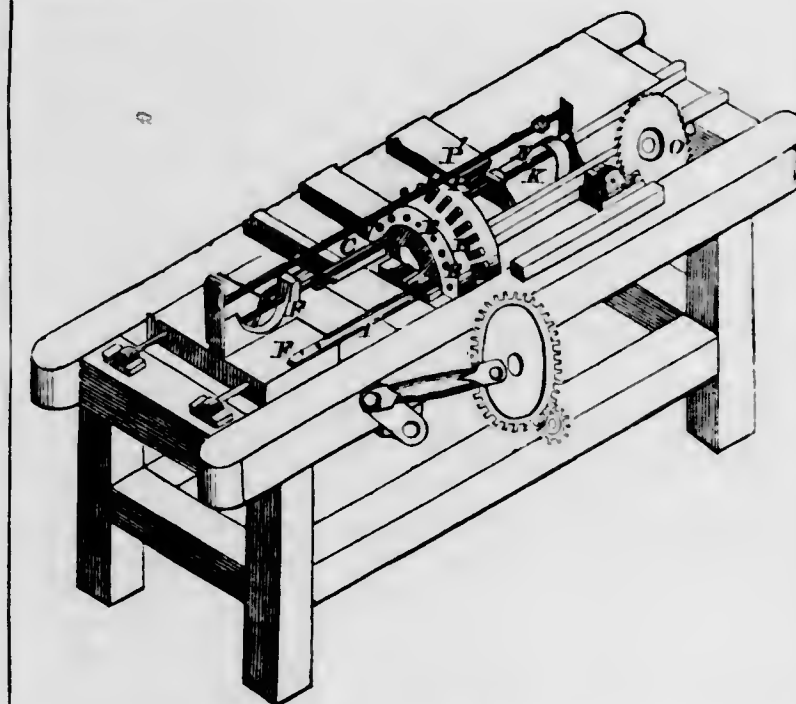
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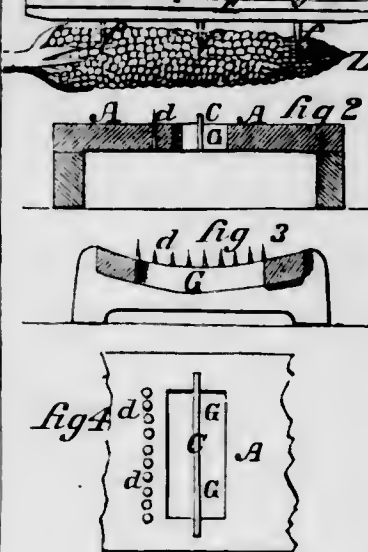
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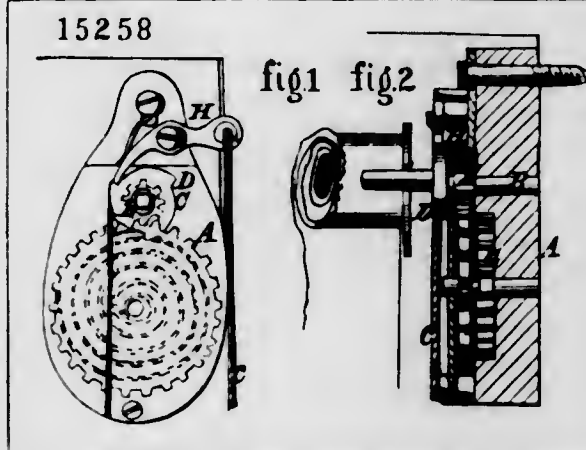
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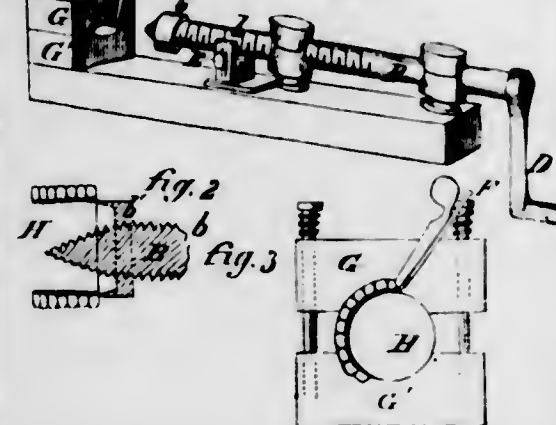
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15258



15835 fig 1



14886

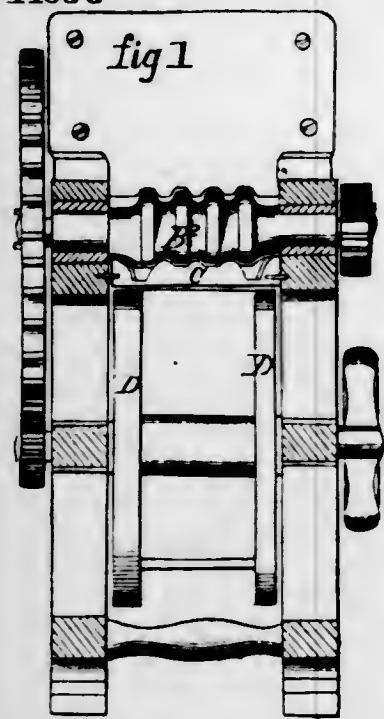
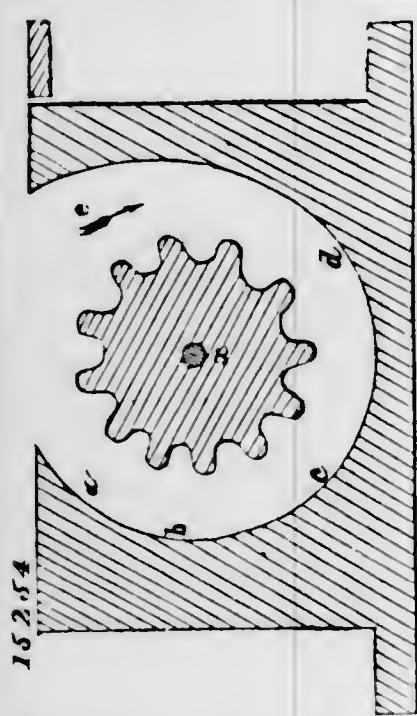
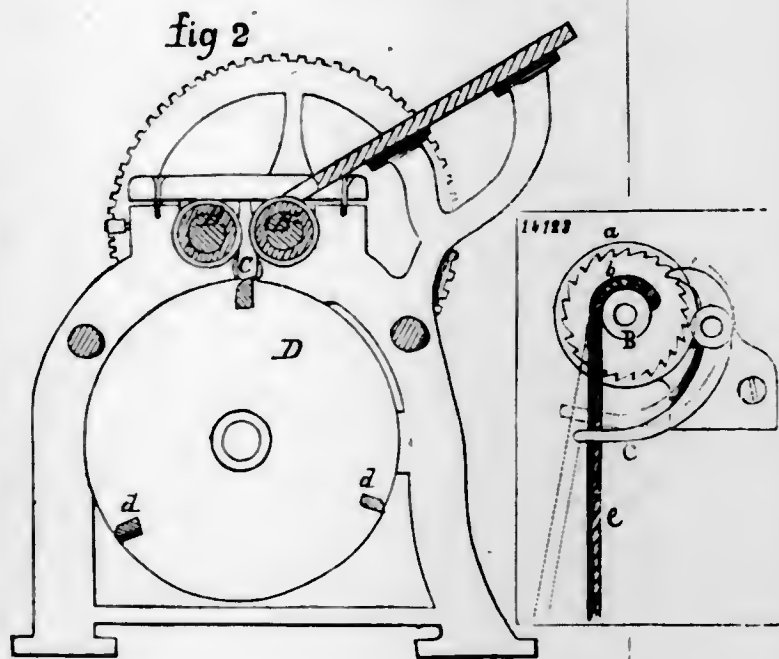
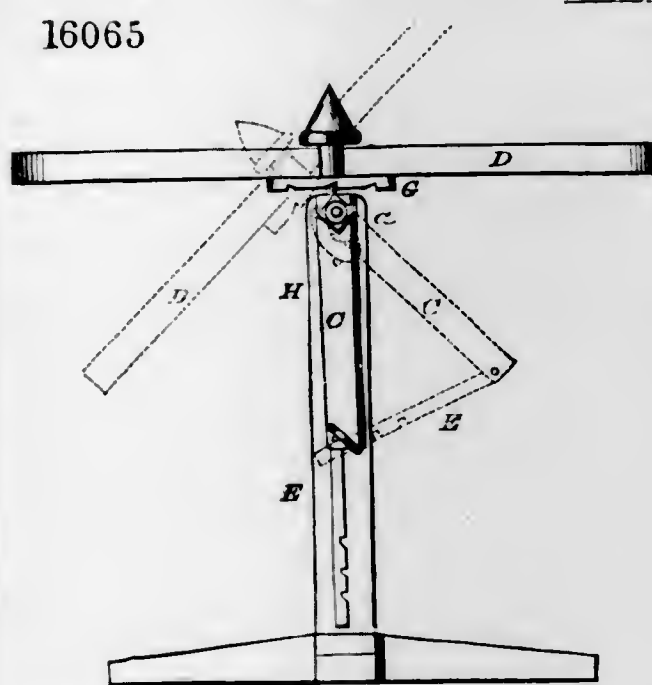


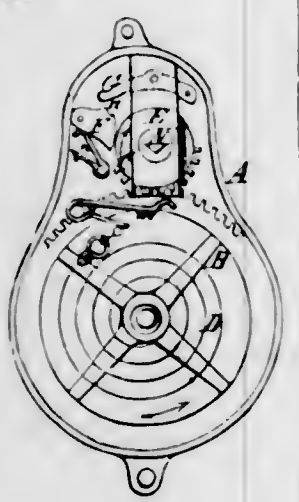
fig 2



16065



15873



14855

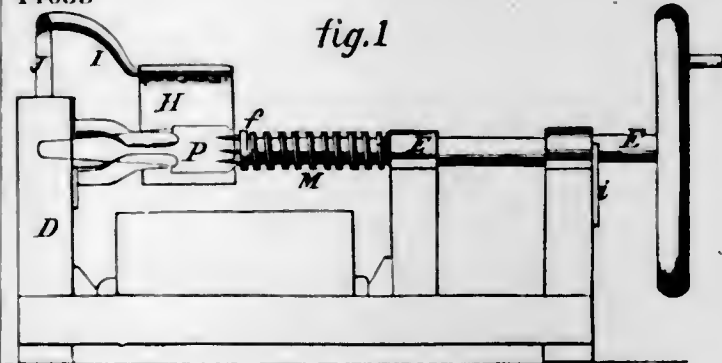
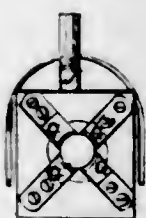


fig.2



15325

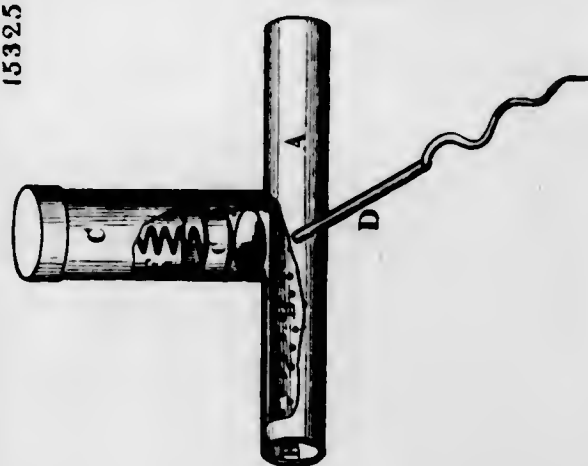


fig 1

16267

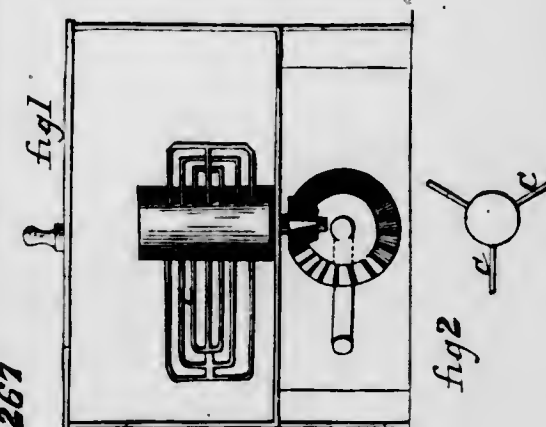
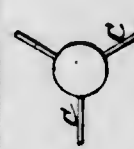
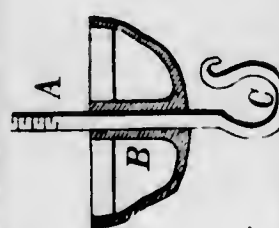


fig 2



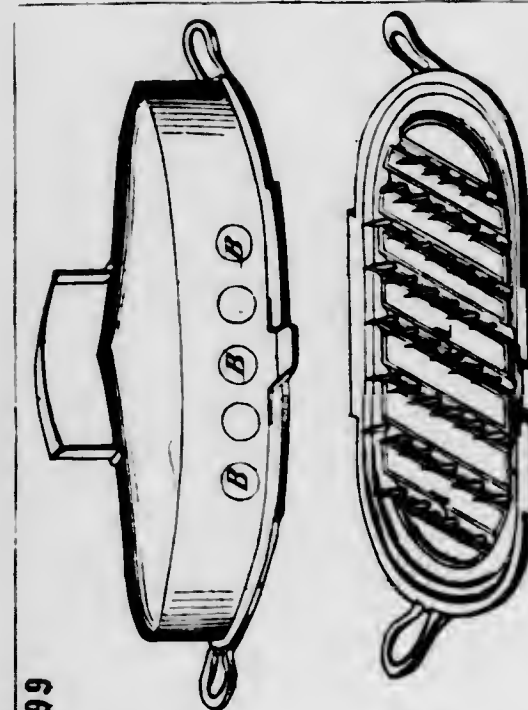
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15799



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15083

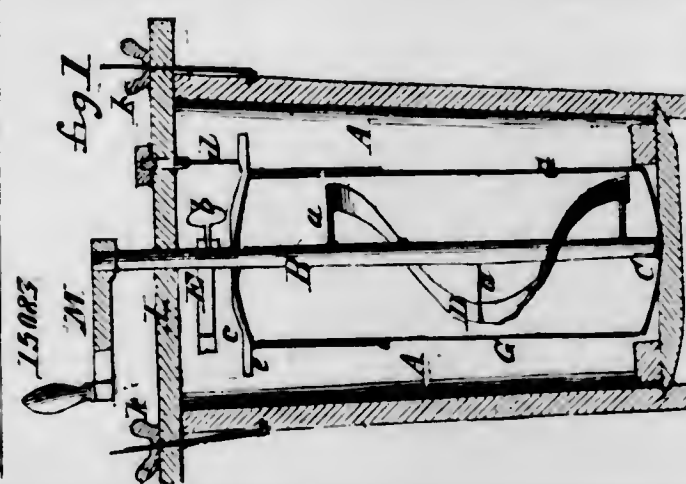
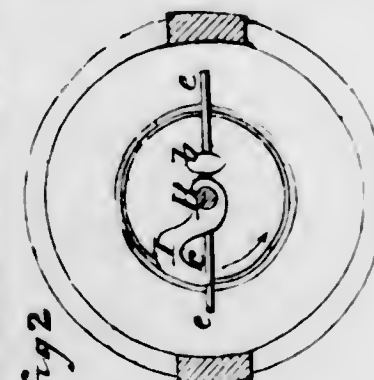
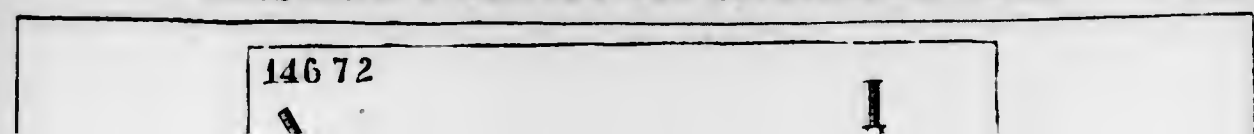
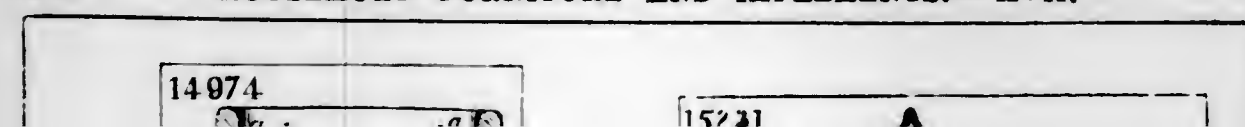
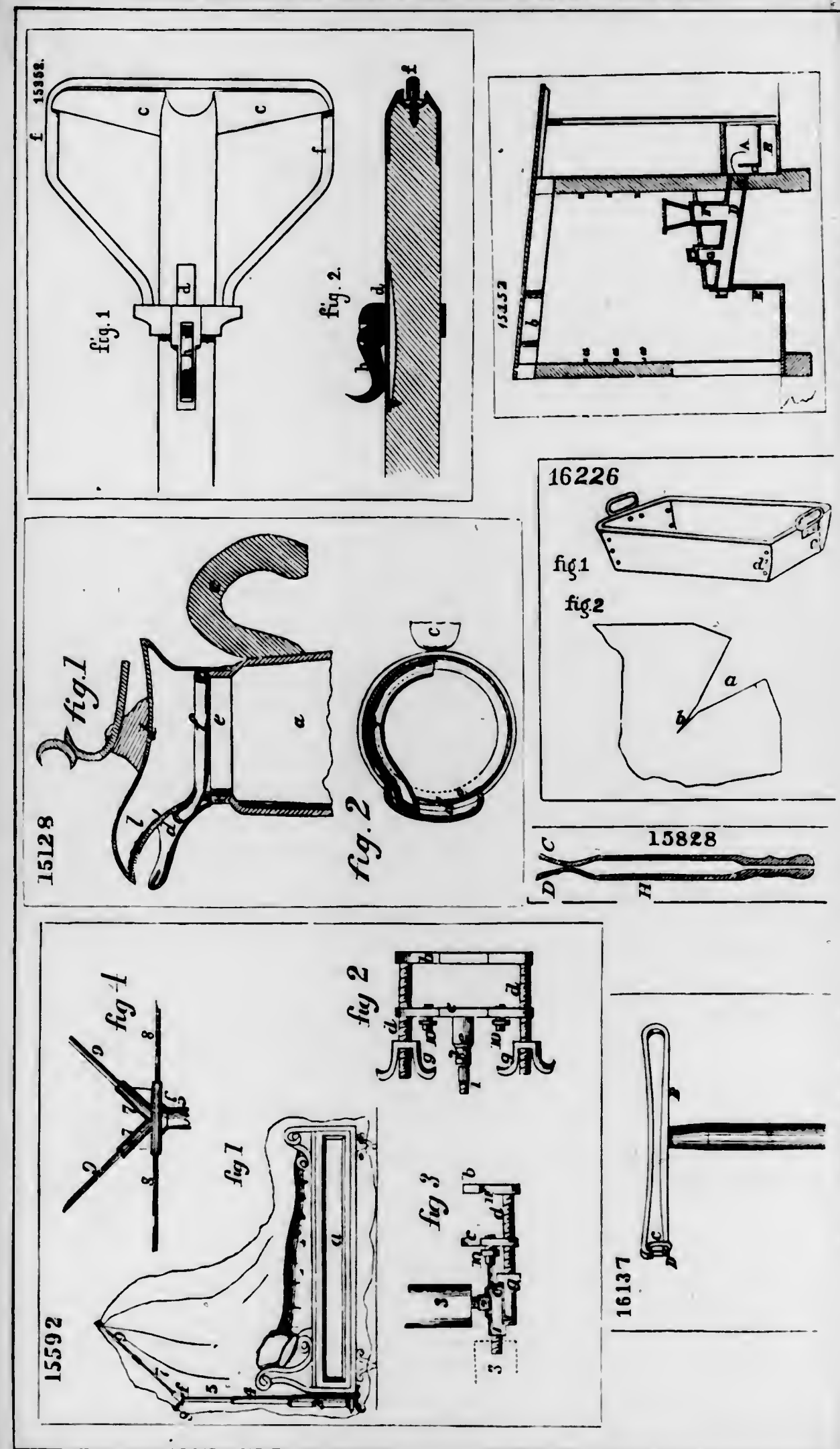
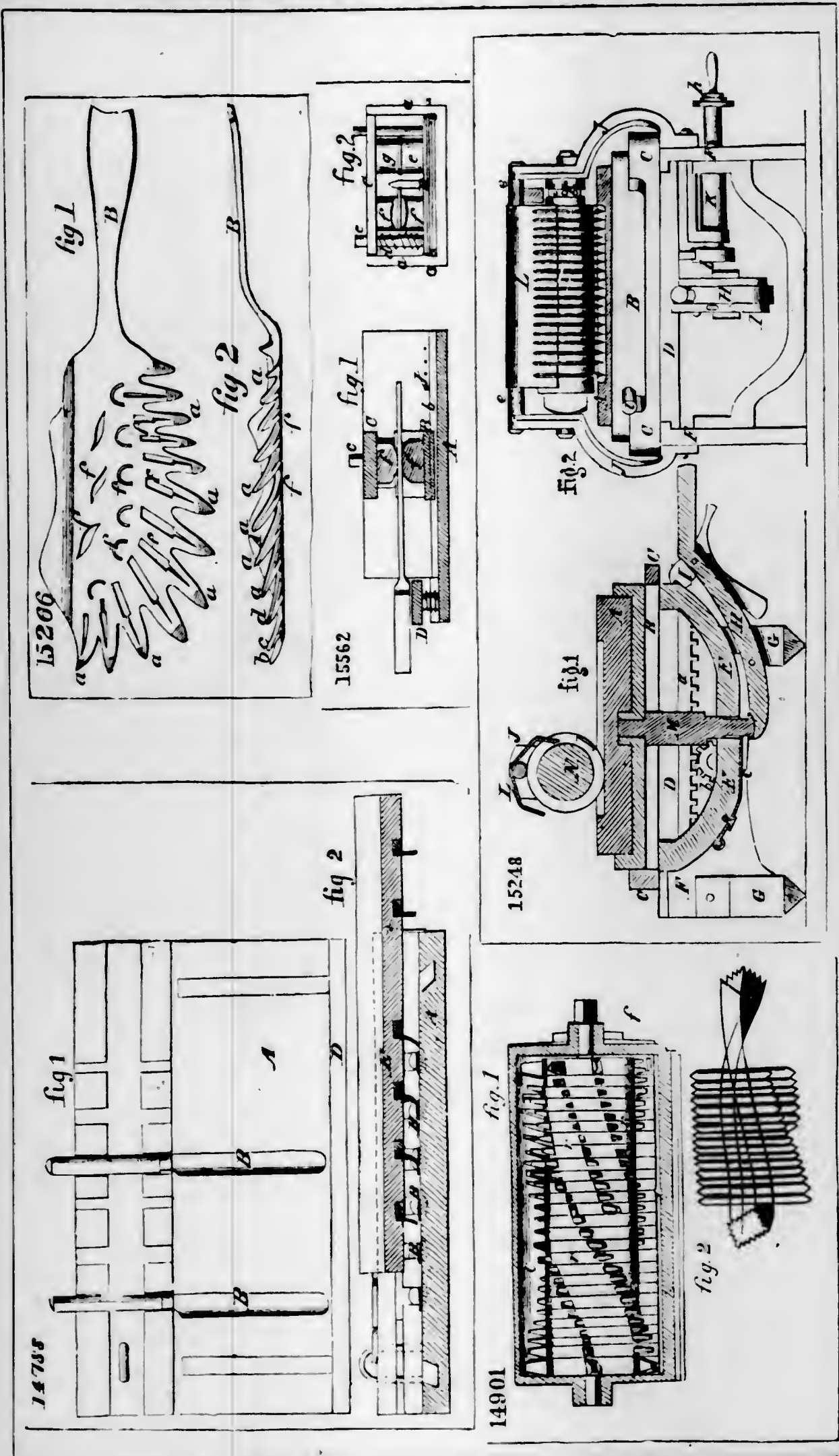
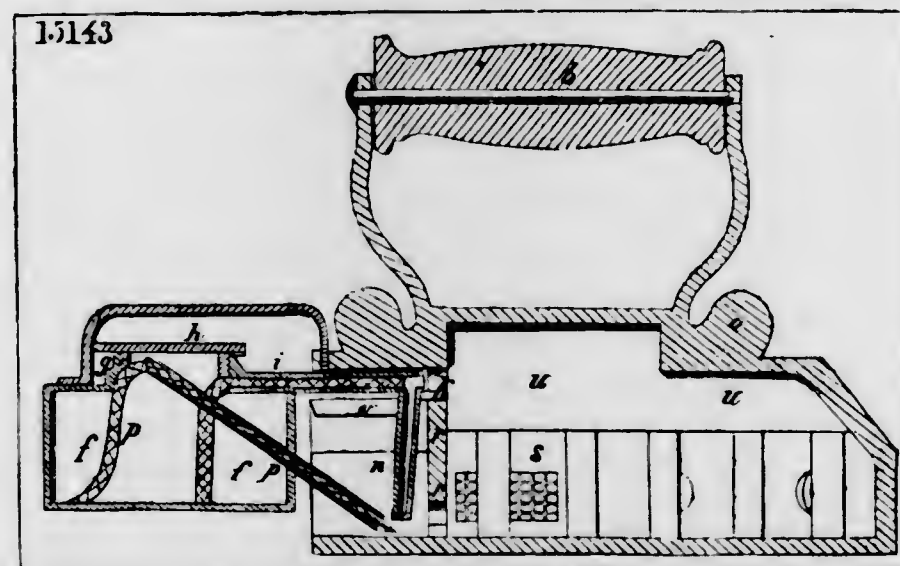
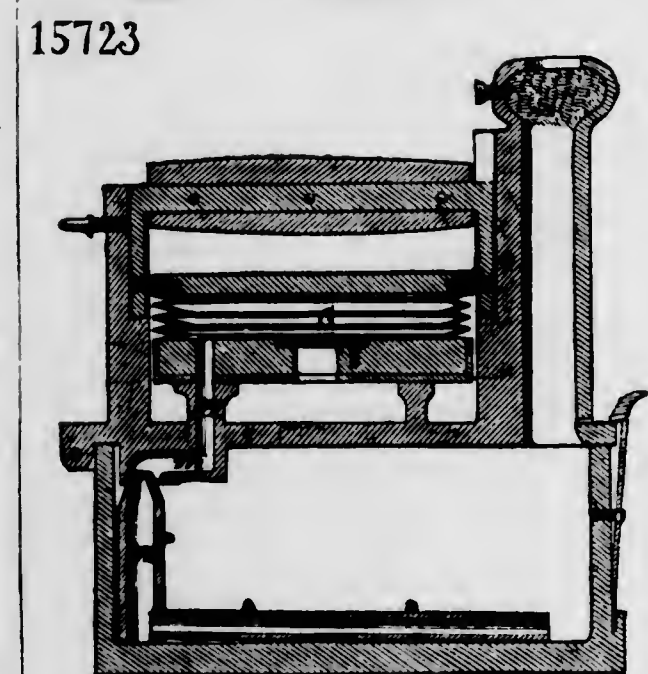
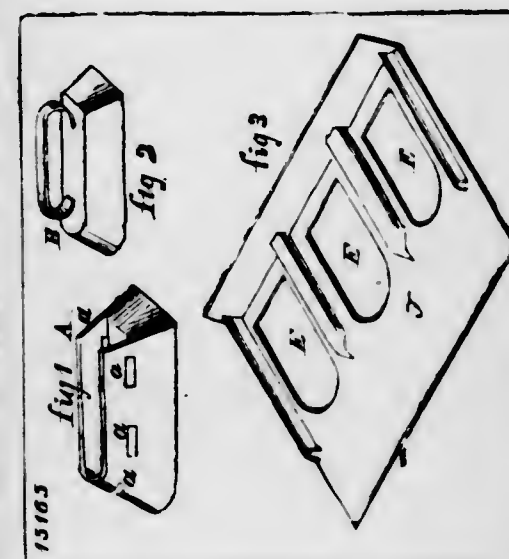
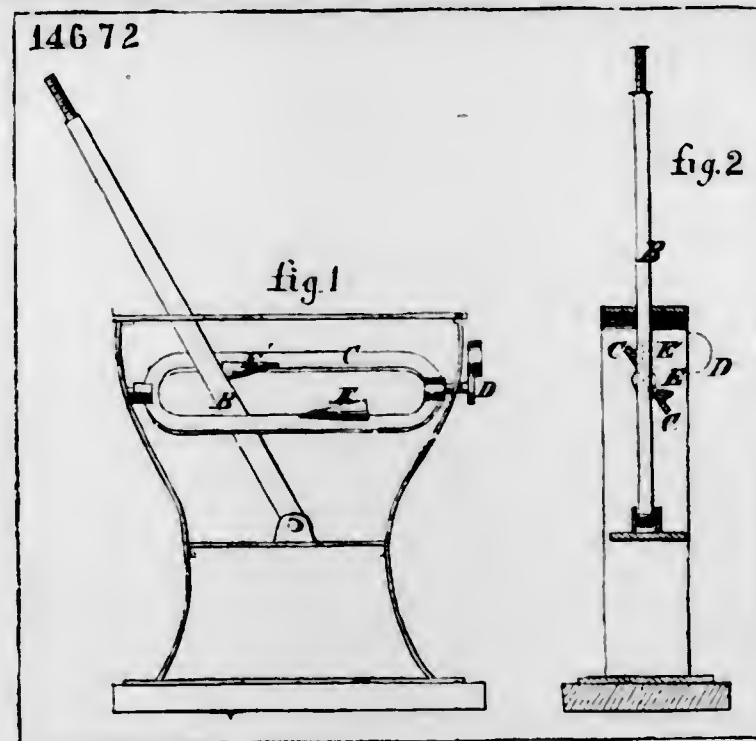
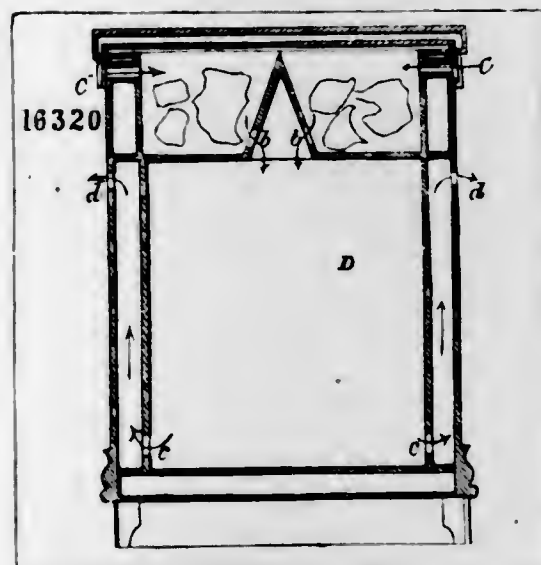
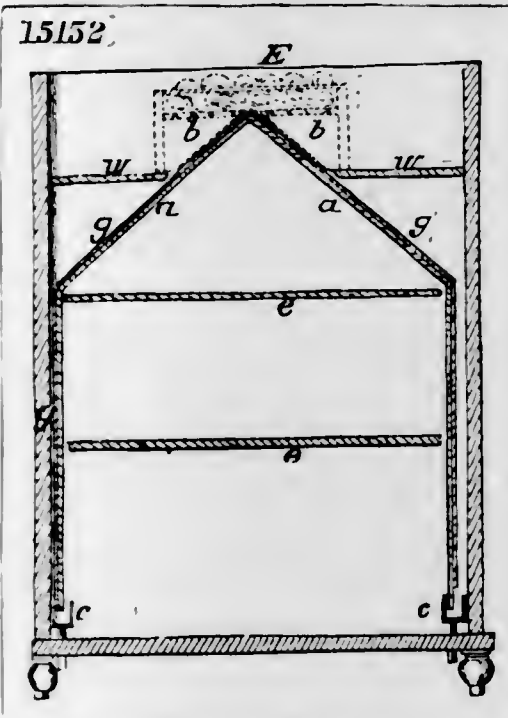
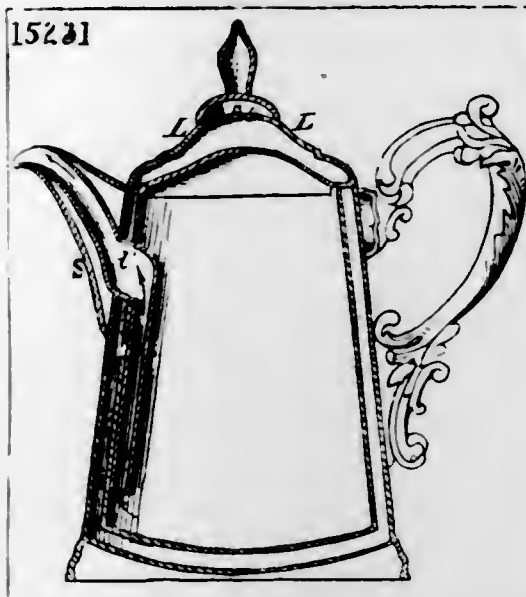
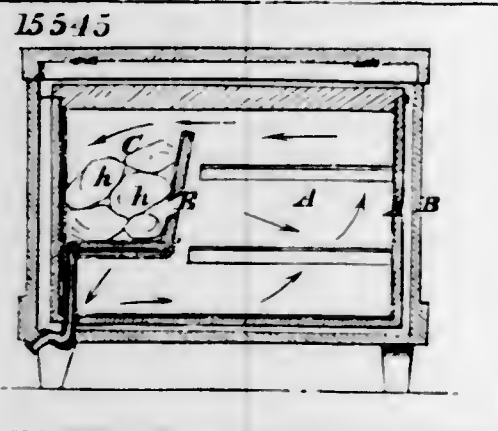
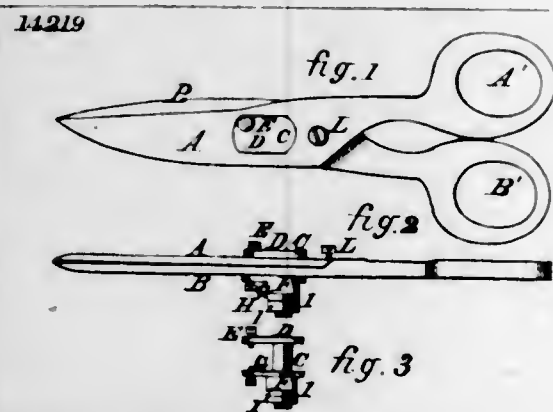
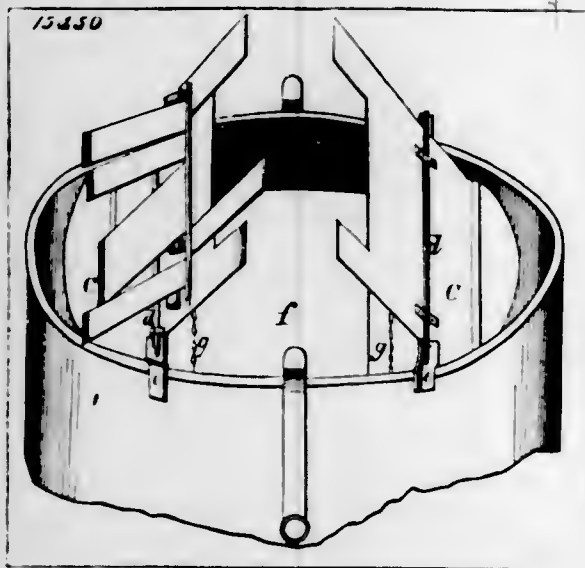
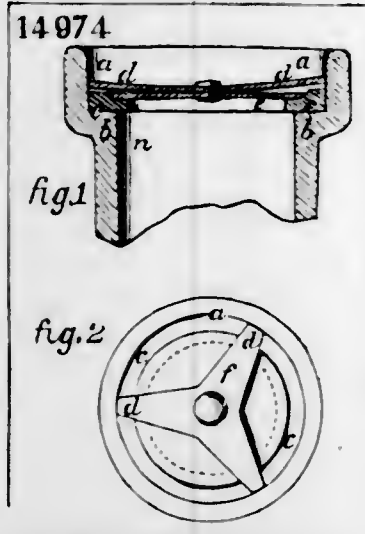
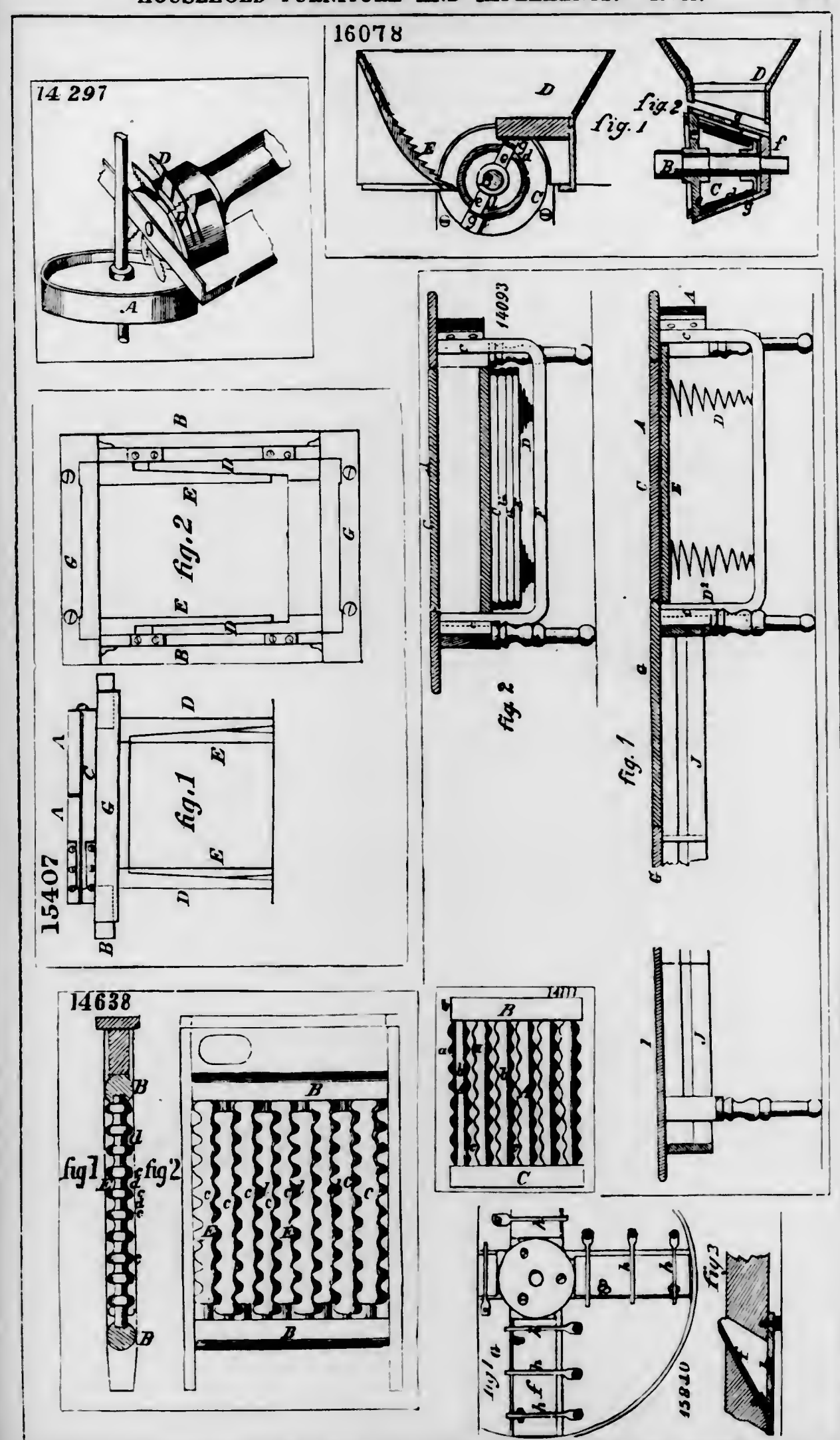
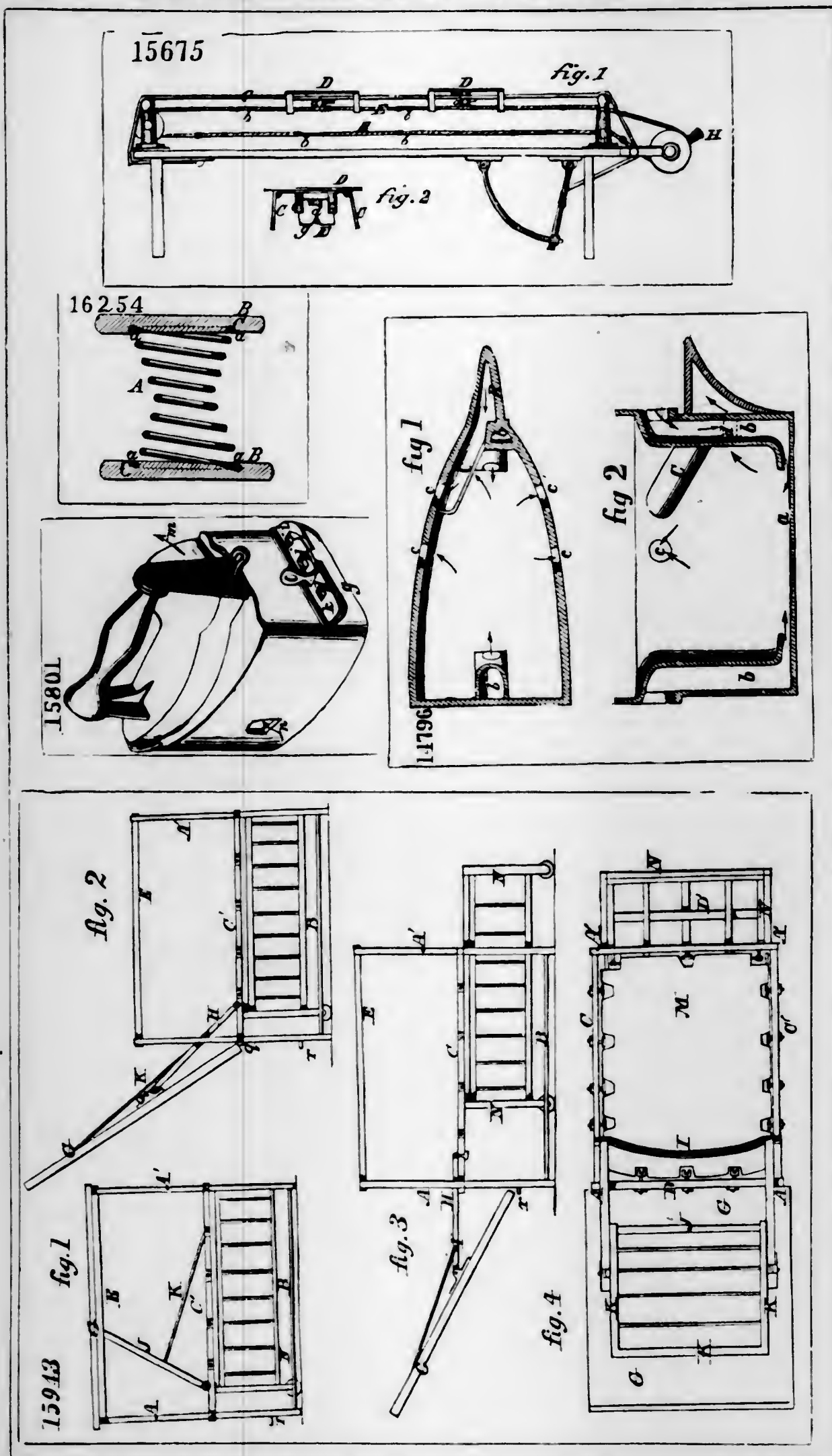


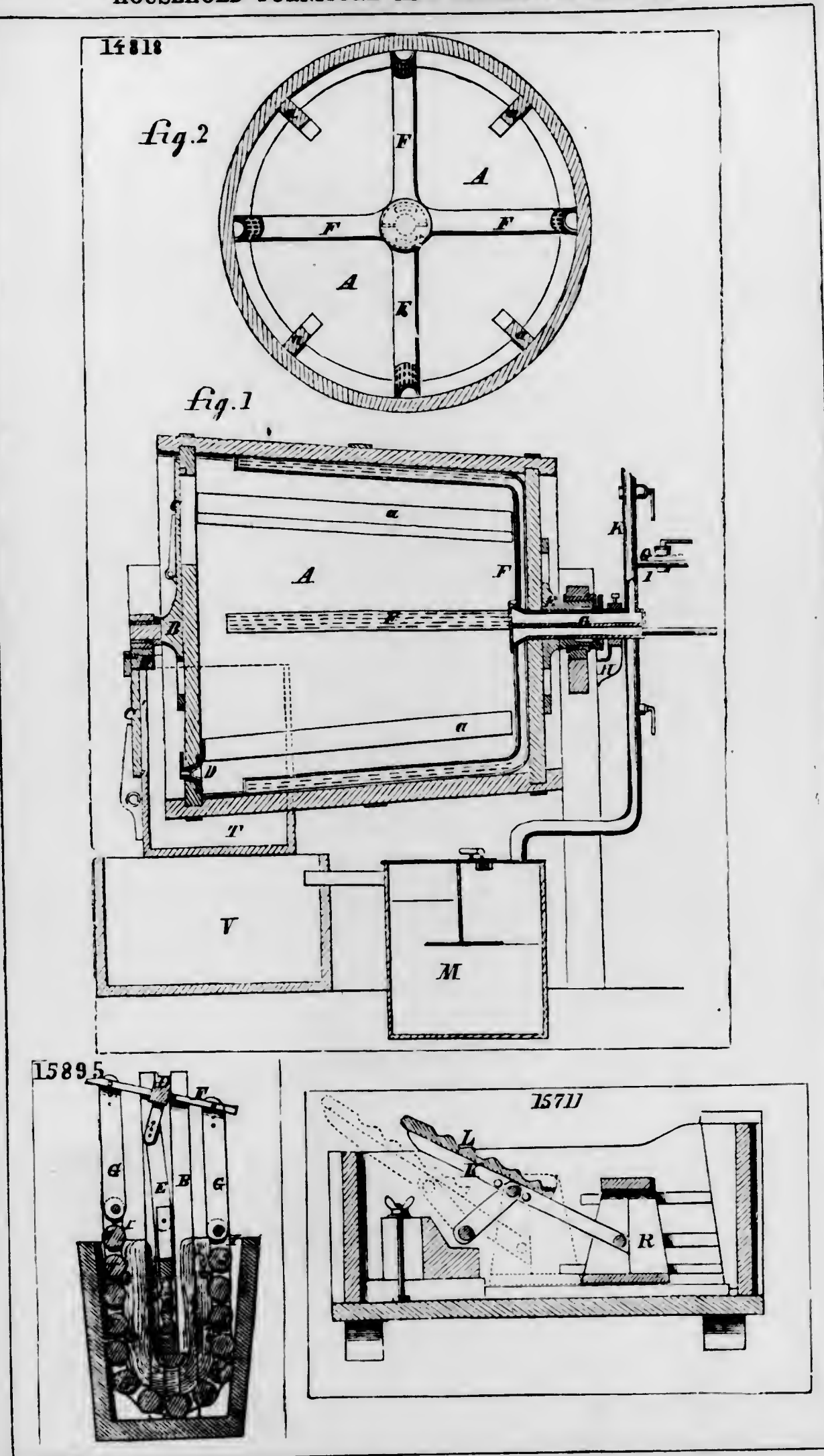
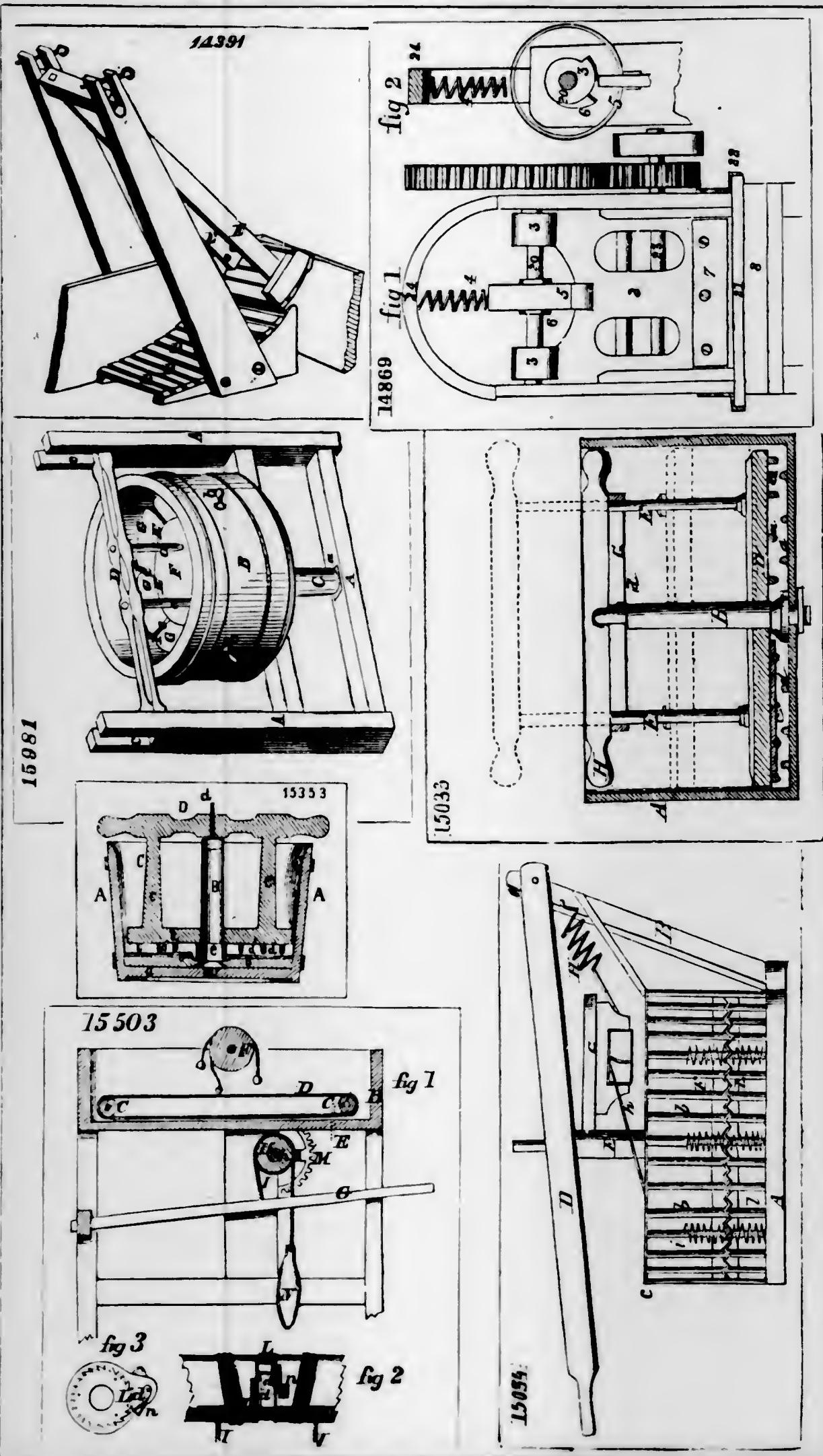
fig 2

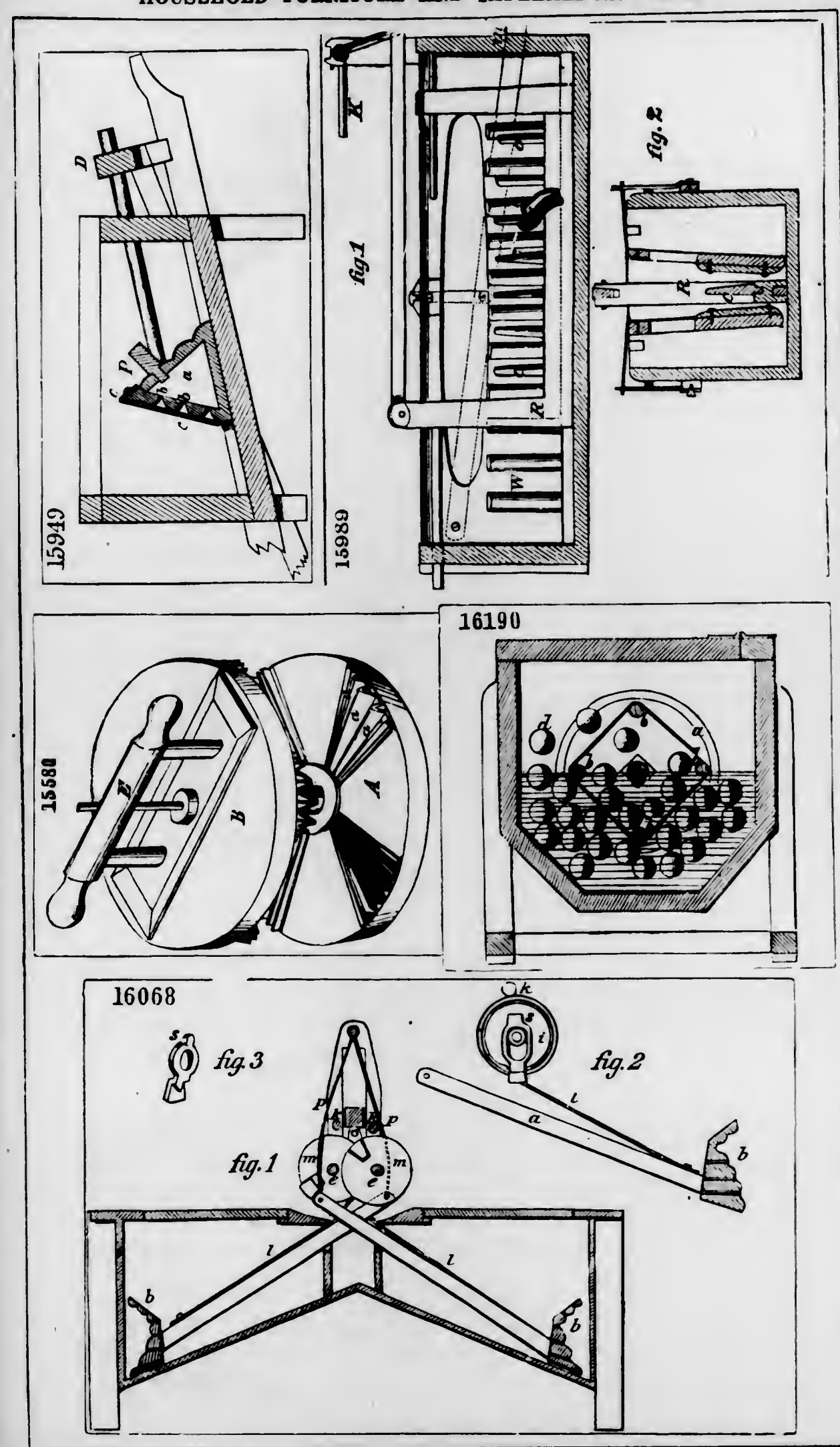
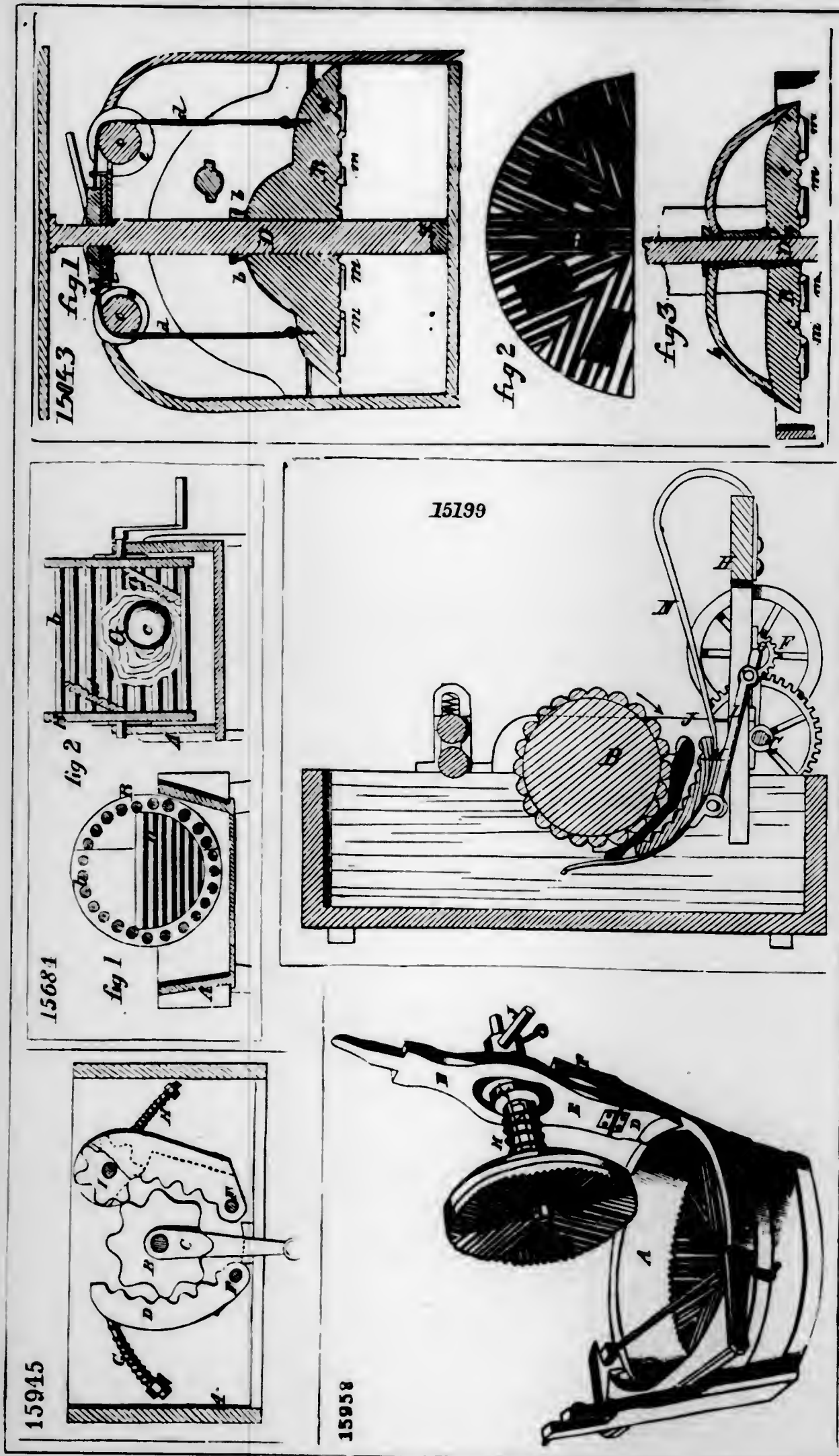


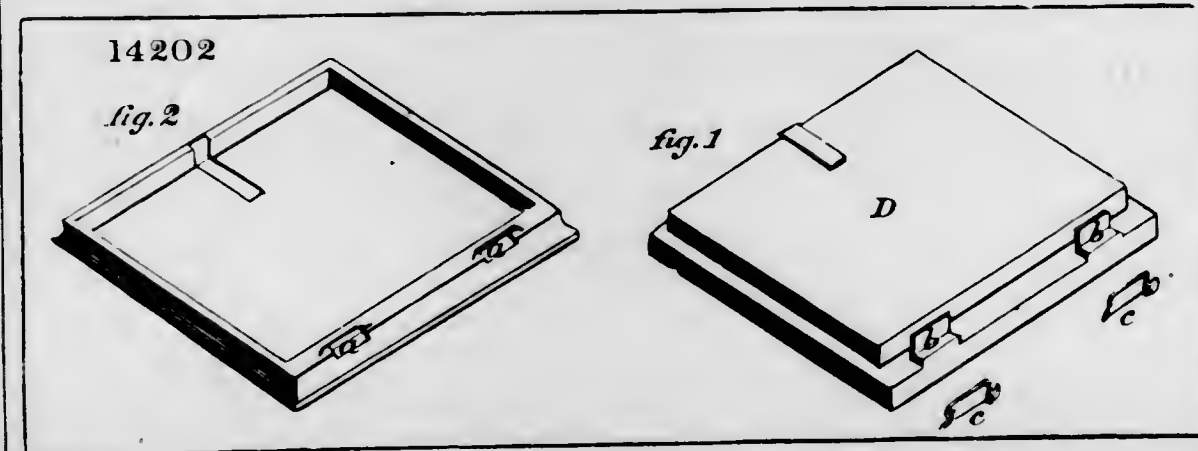
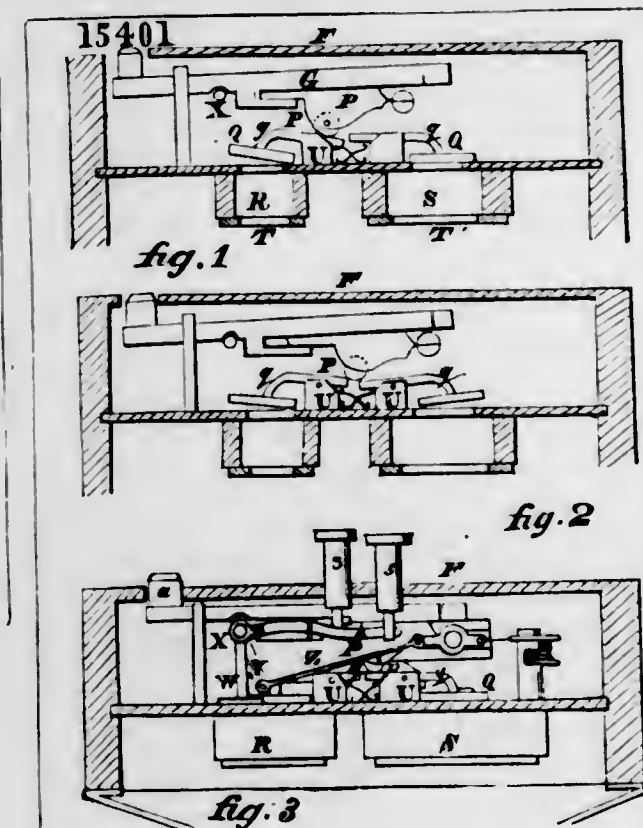
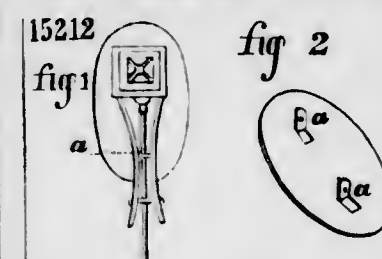
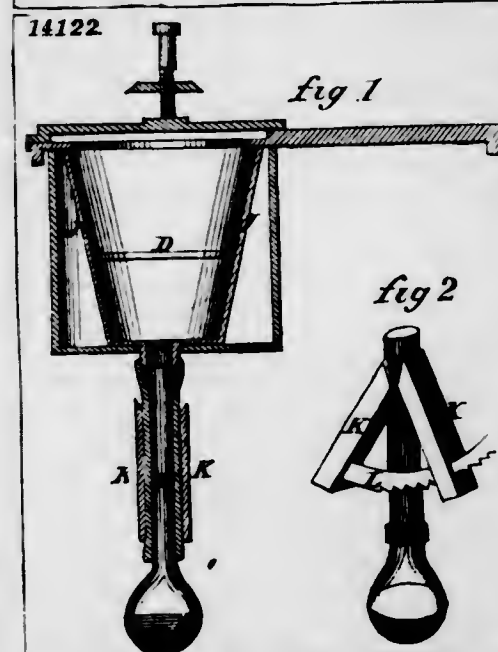
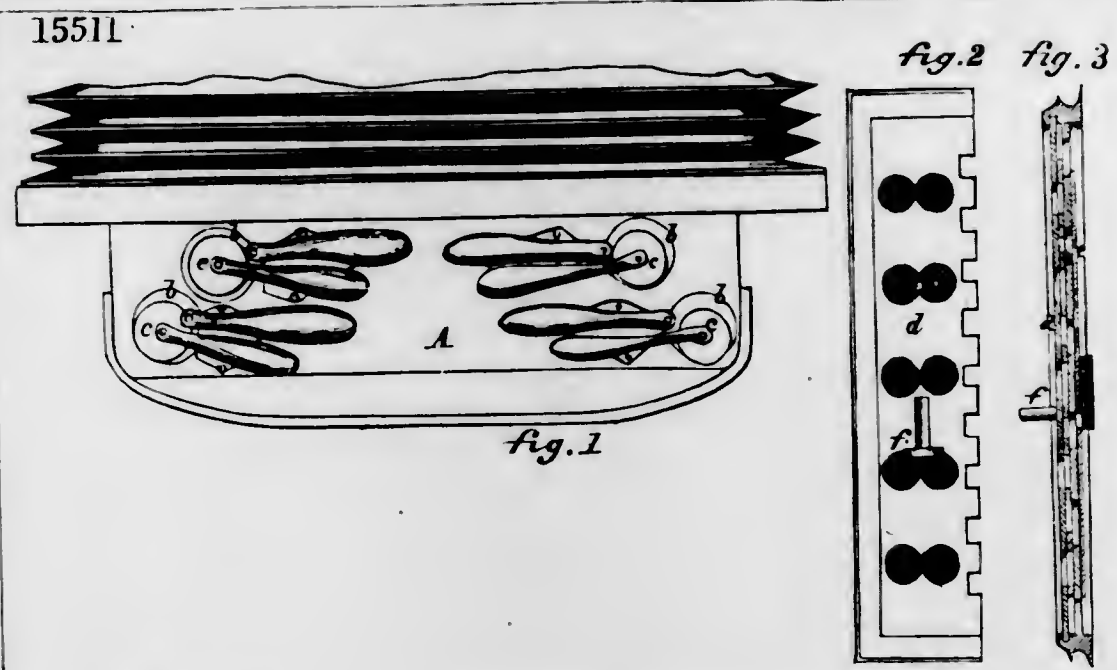
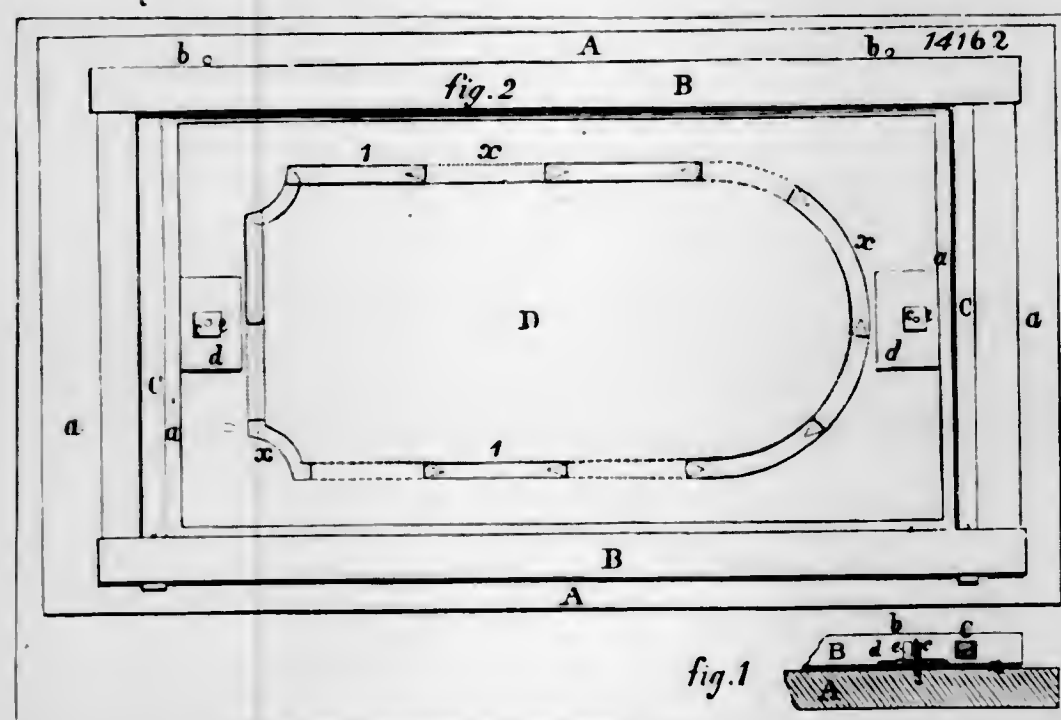
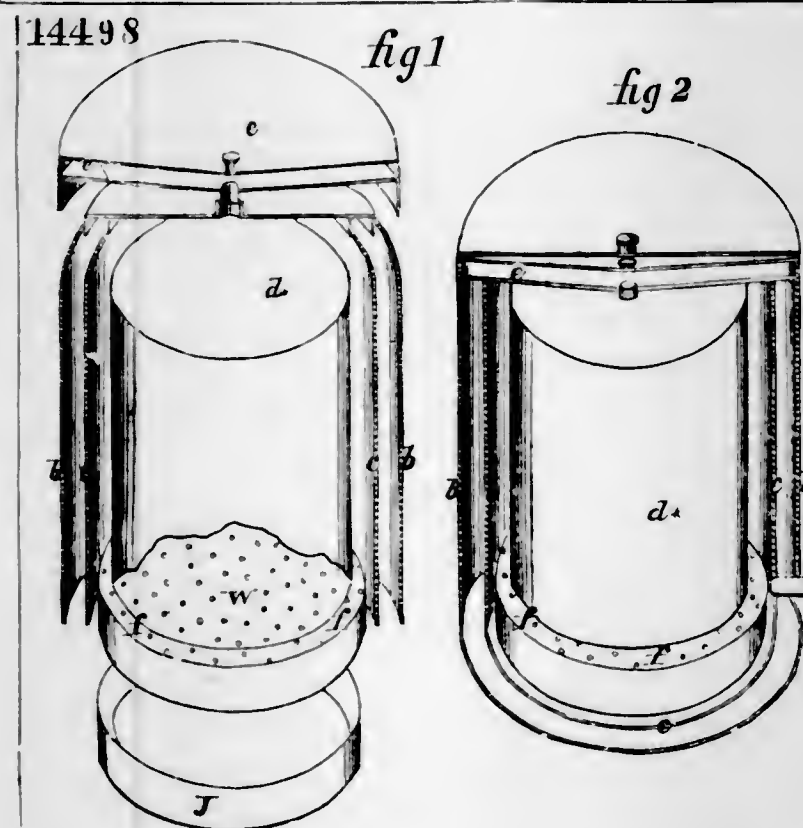
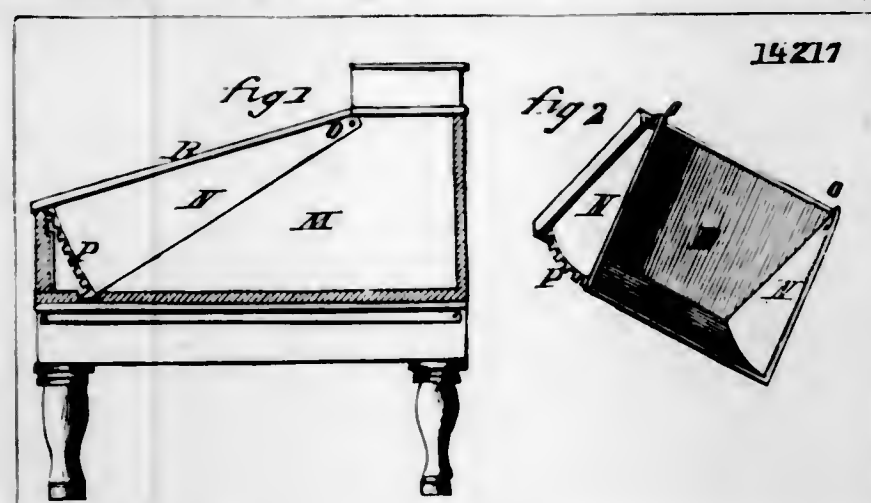


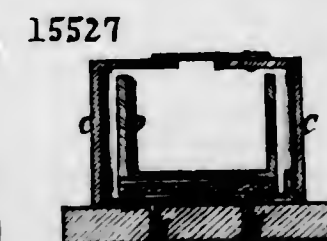
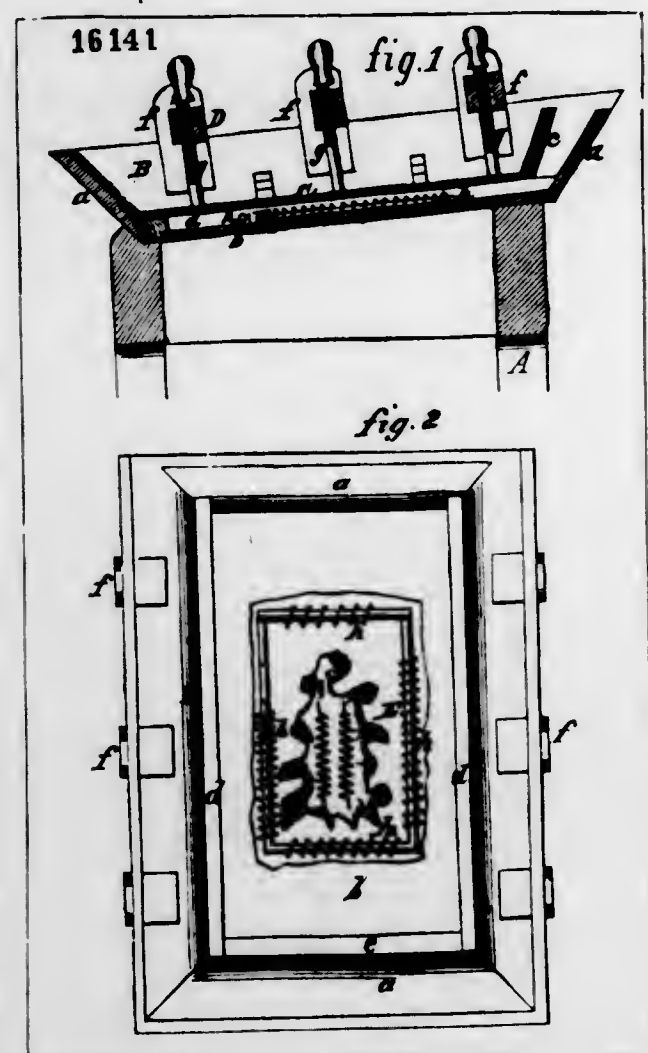
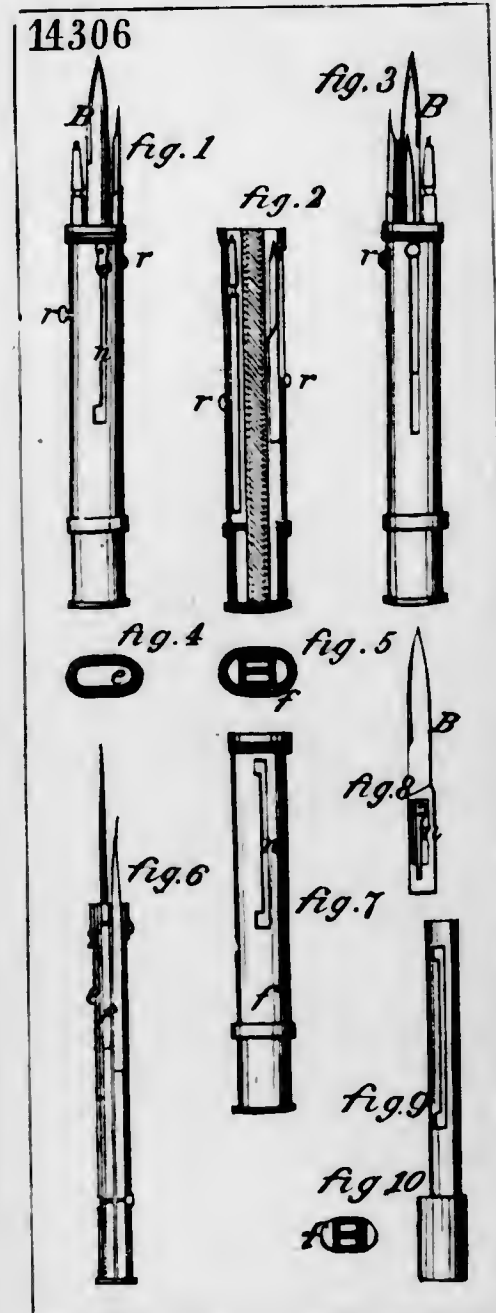
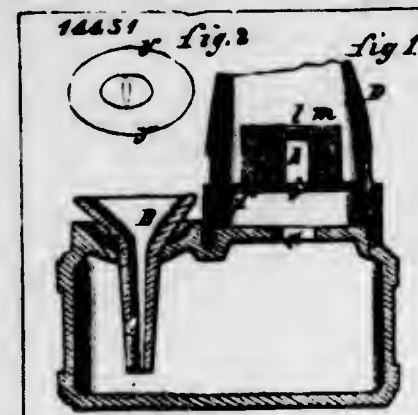
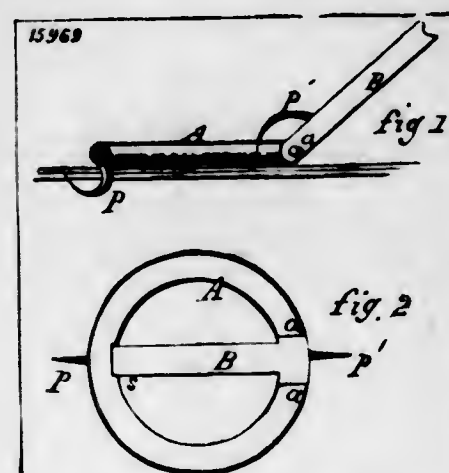
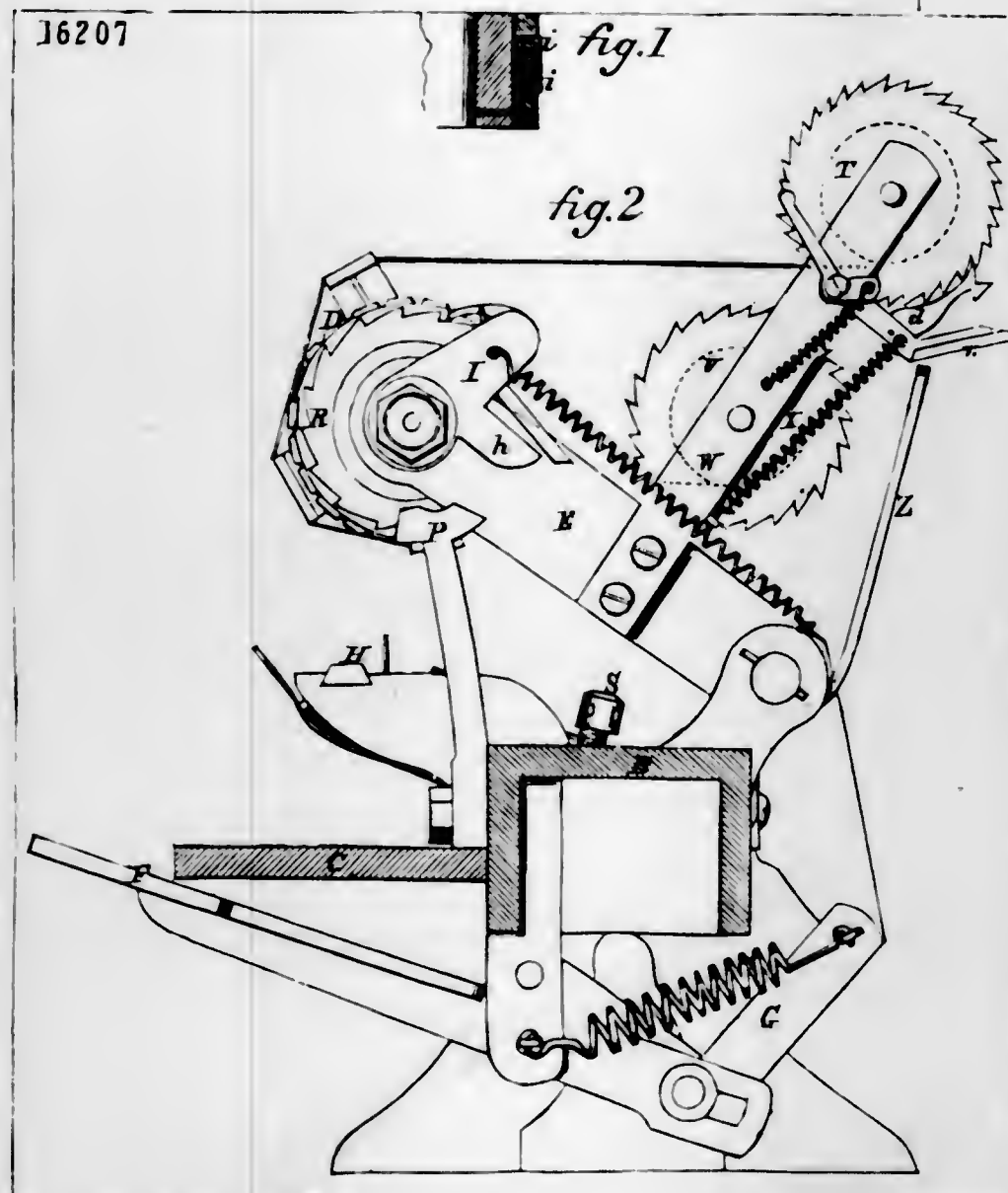
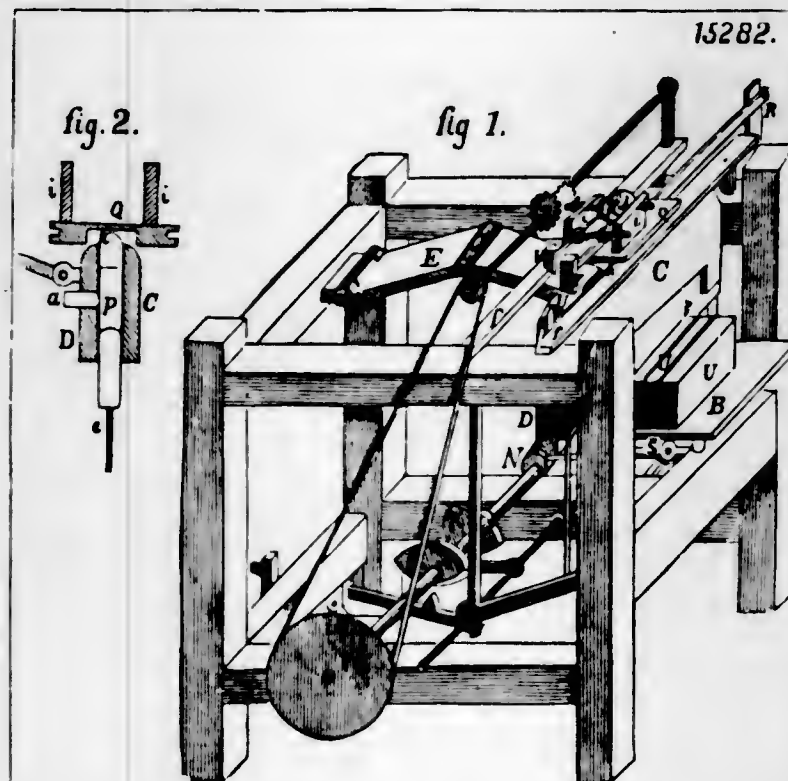


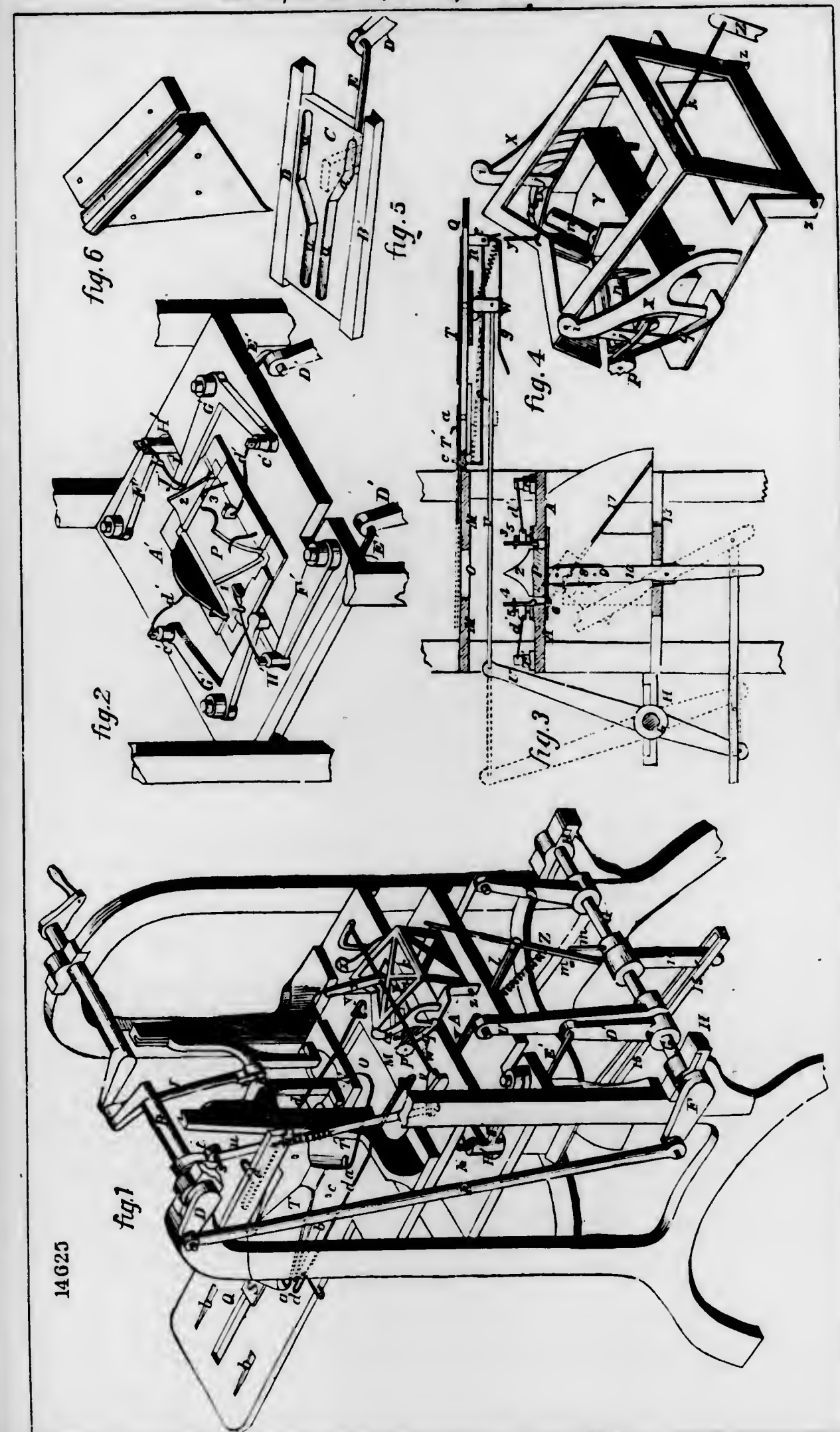
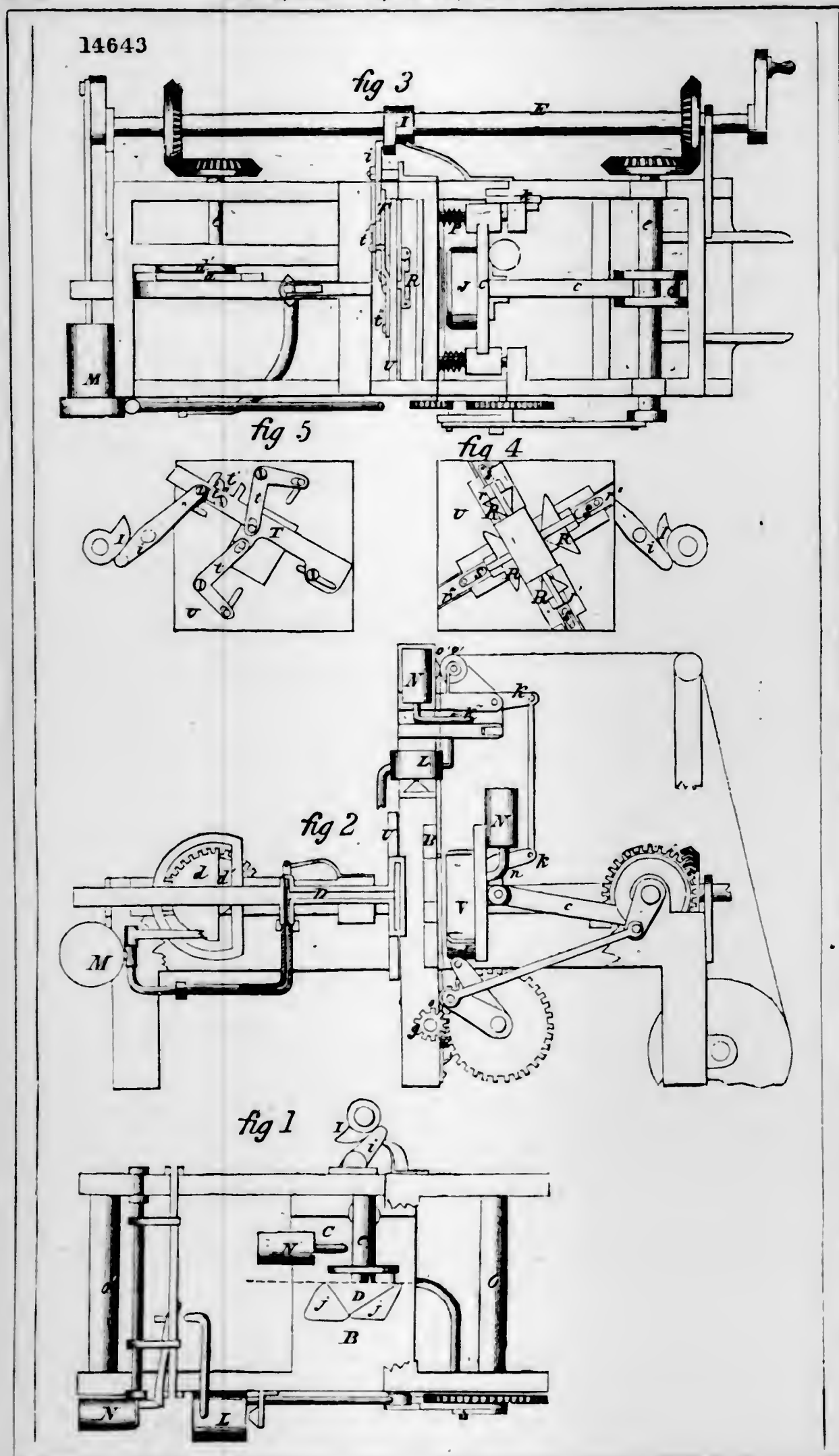


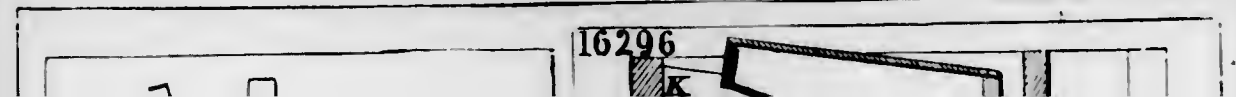
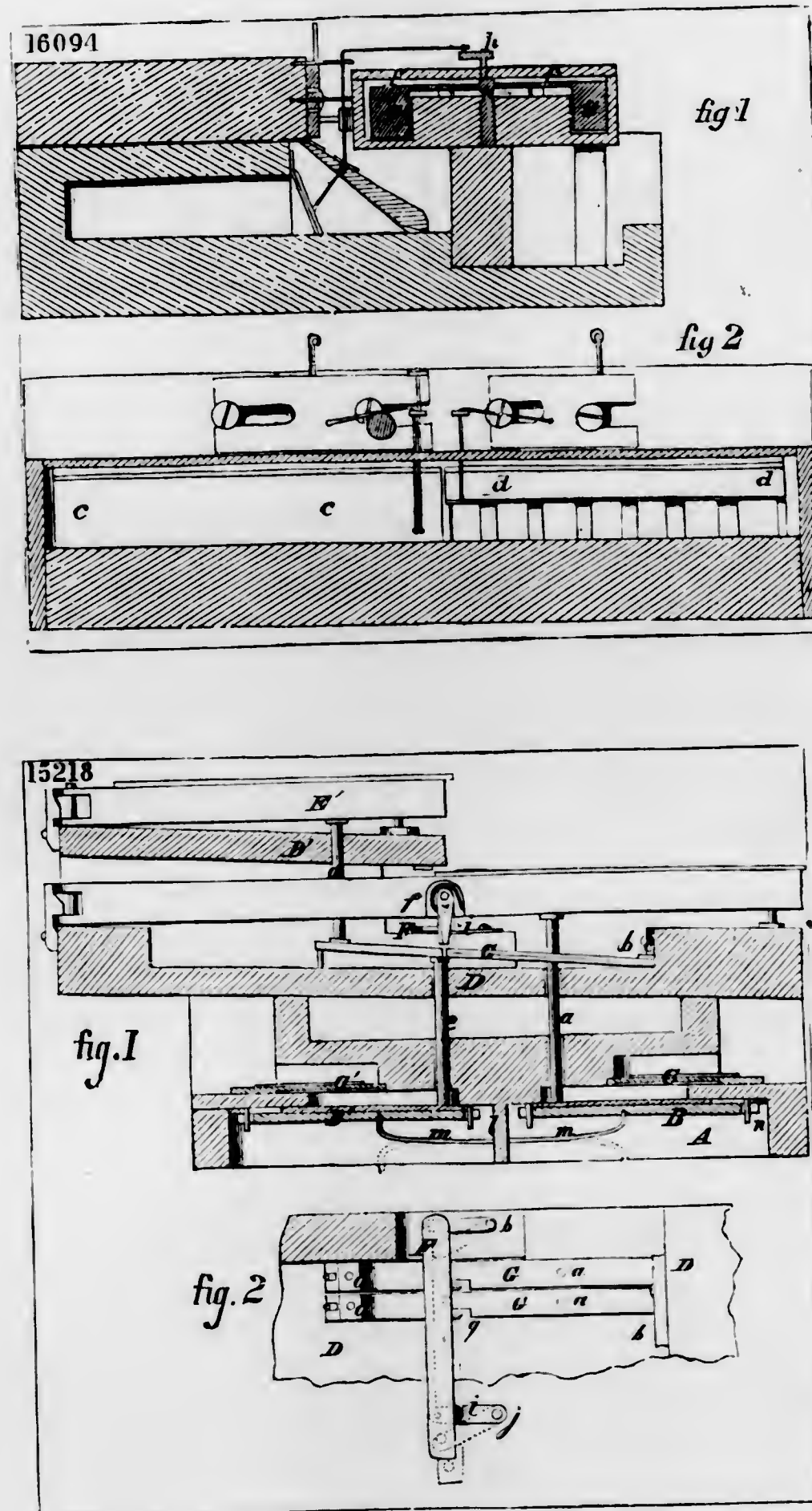
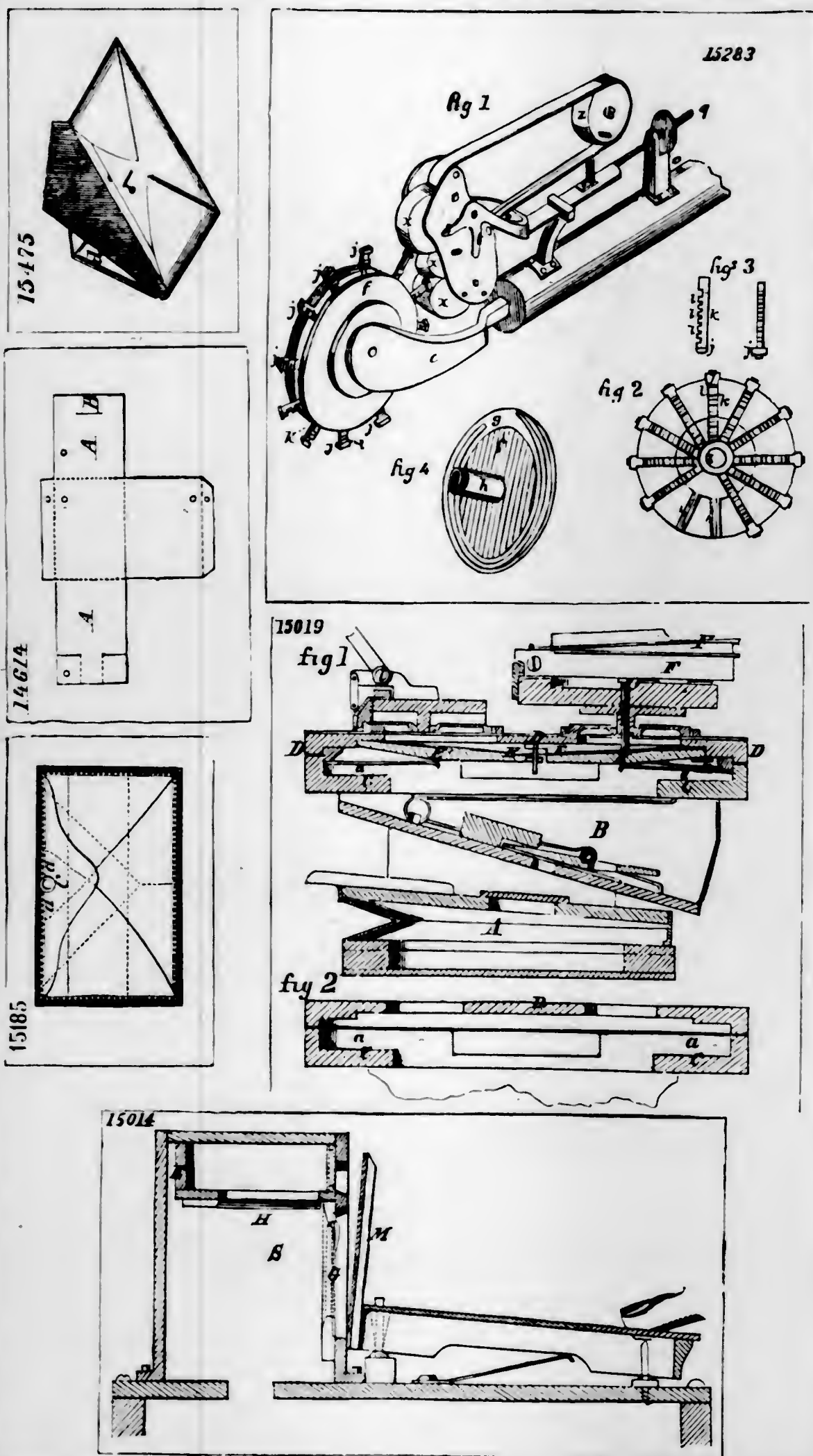


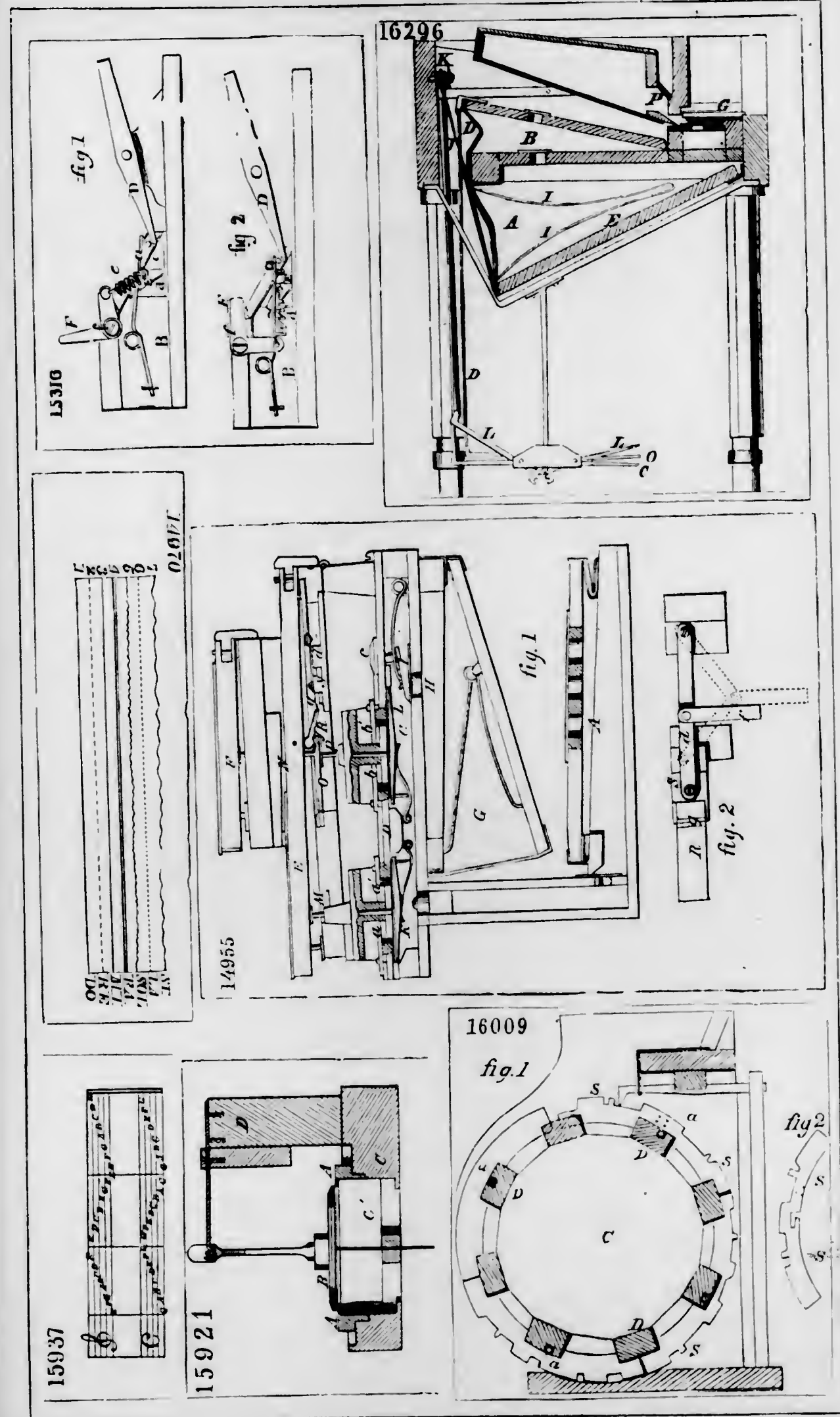
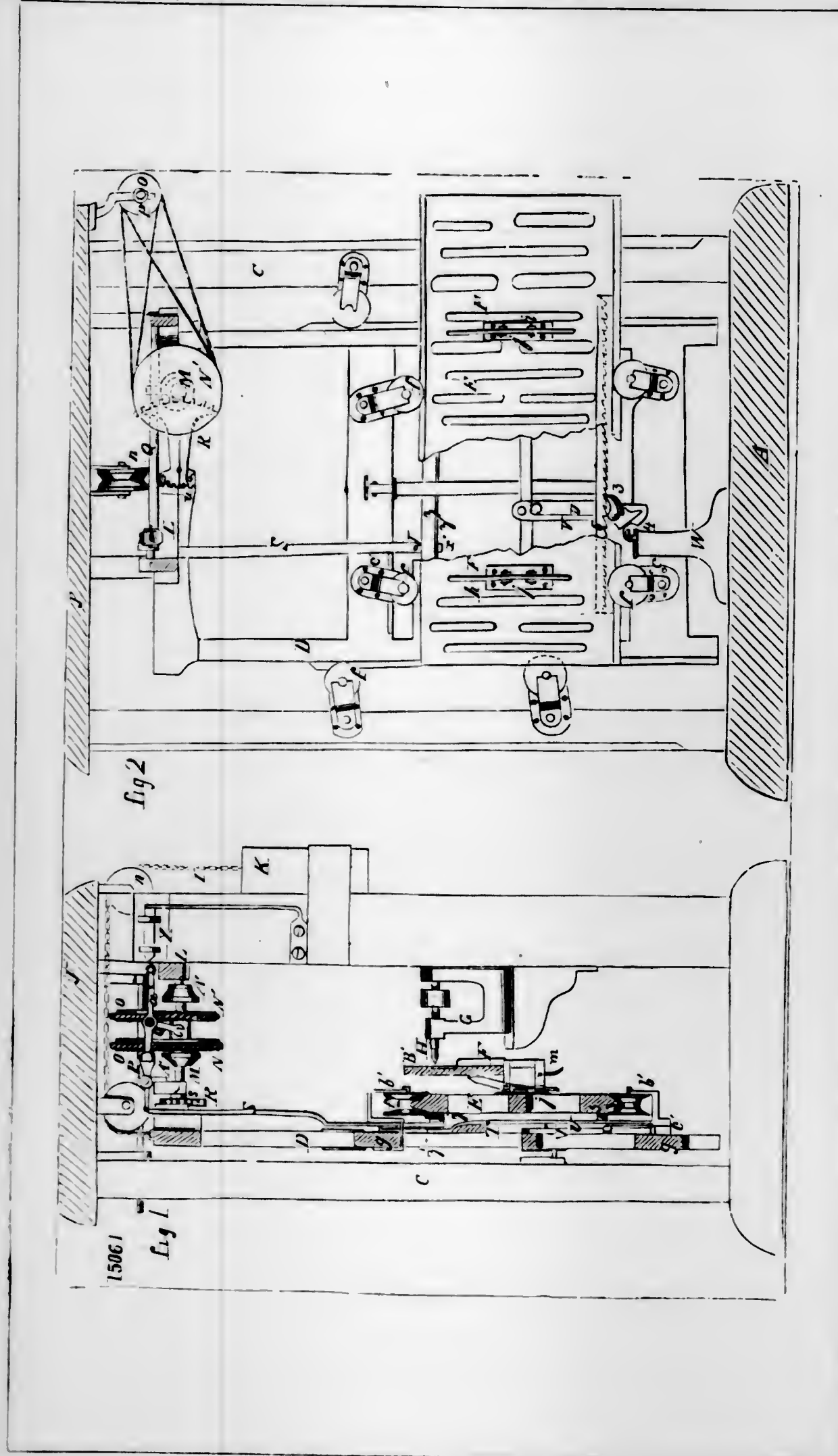




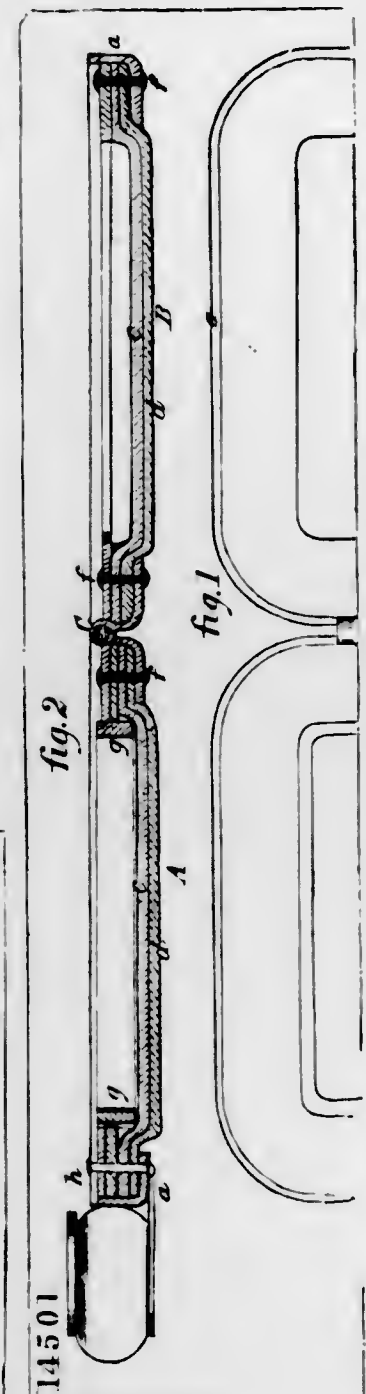
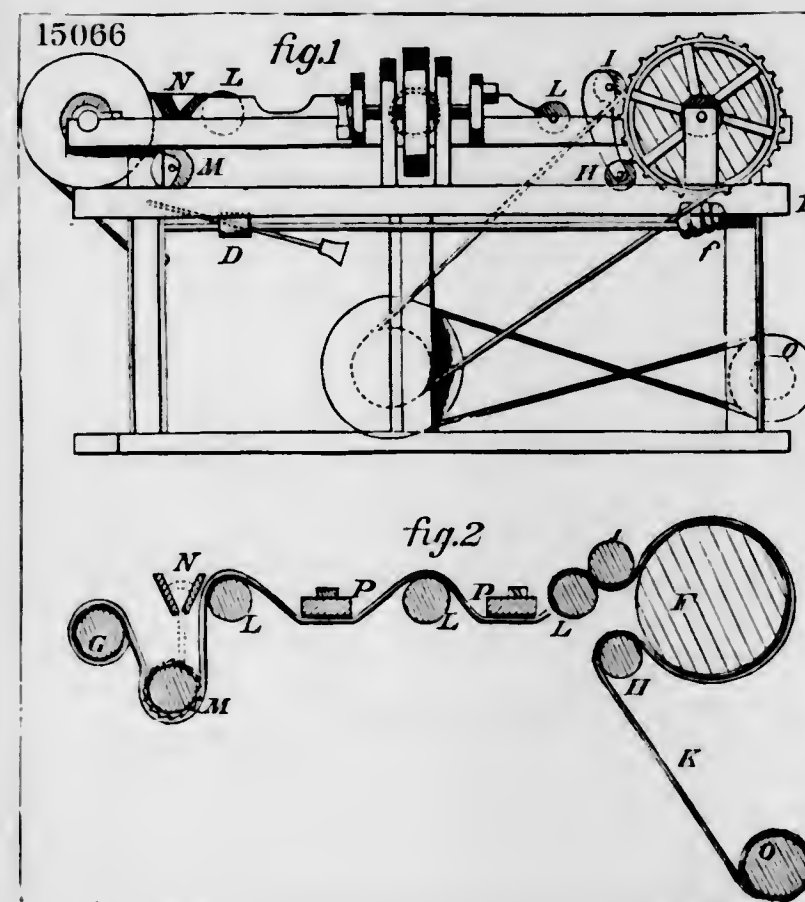
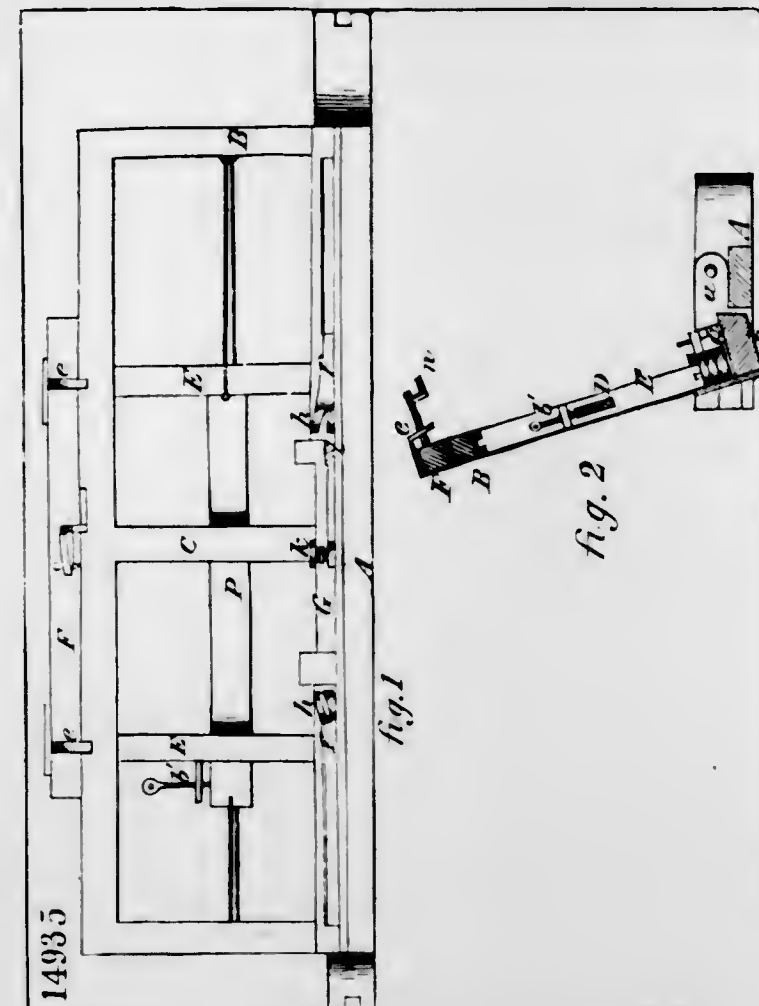
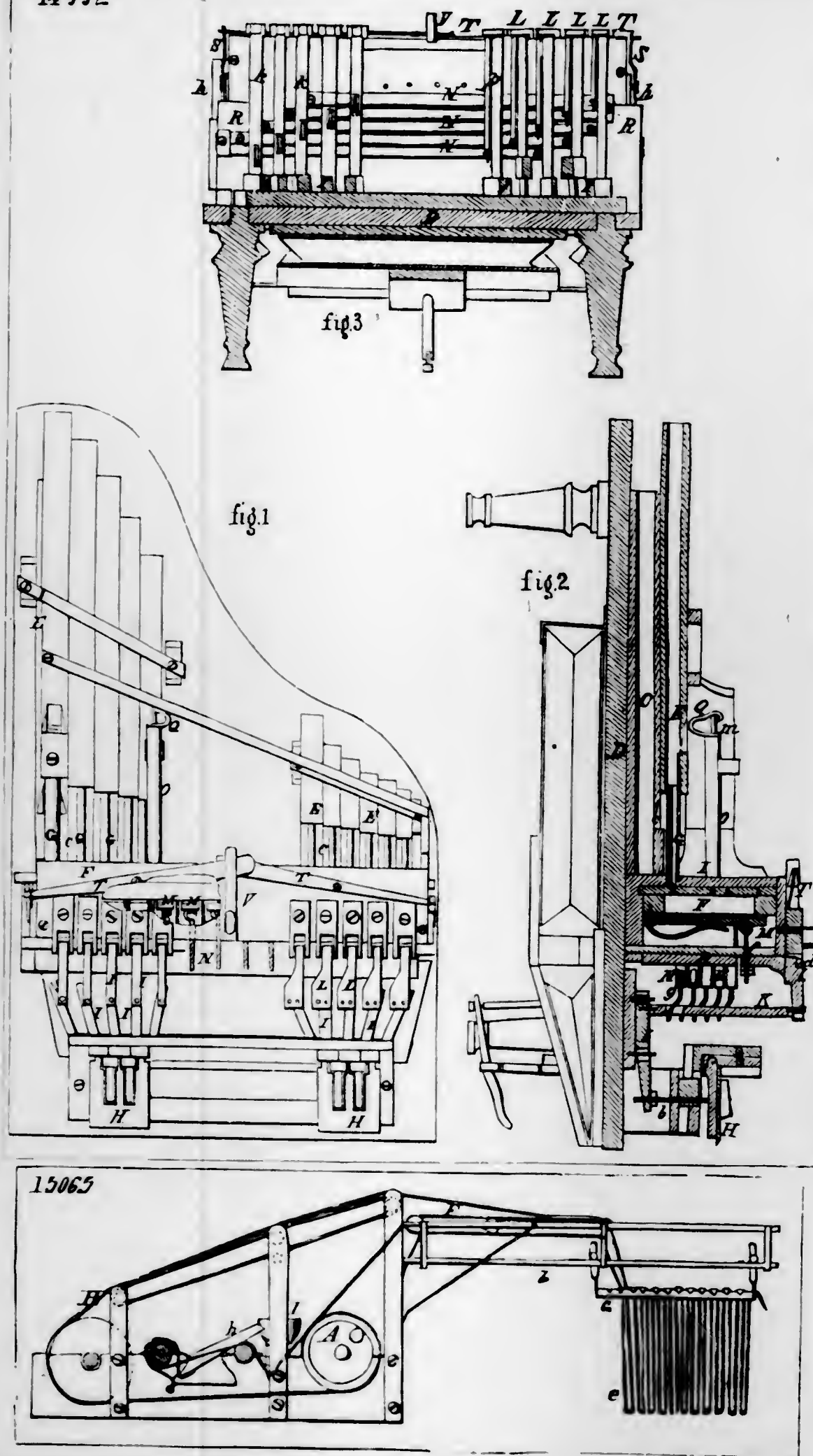


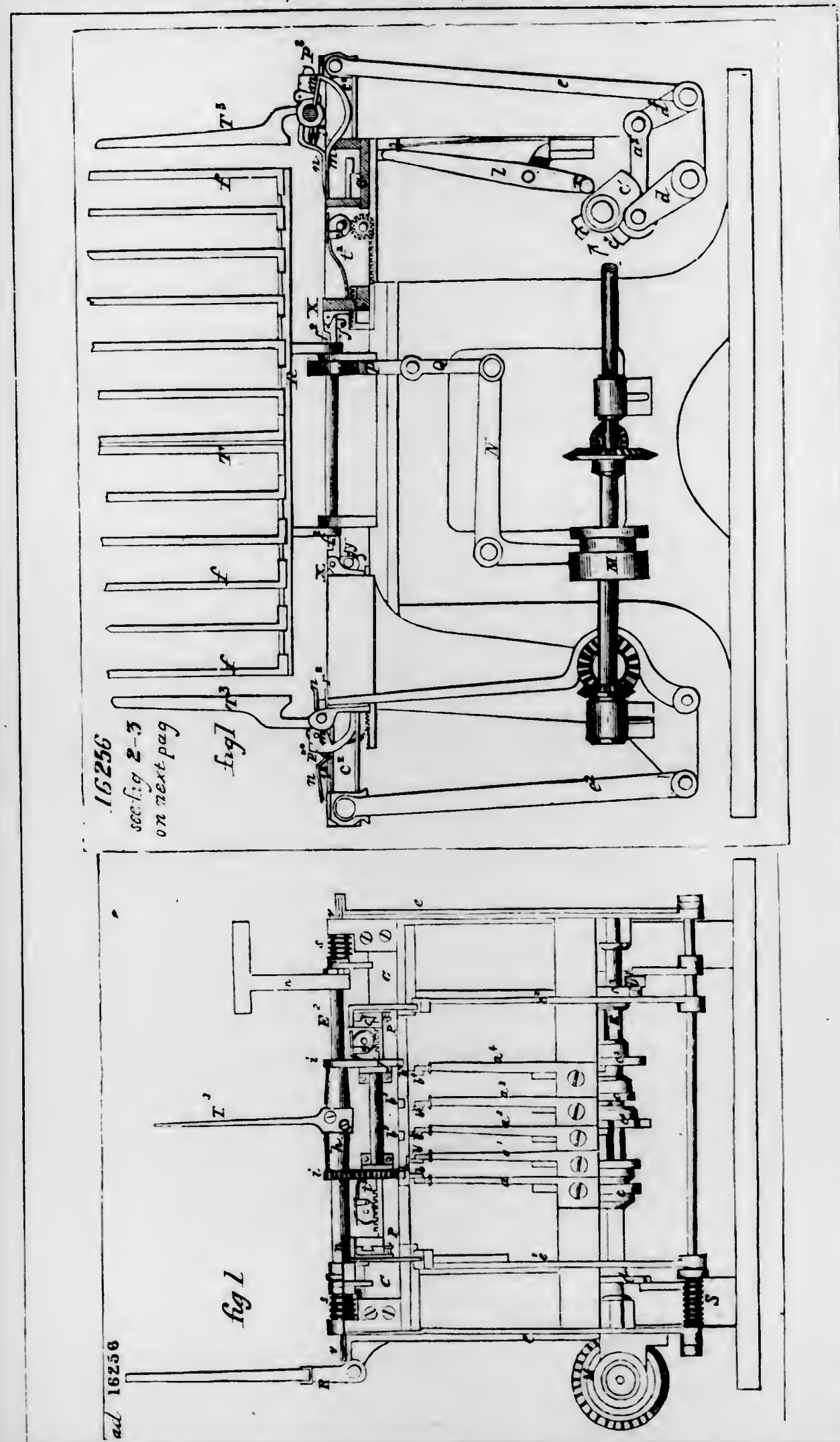
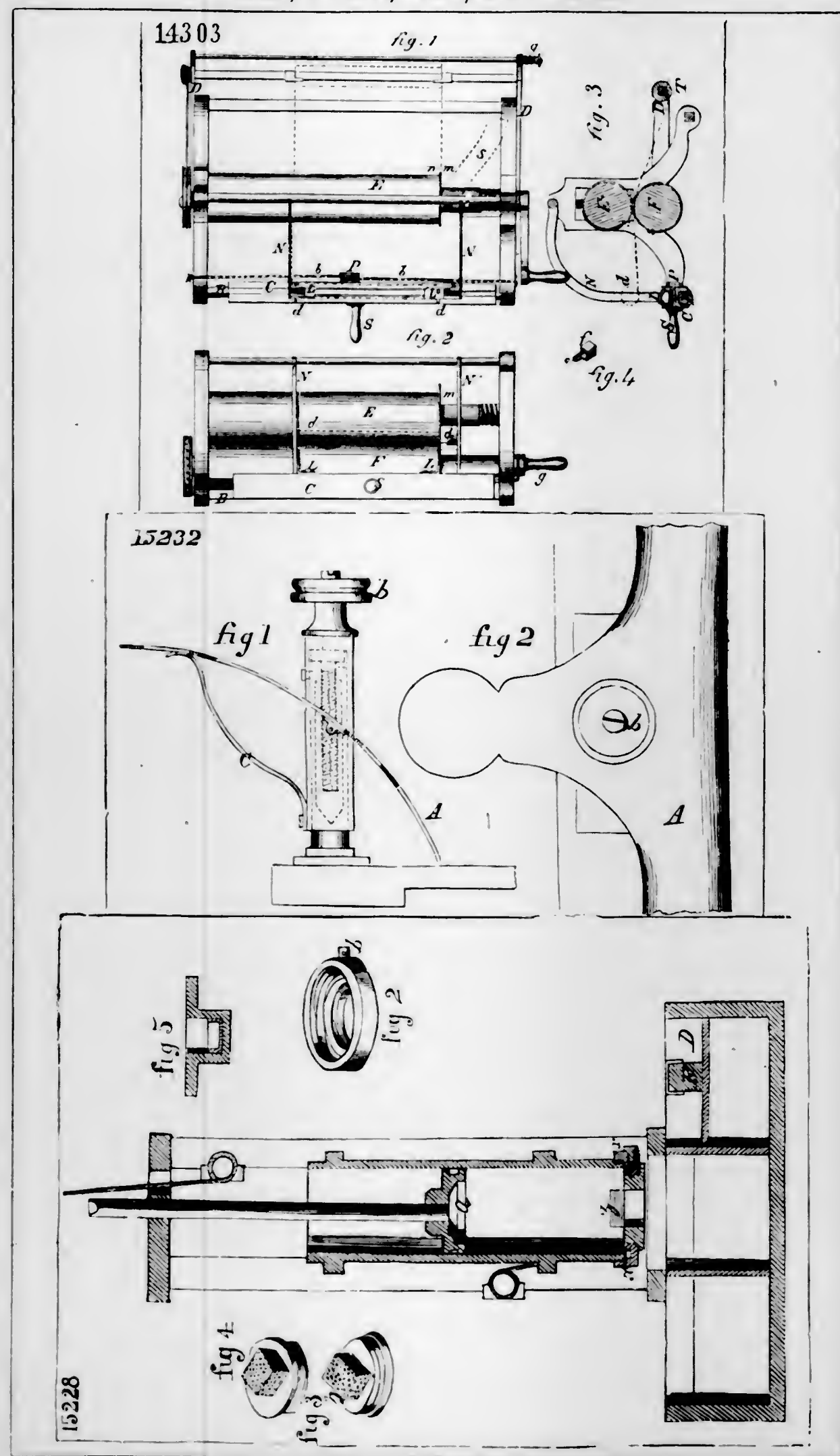


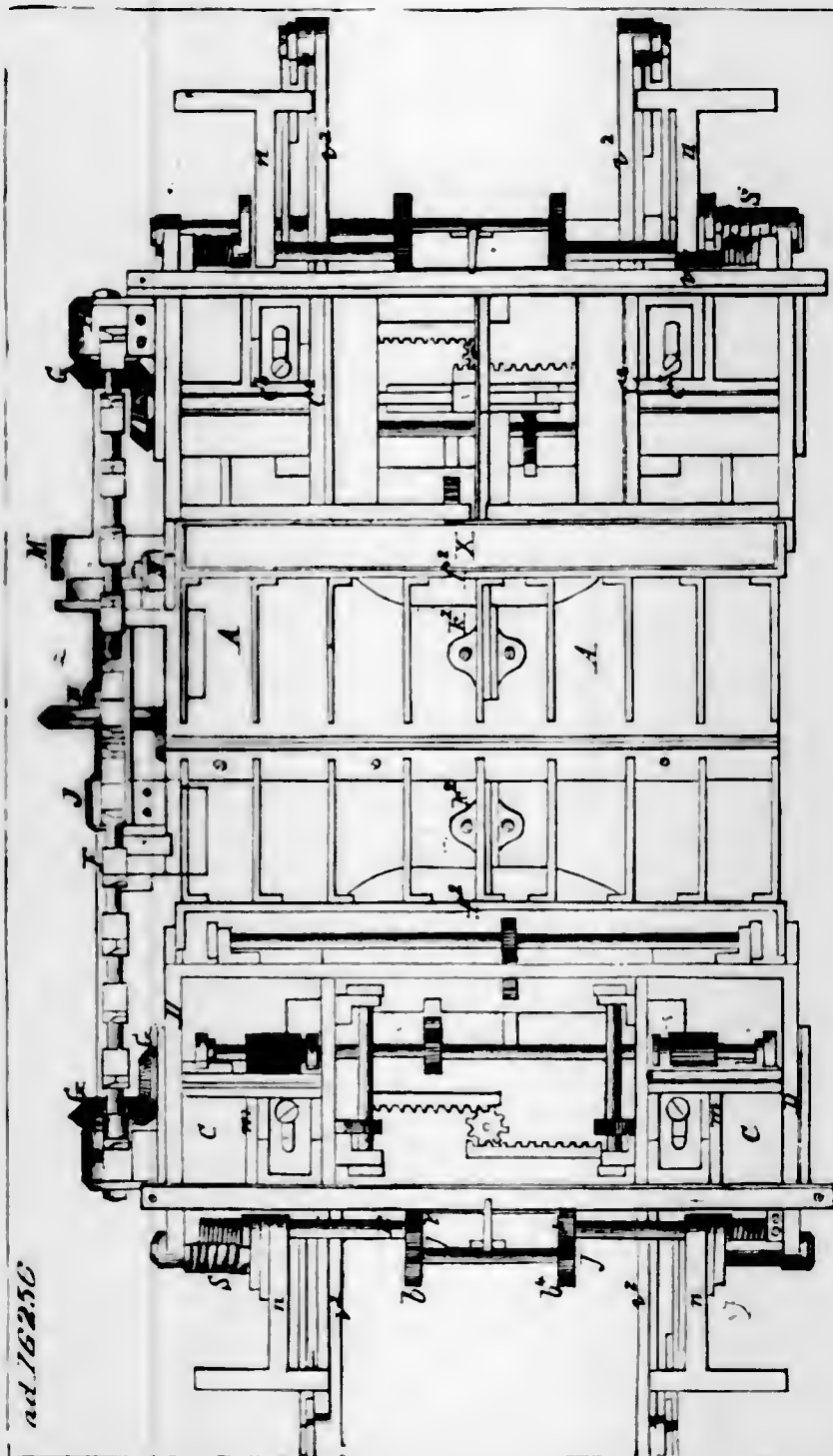




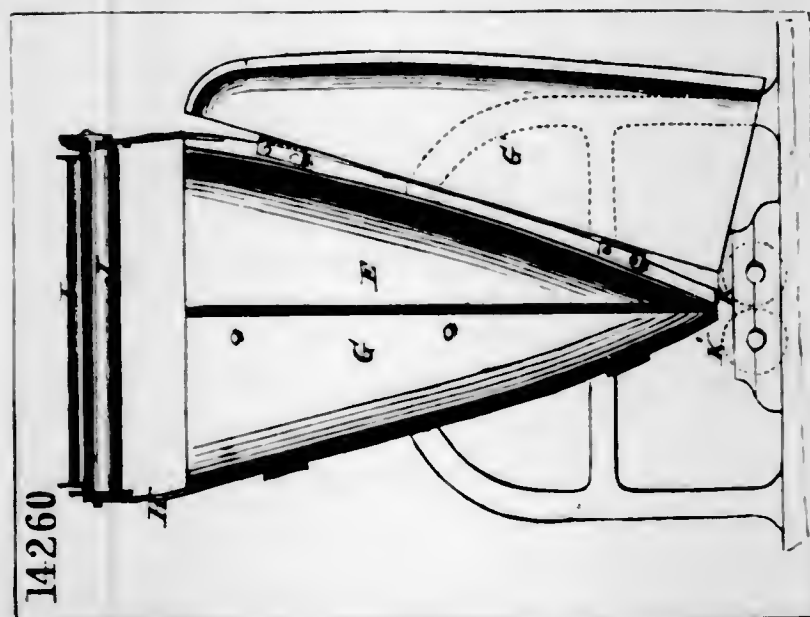
14992







ad. 16250



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14697

fig 1

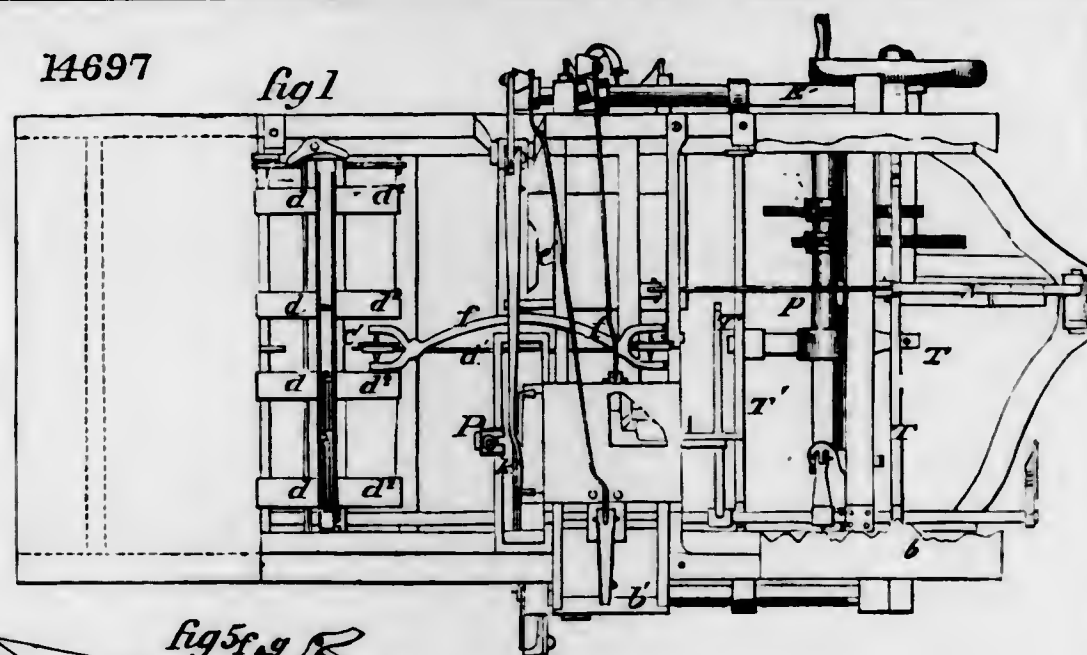


fig 5



fig 2

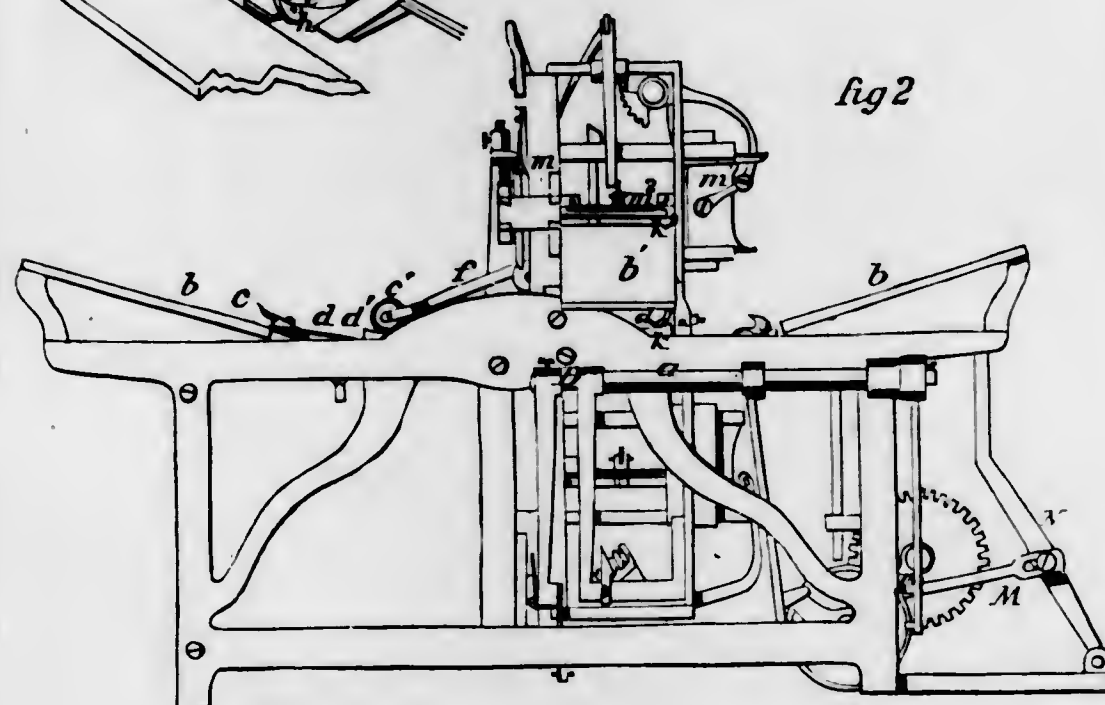
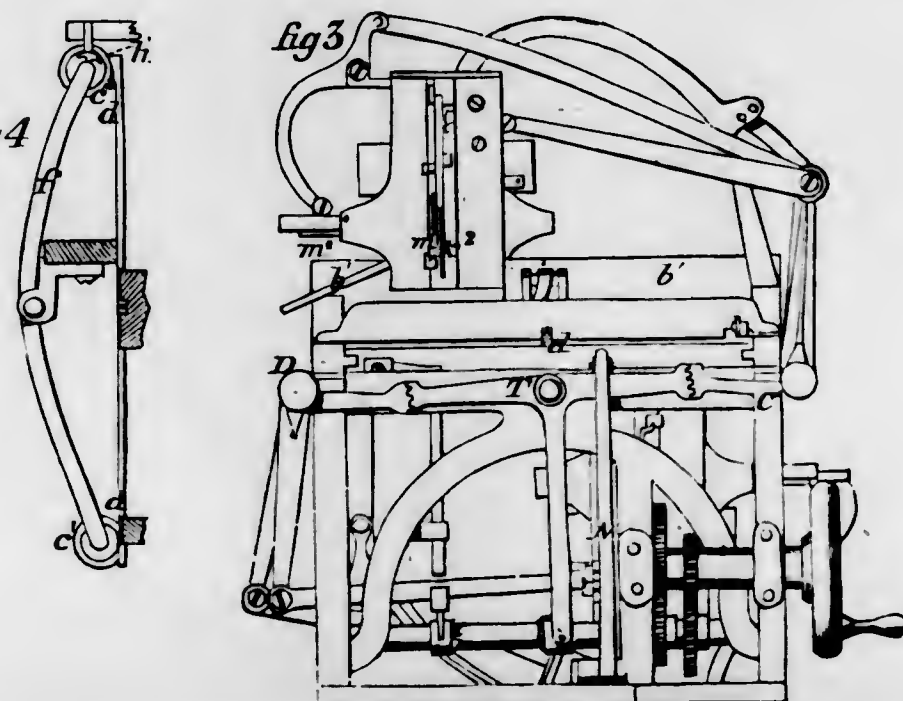


fig 3

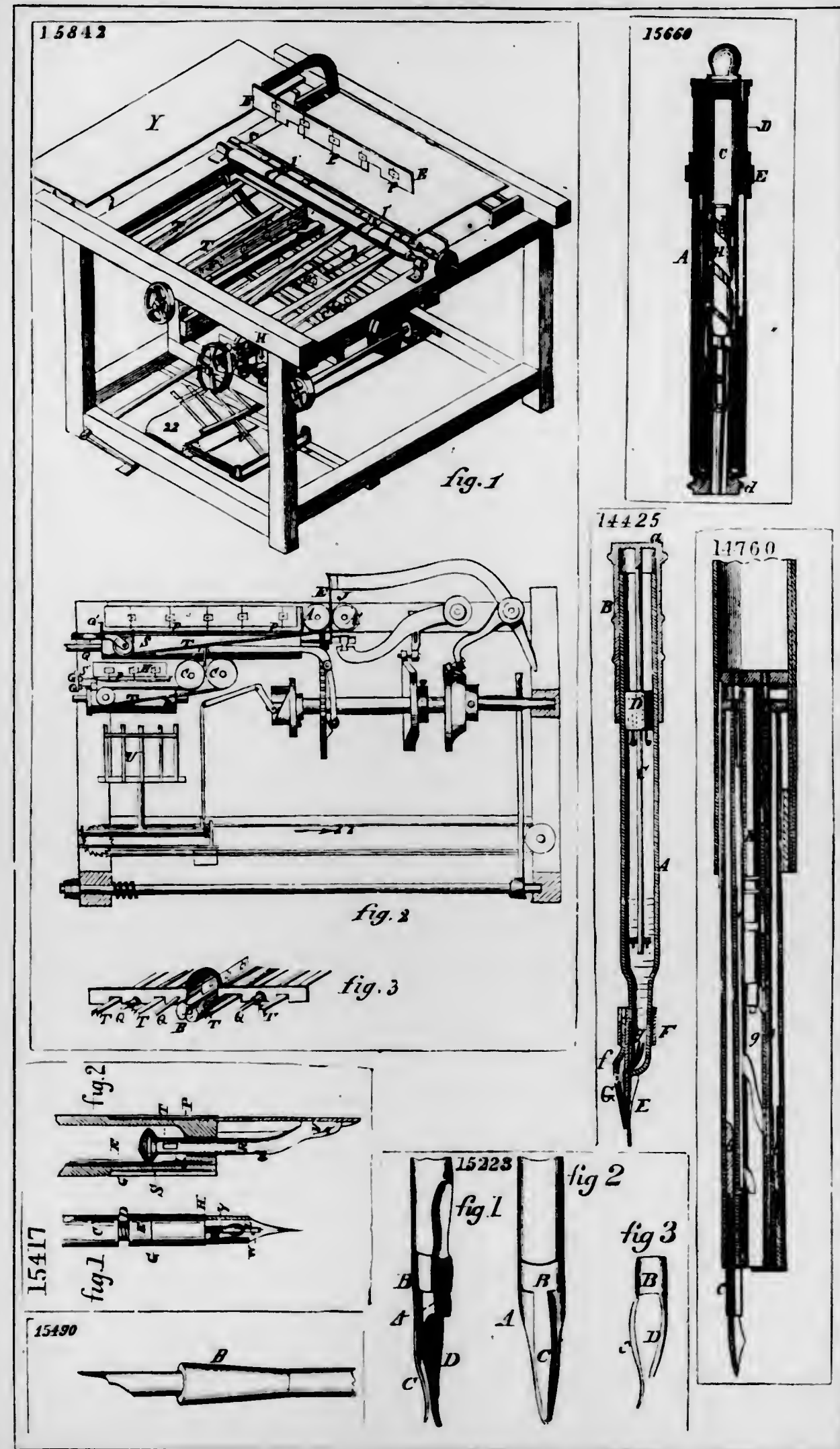
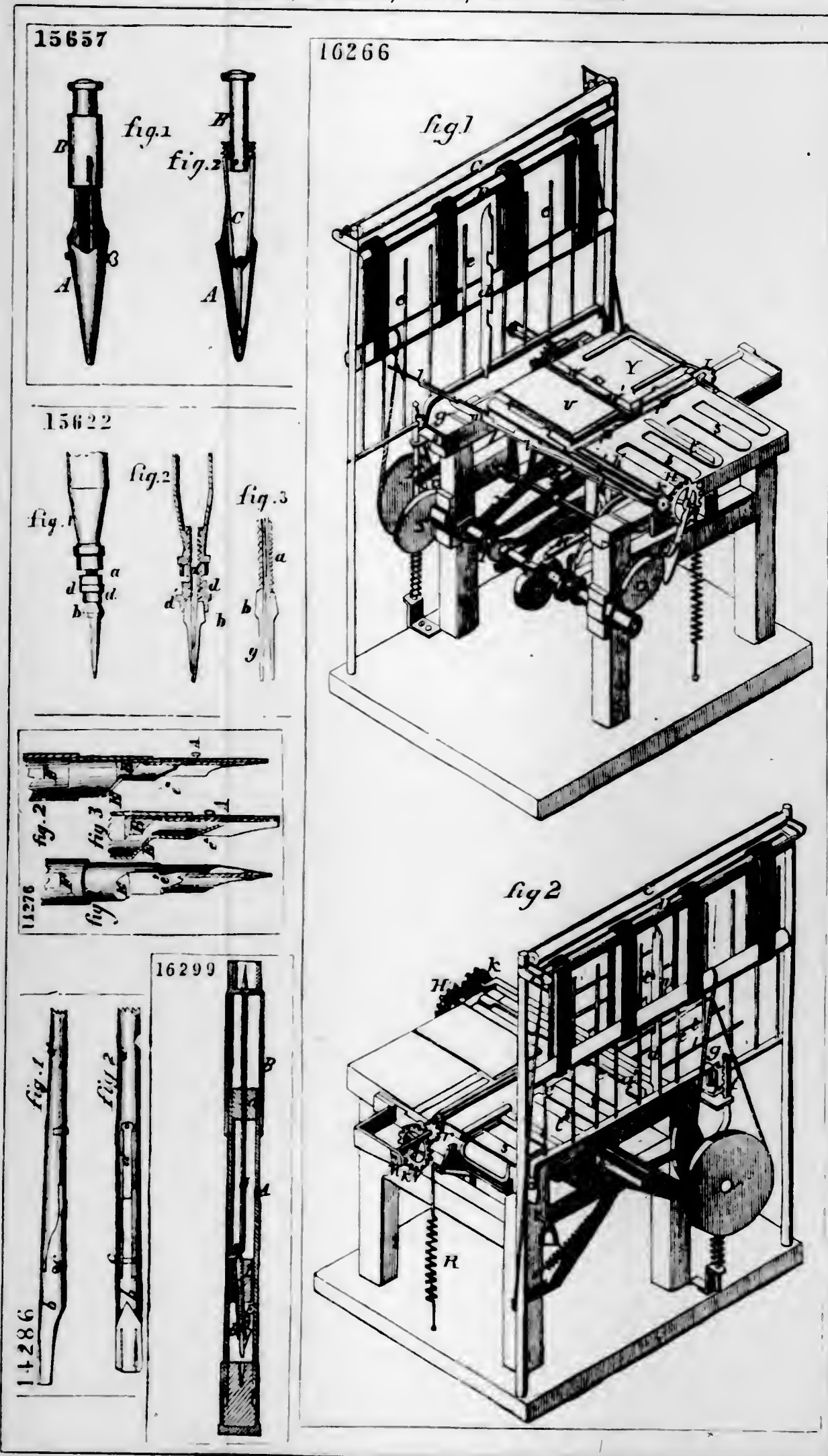
fig 4

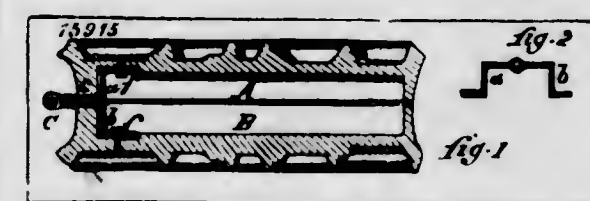
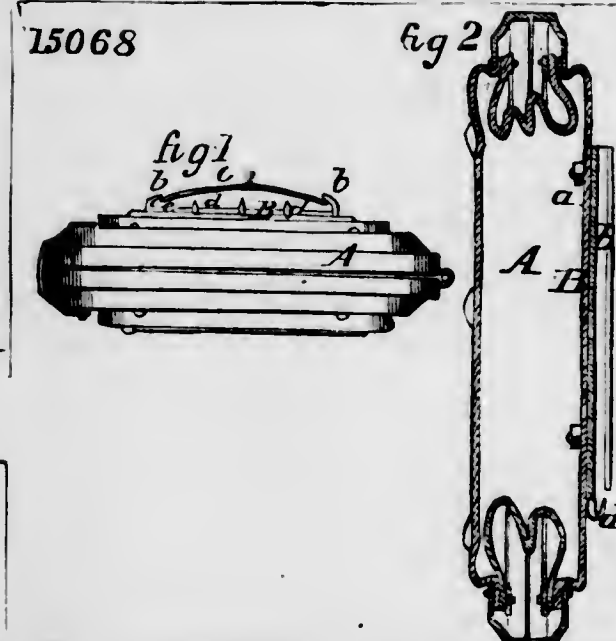
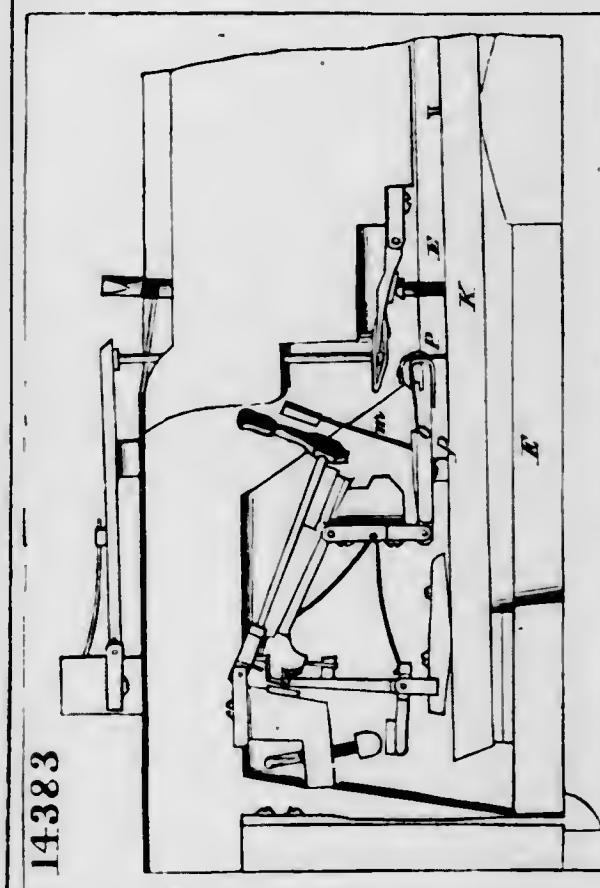
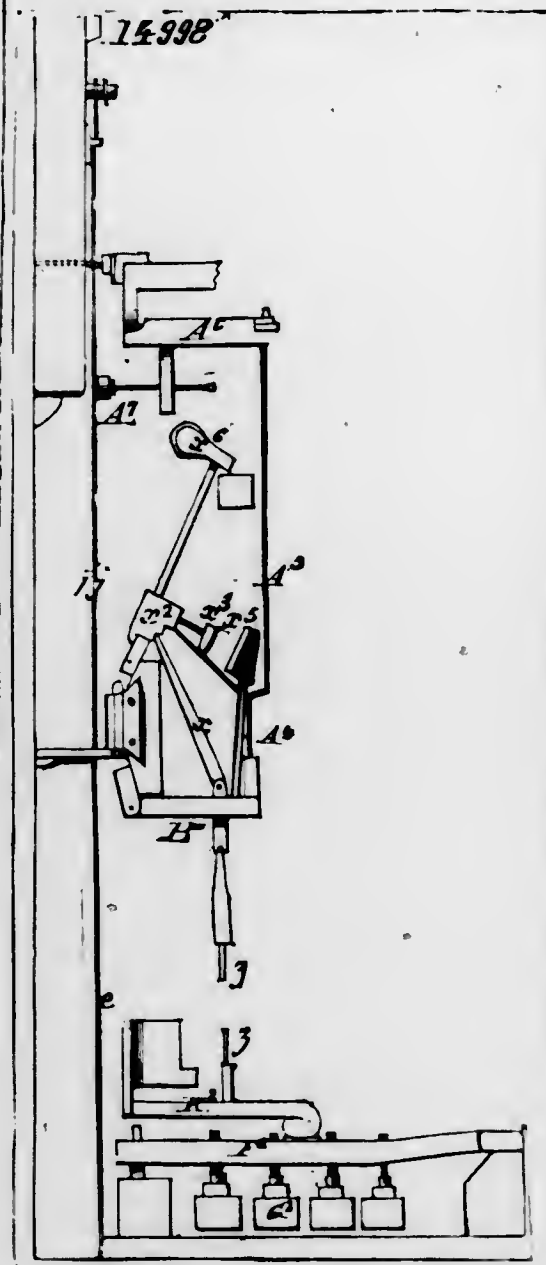
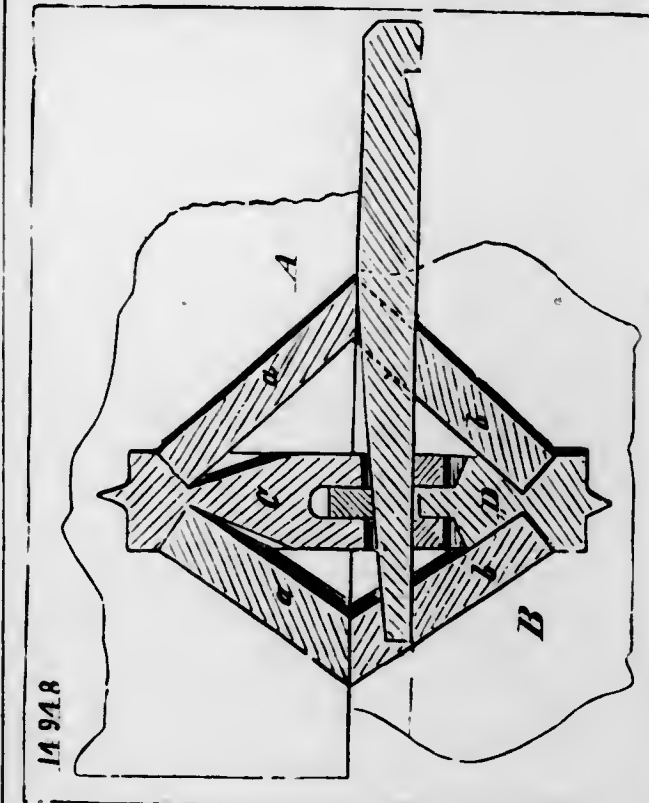
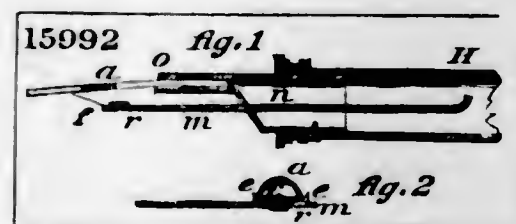
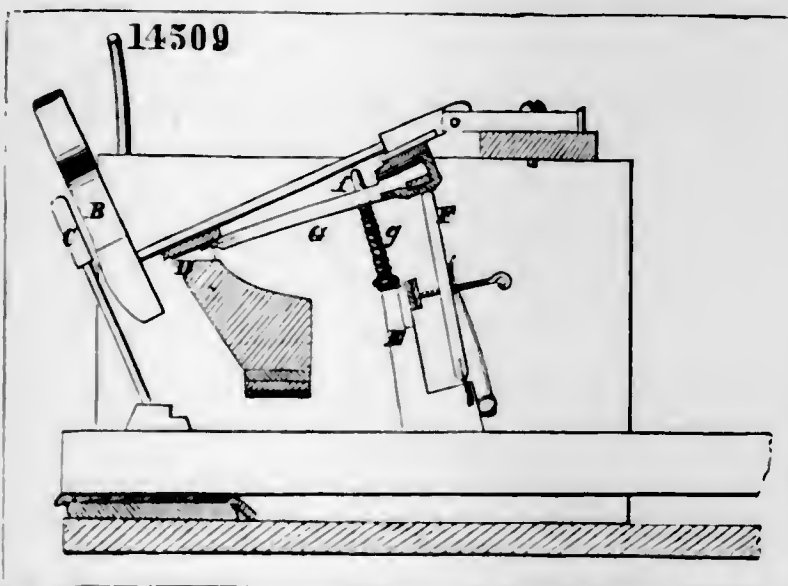
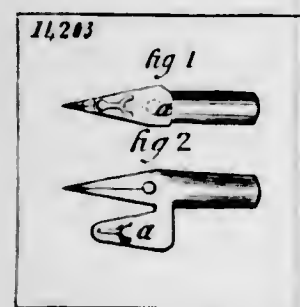
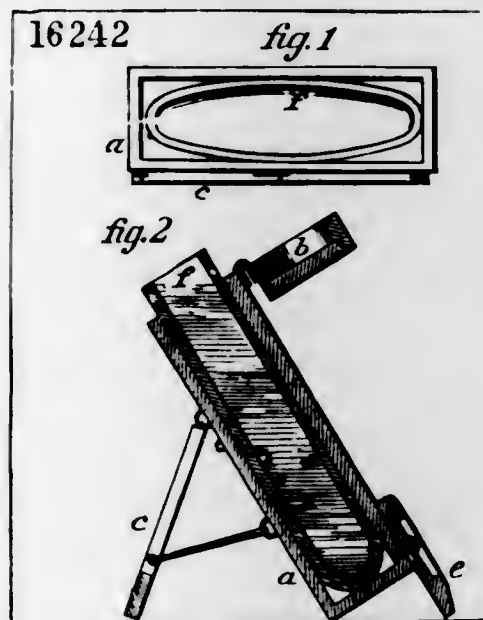
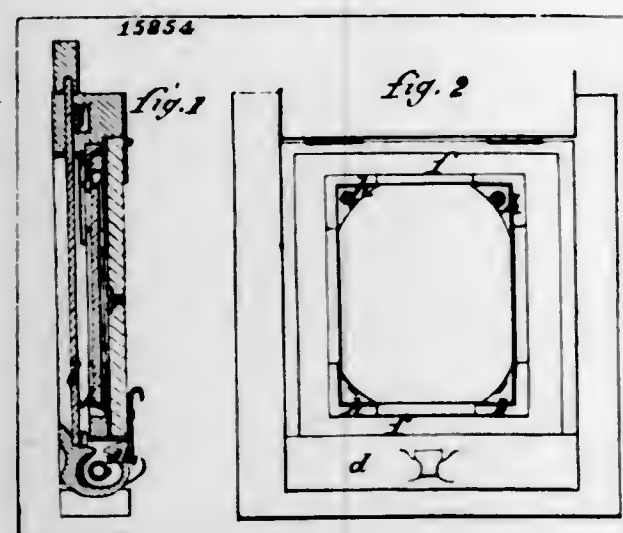
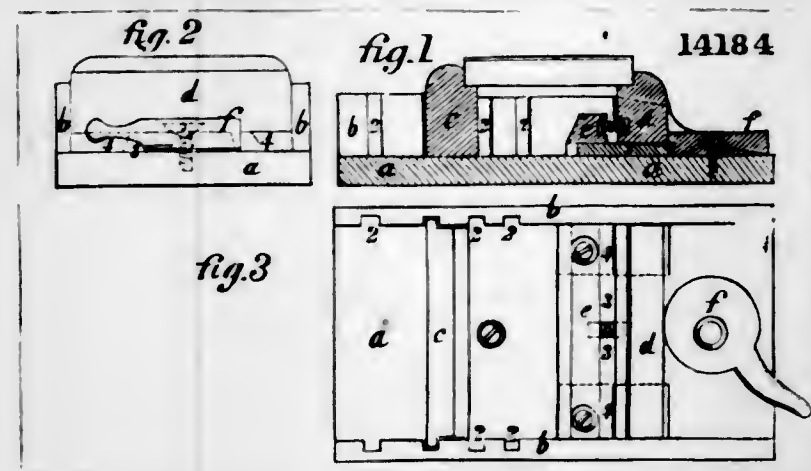


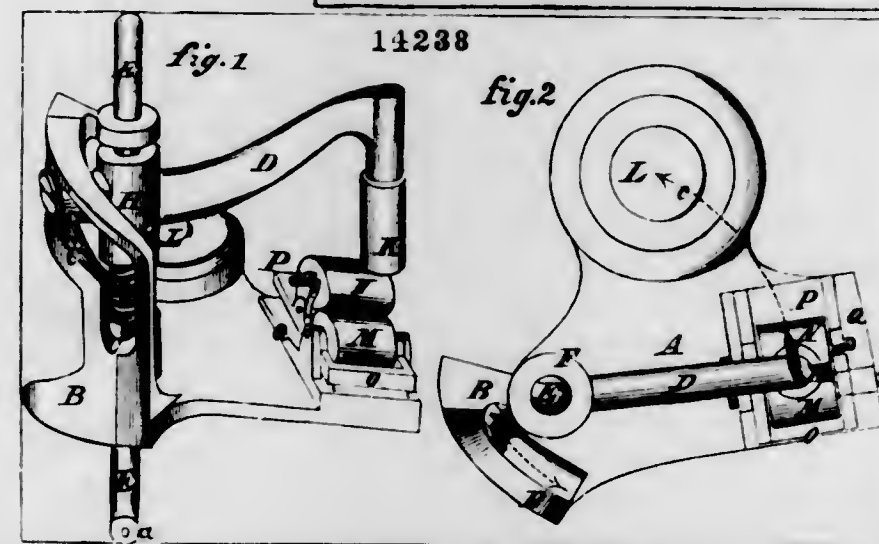
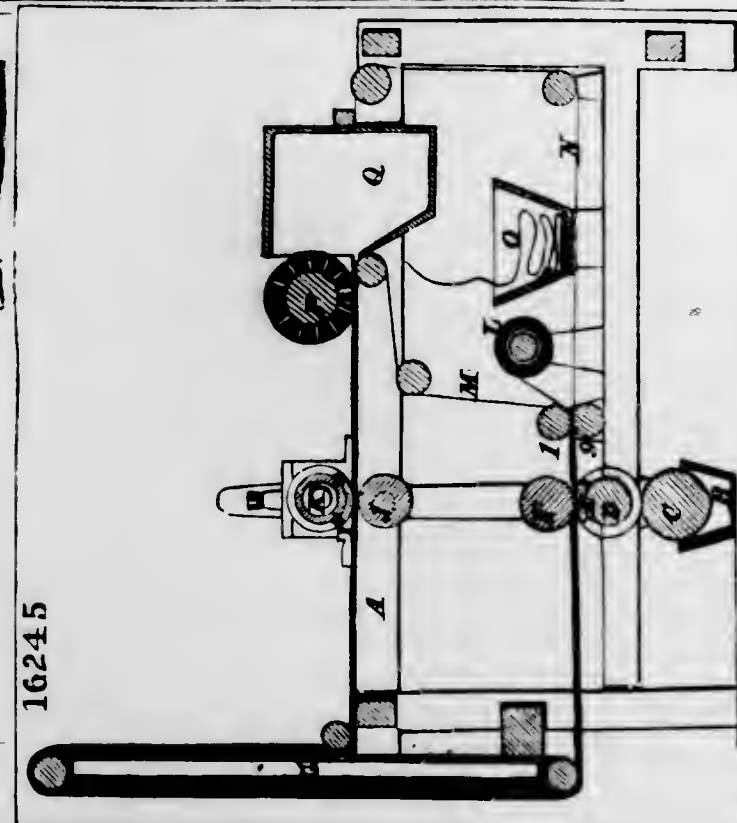
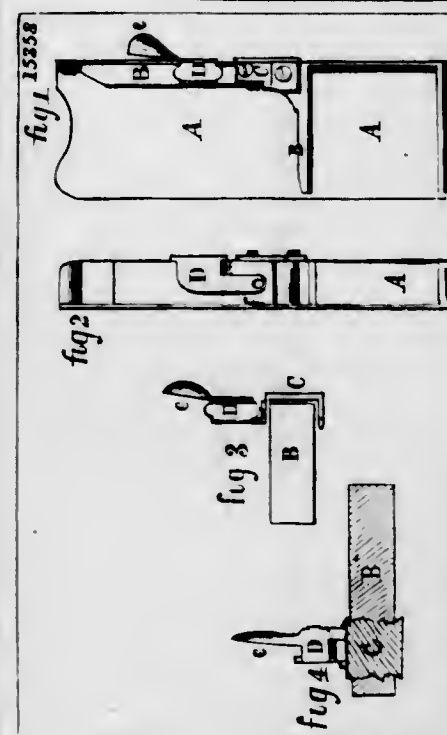
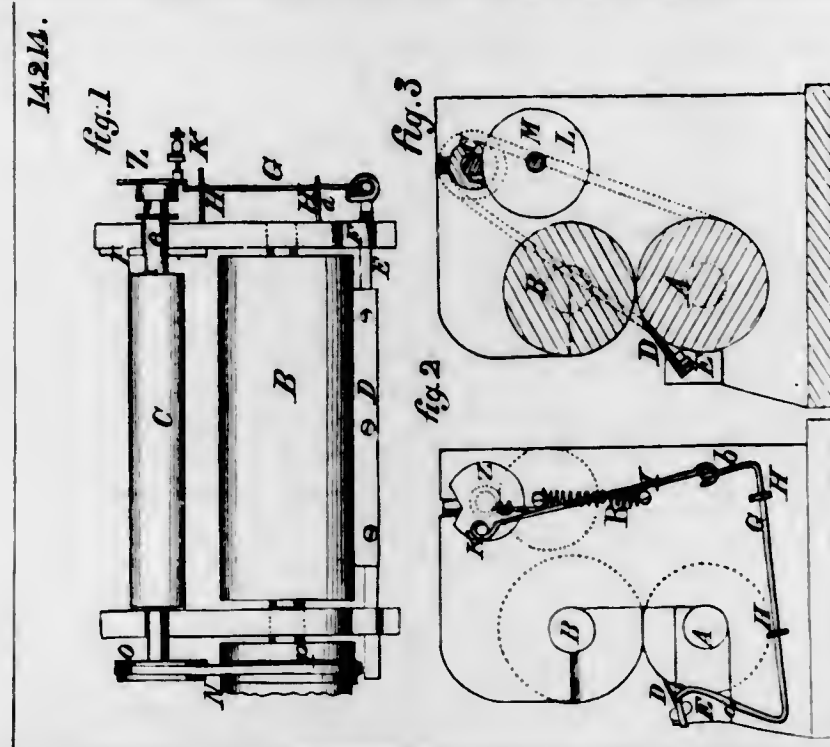
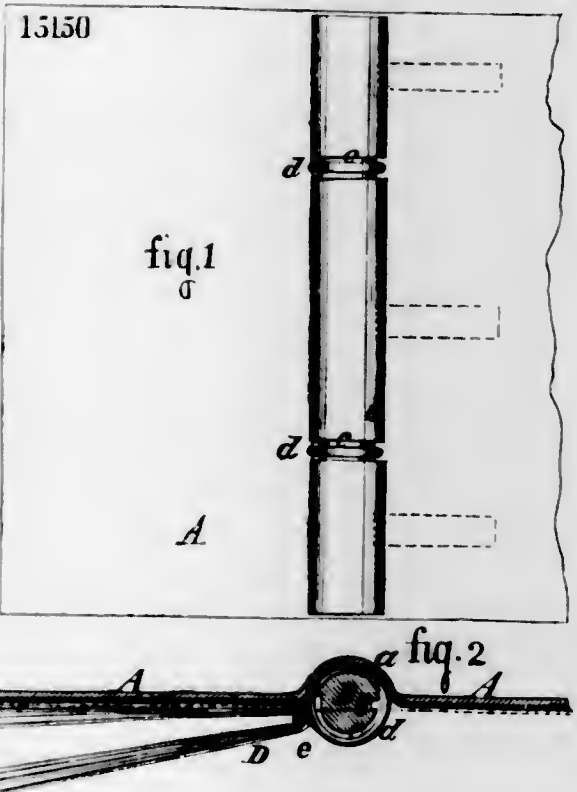
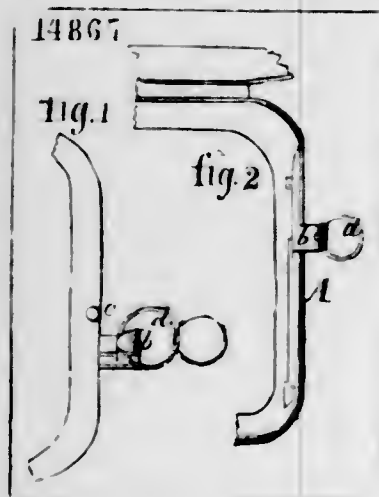
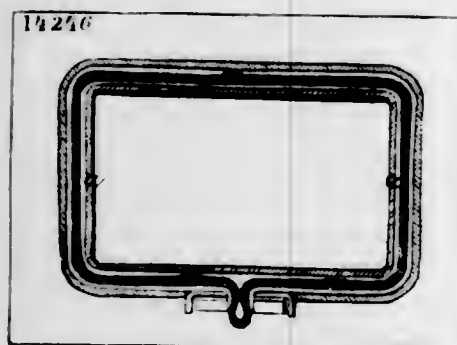
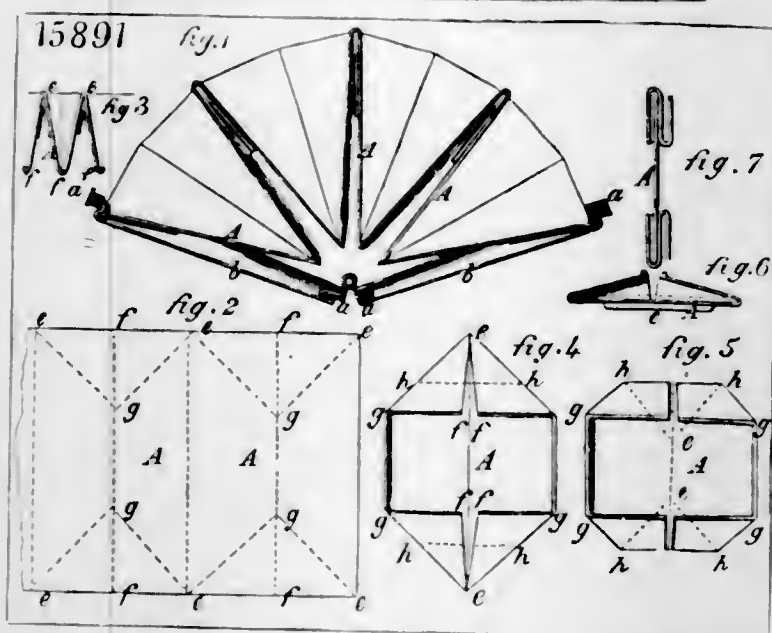
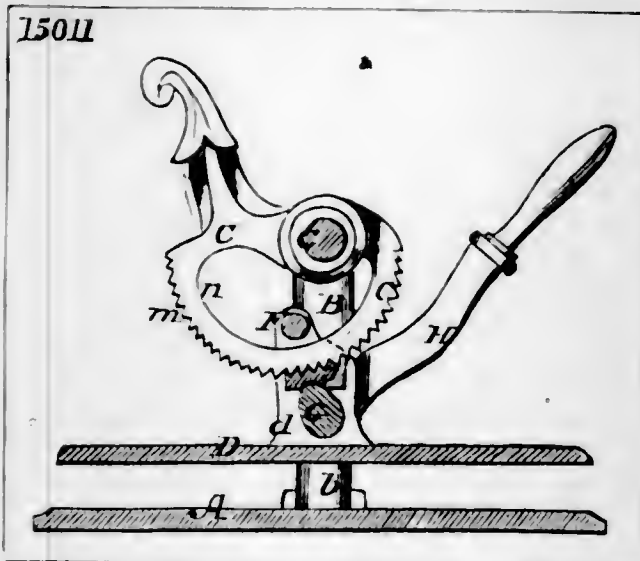
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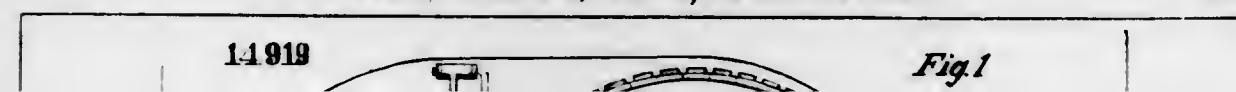
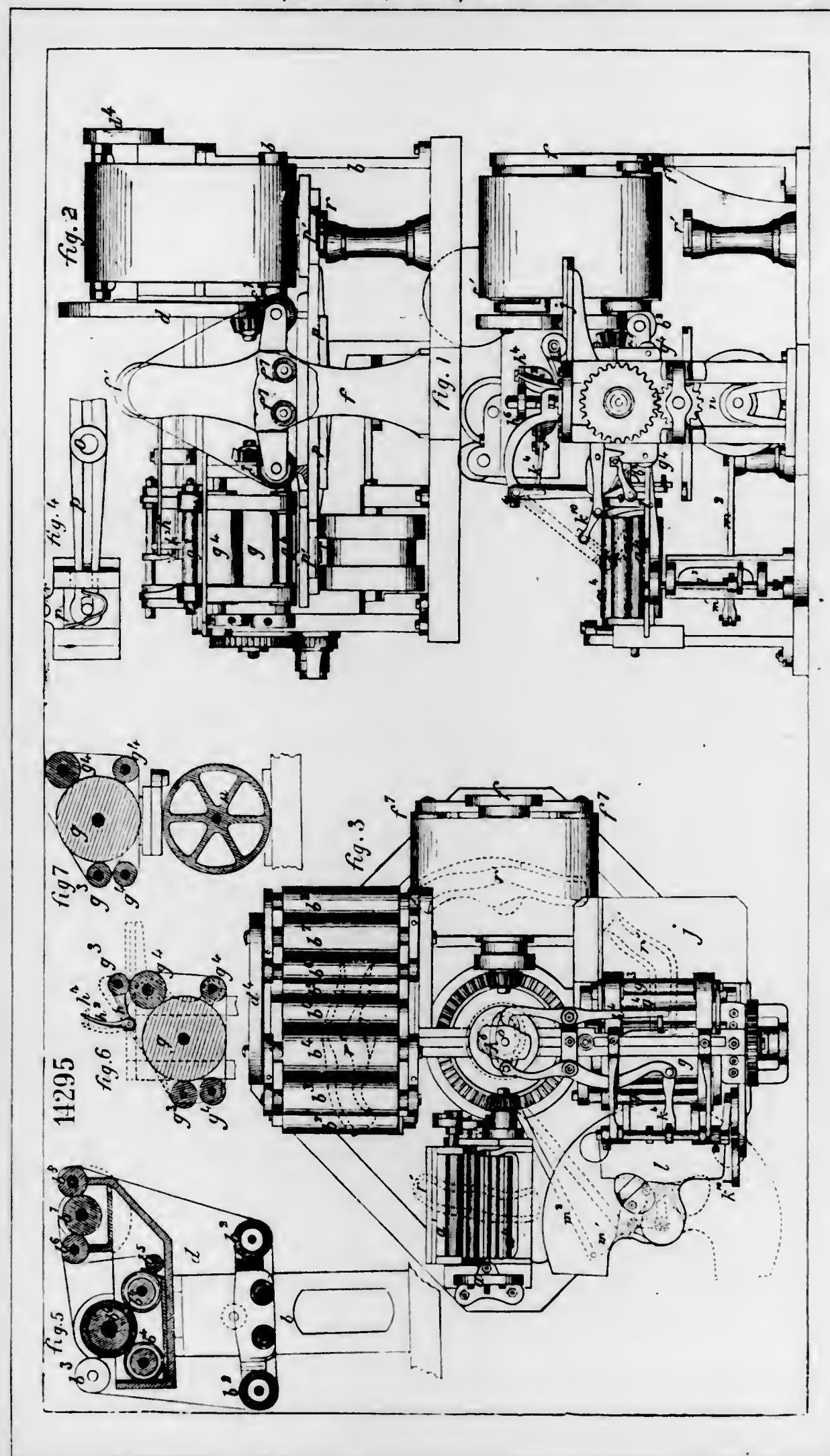
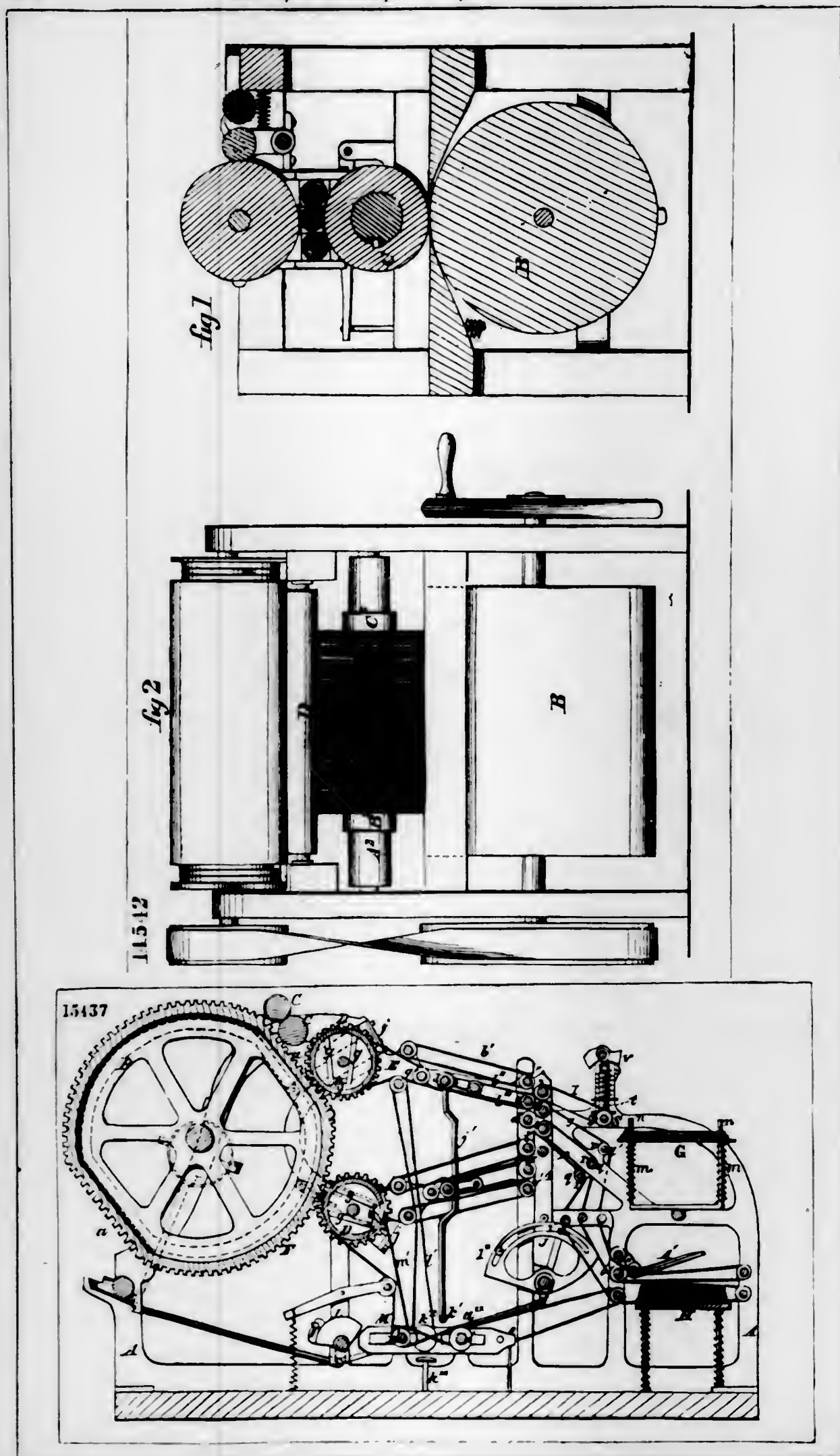
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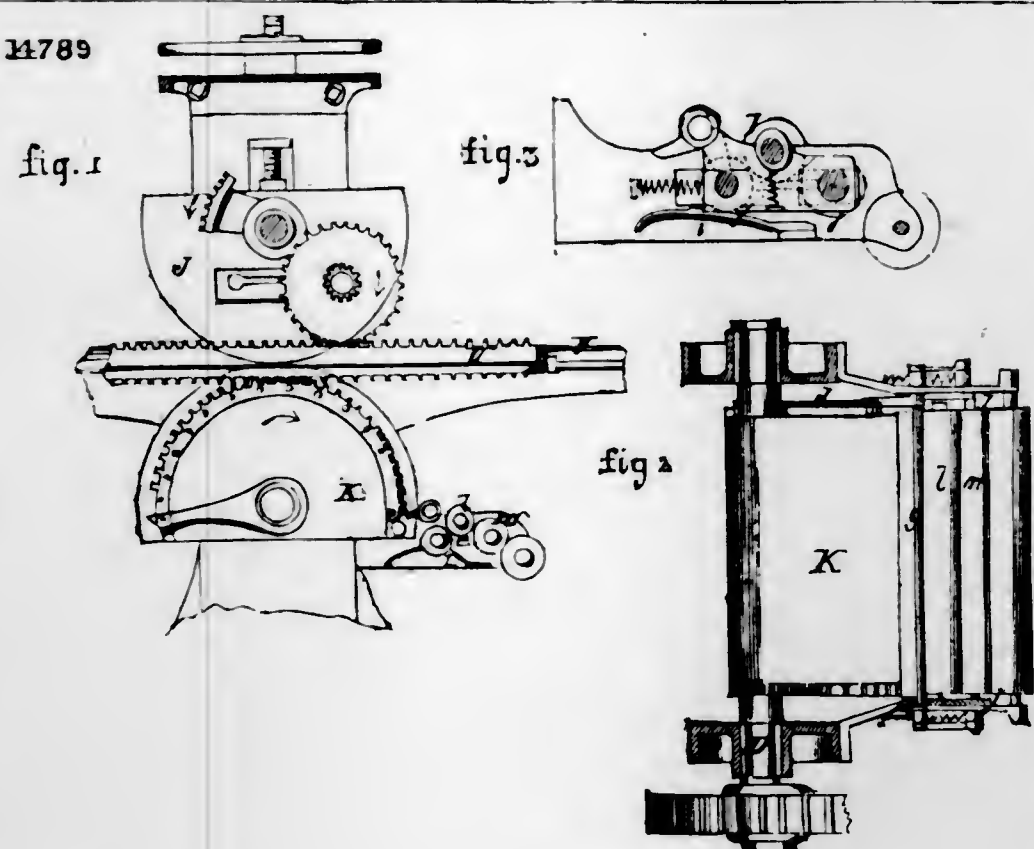




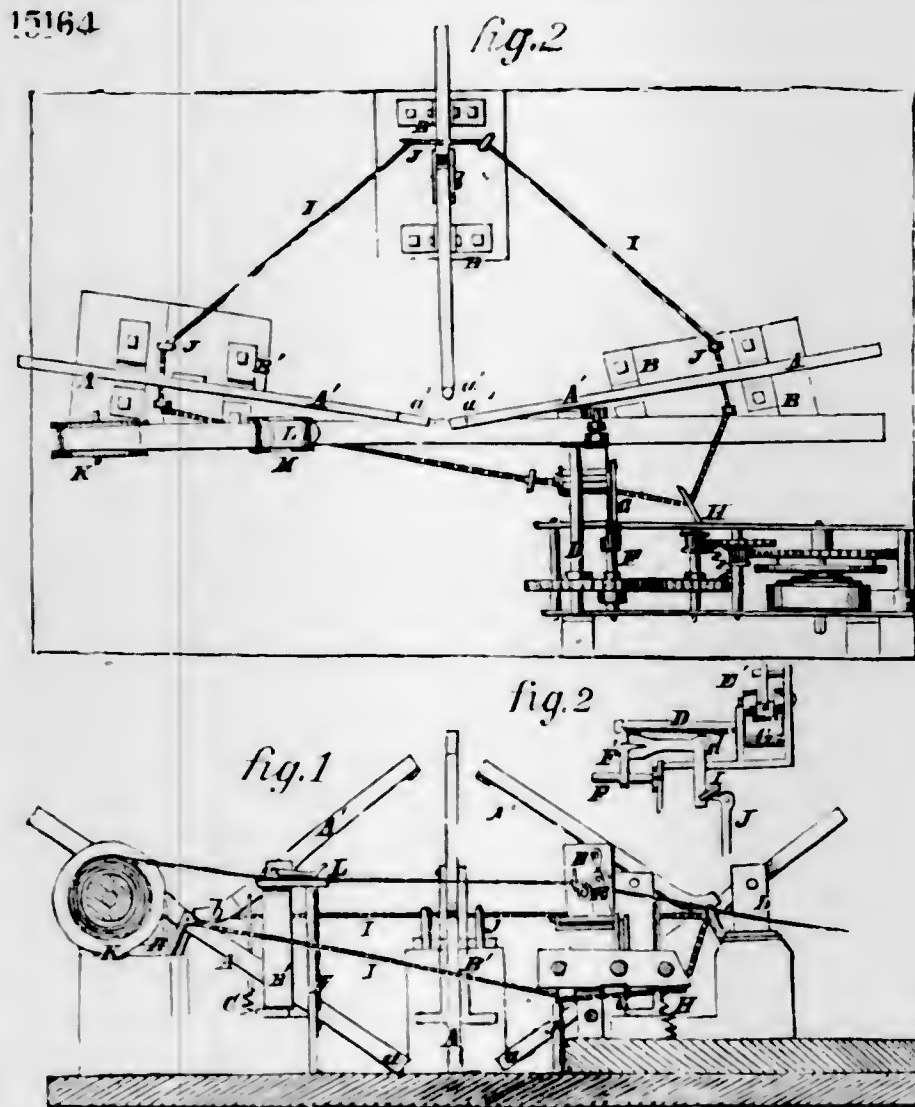




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Fig. 1

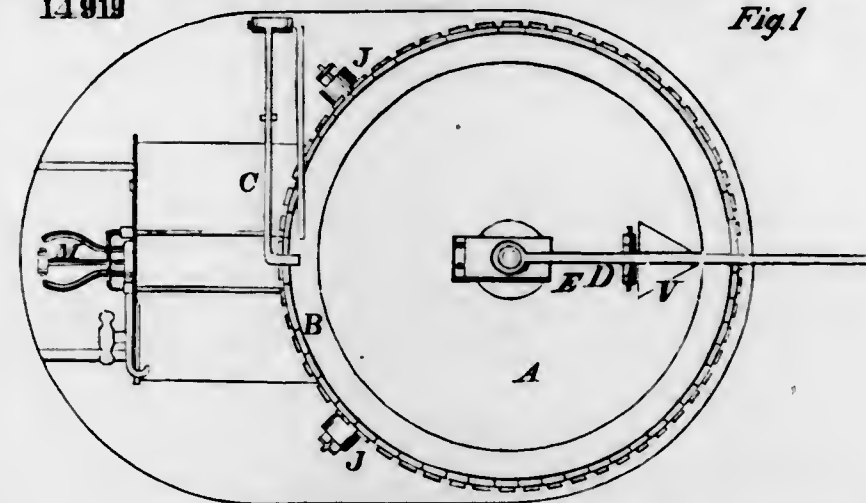


Fig. 2

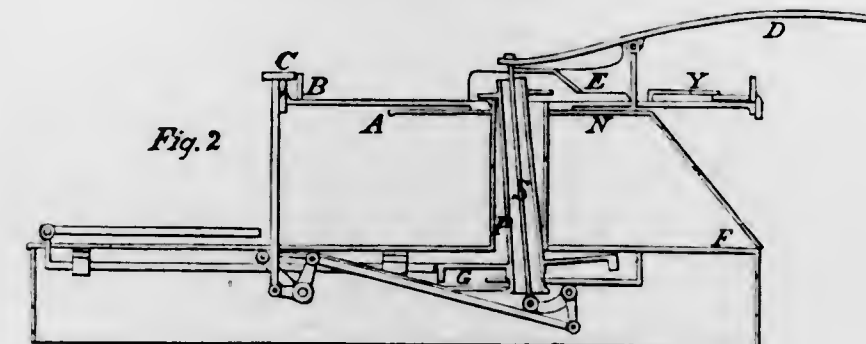
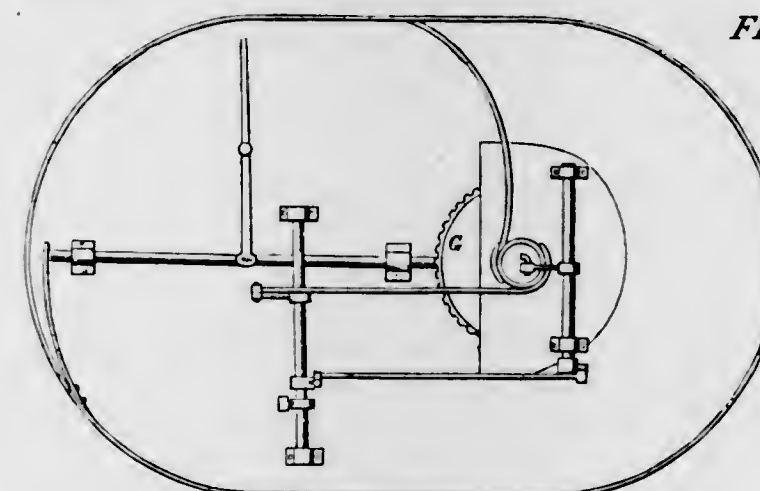


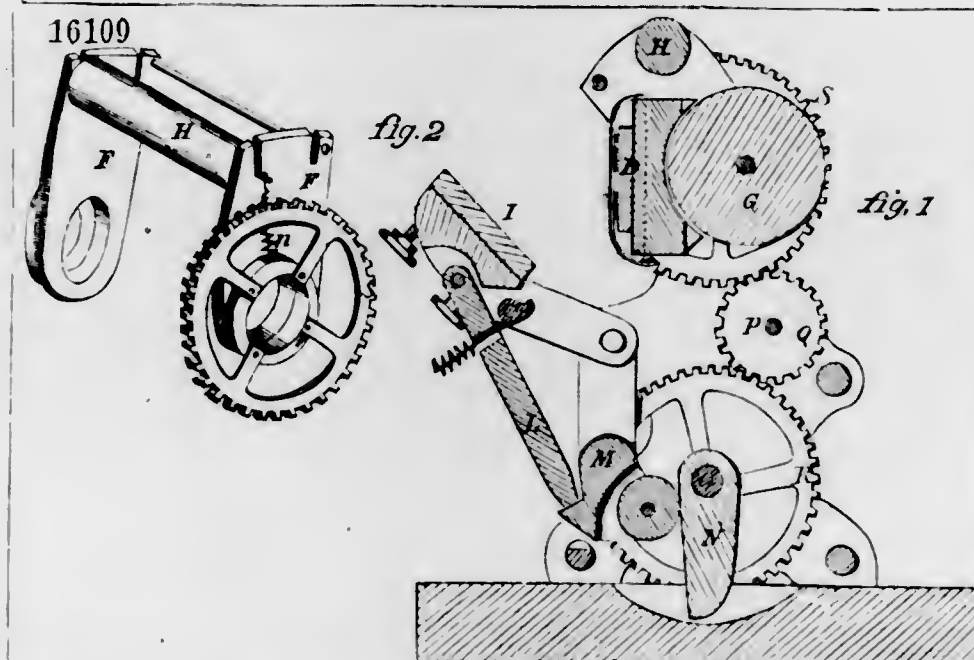
Fig. 3

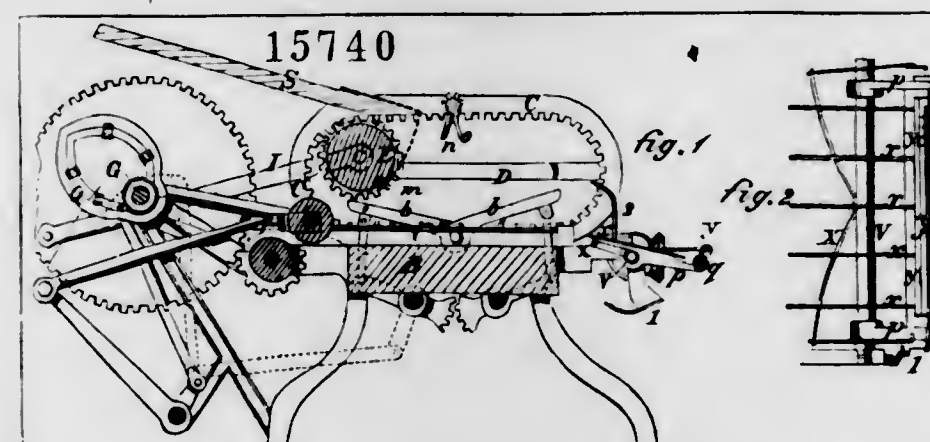
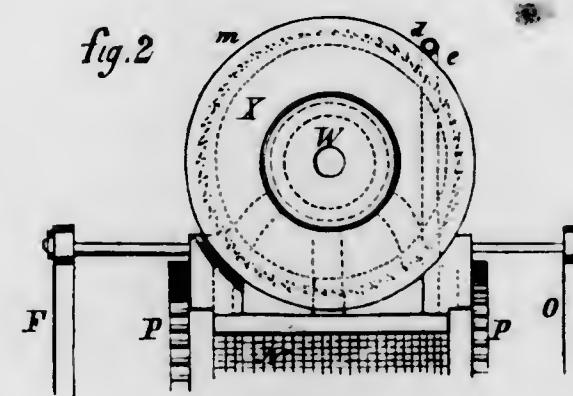
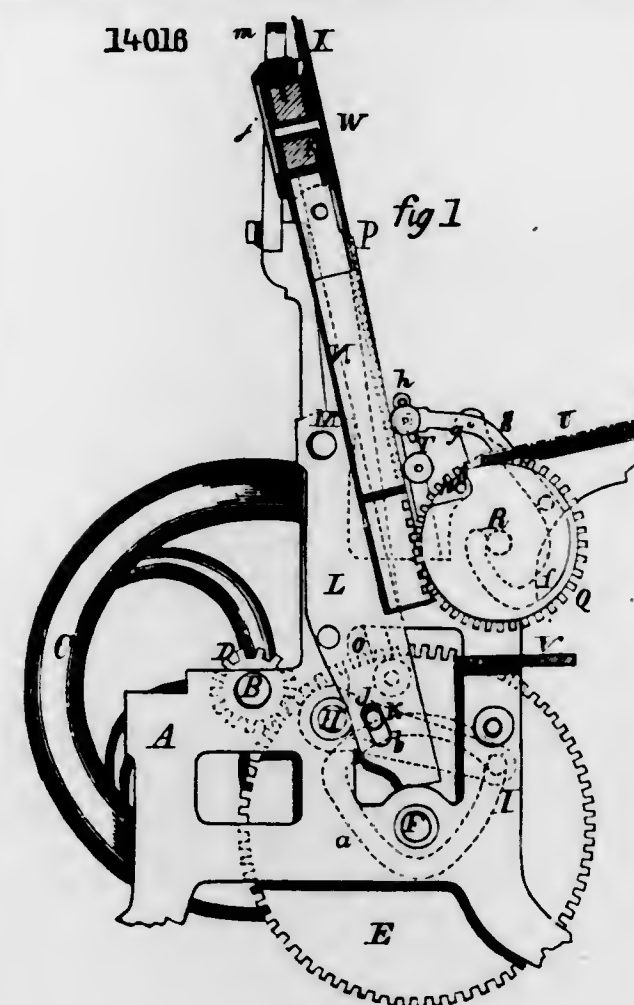
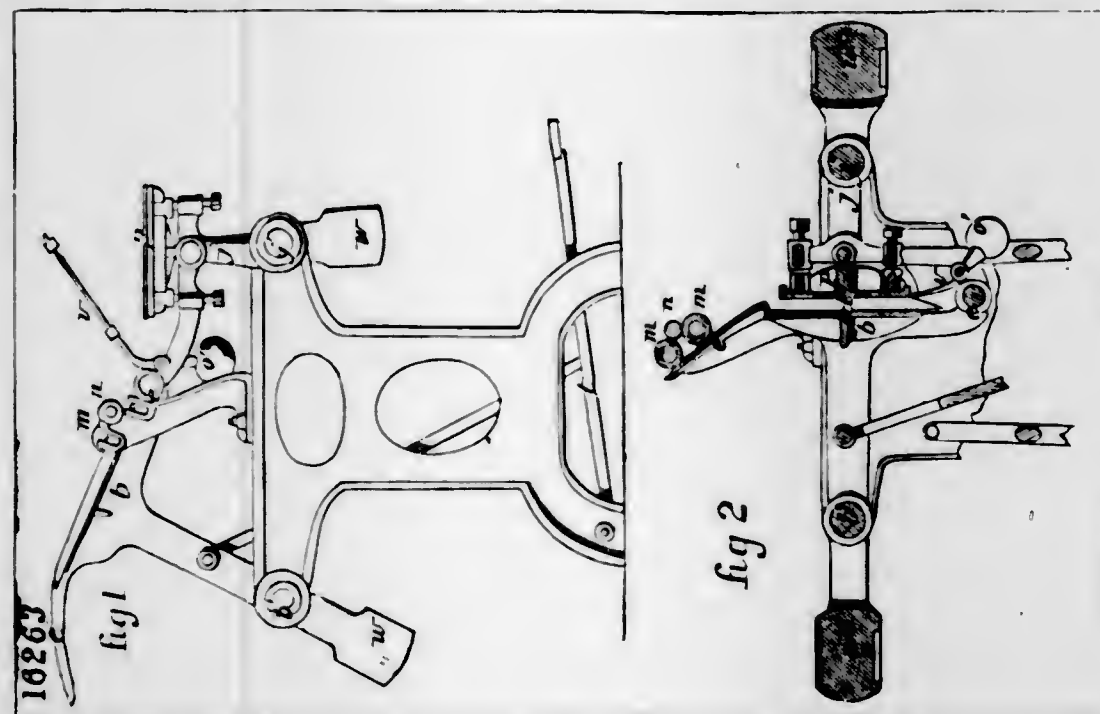
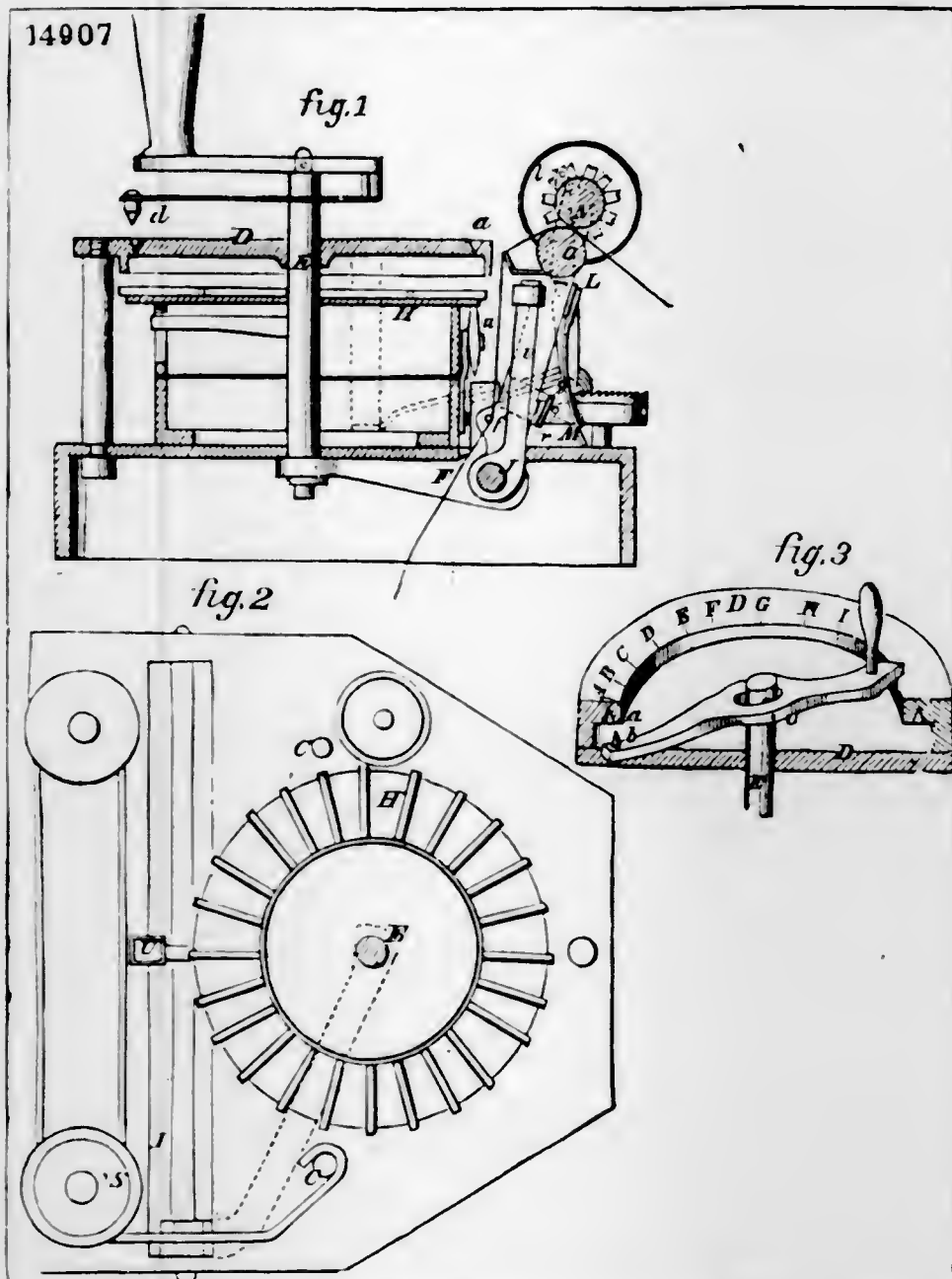


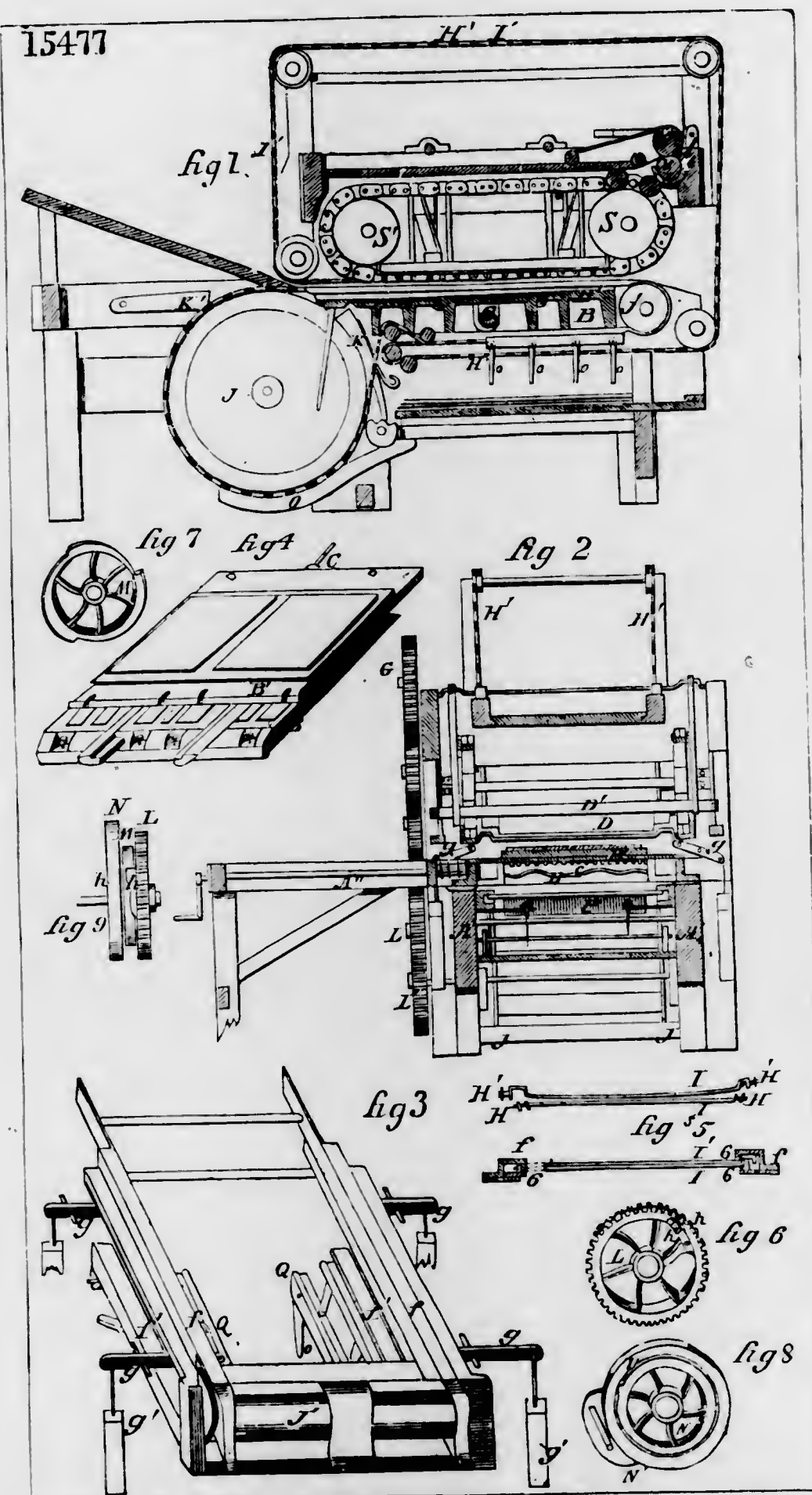
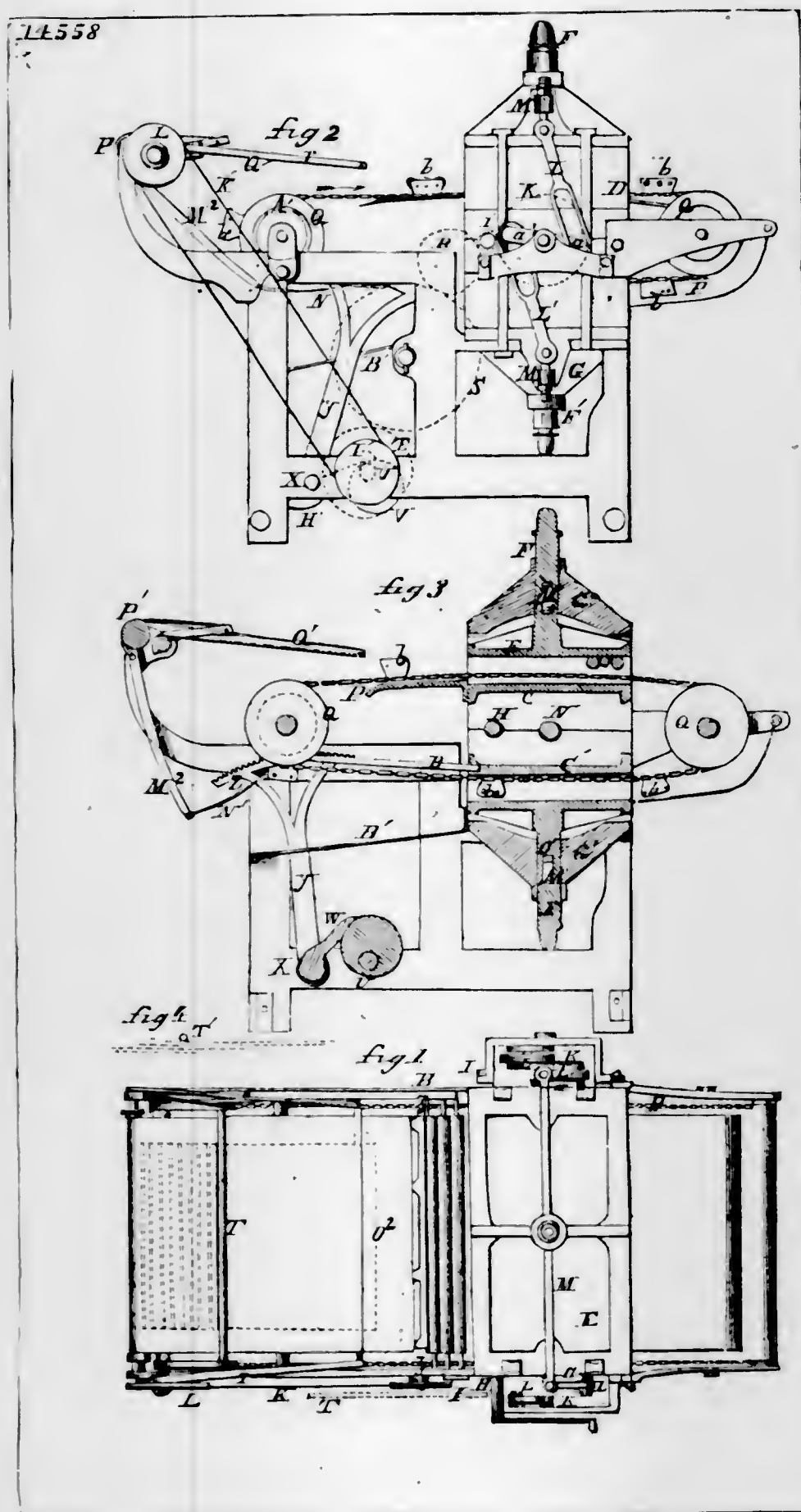
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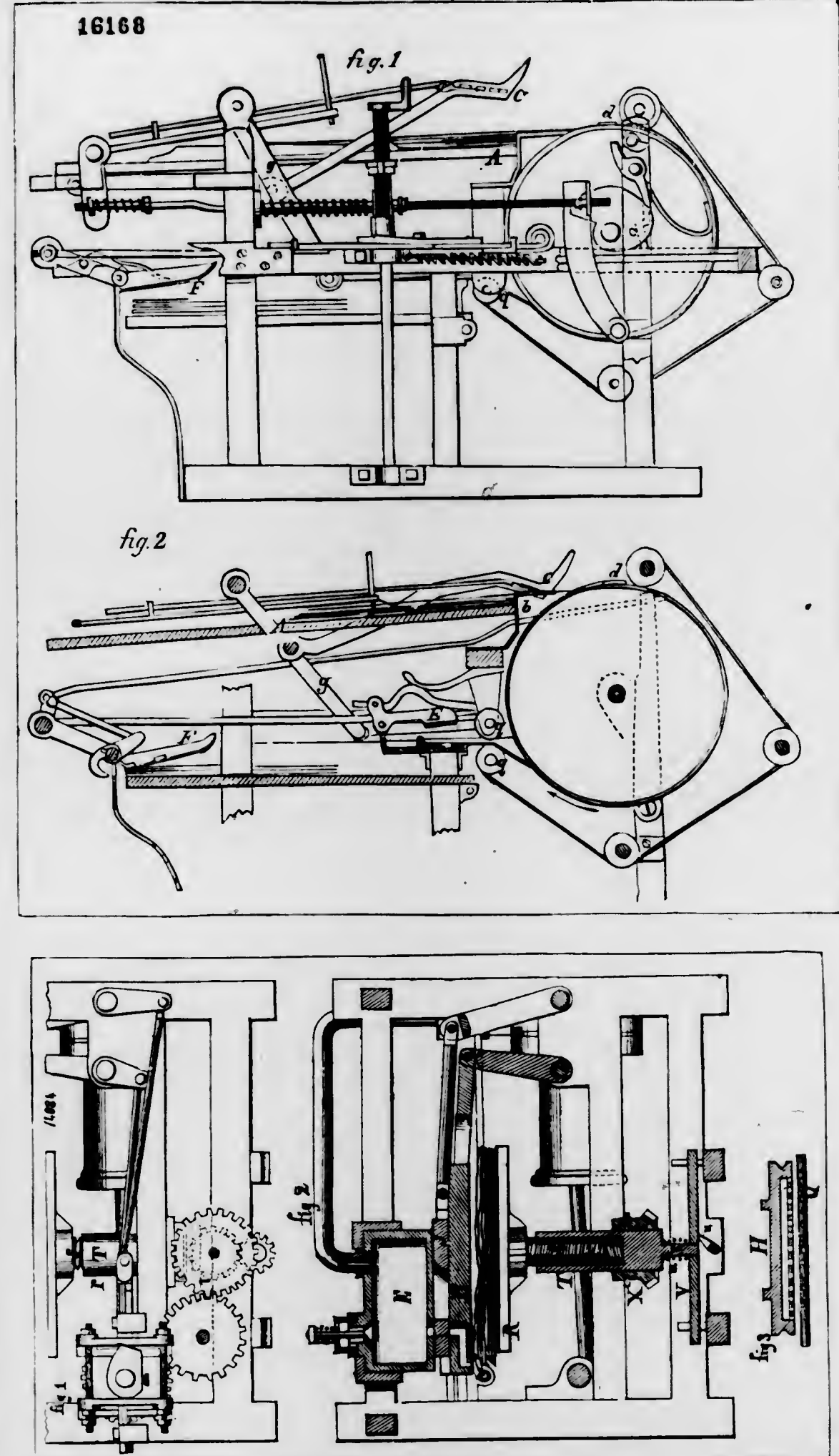
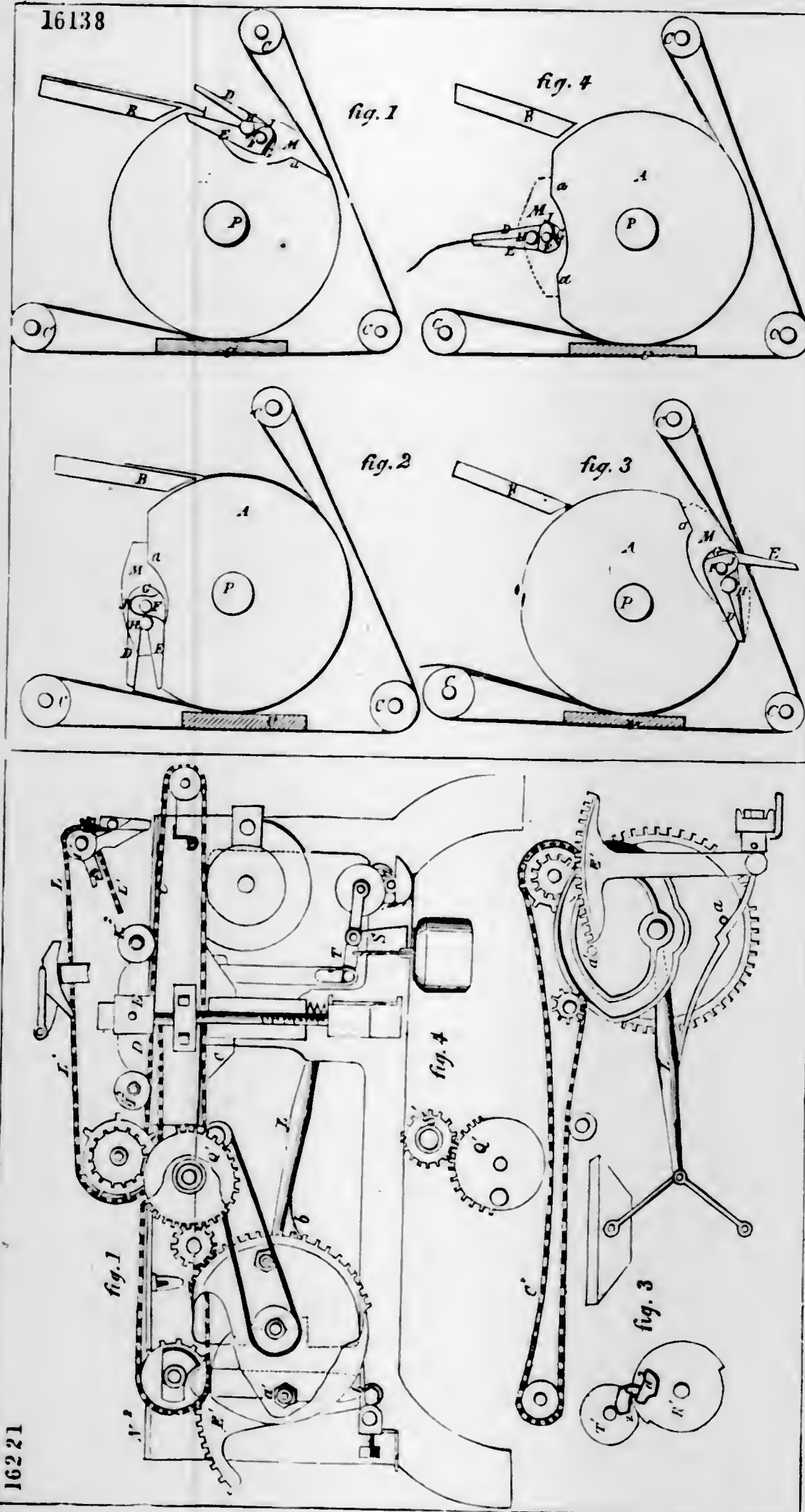
fig. 2

fig. 1

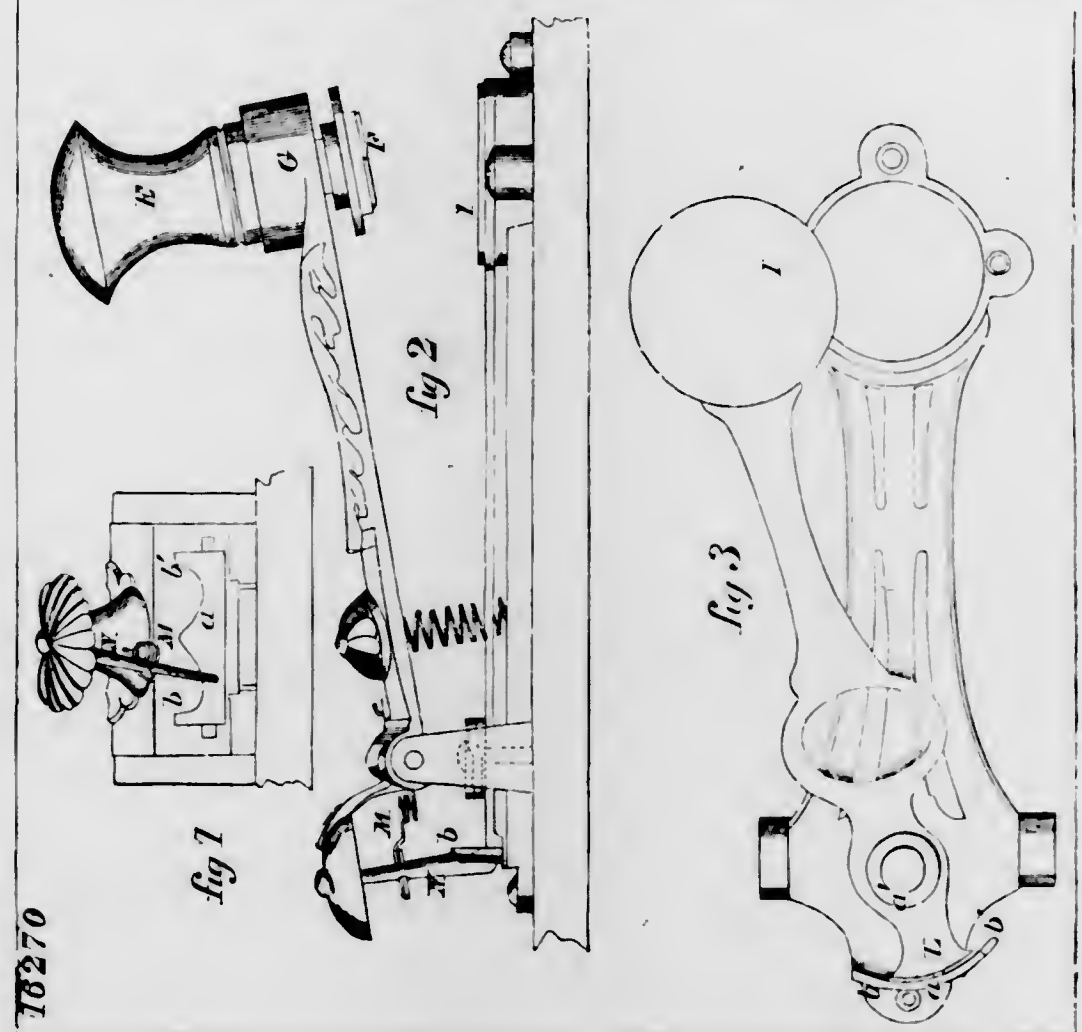
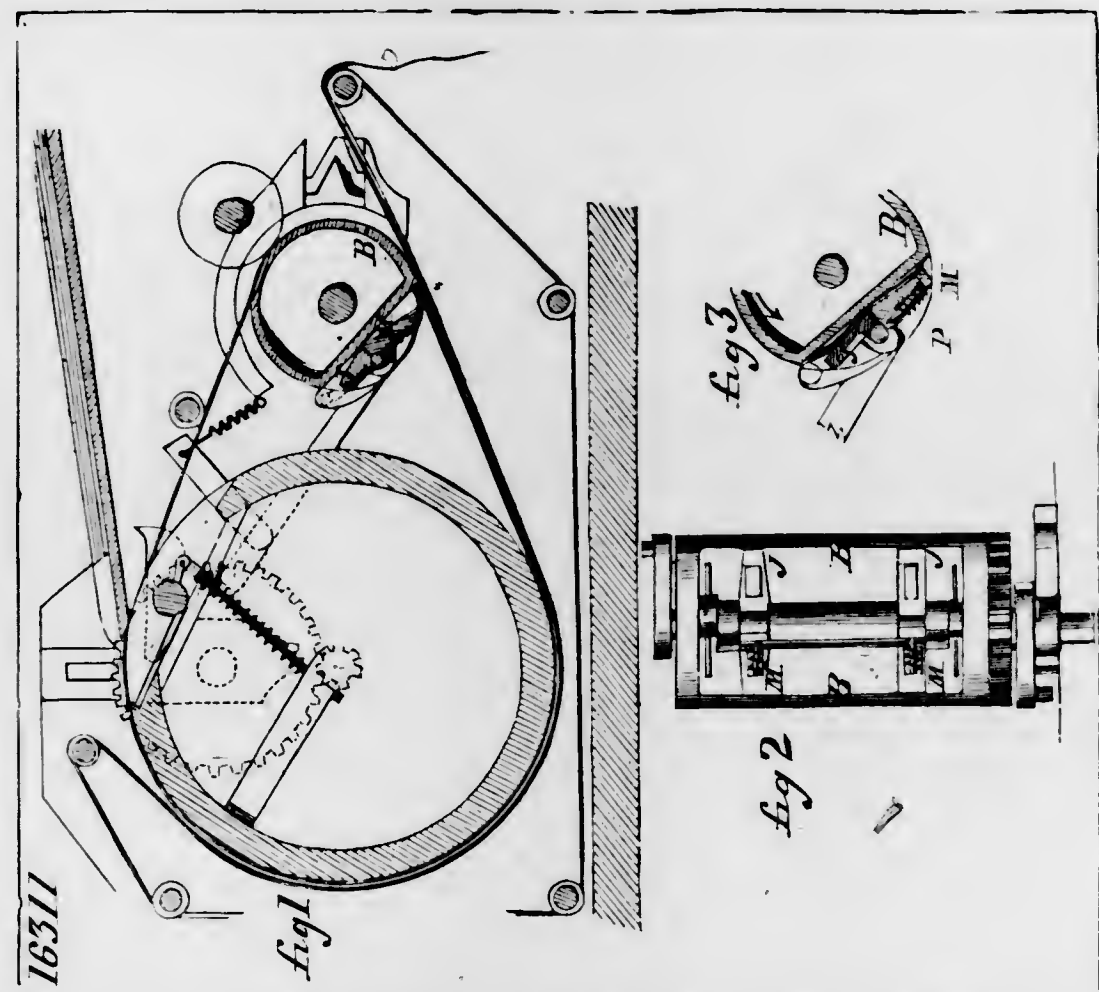
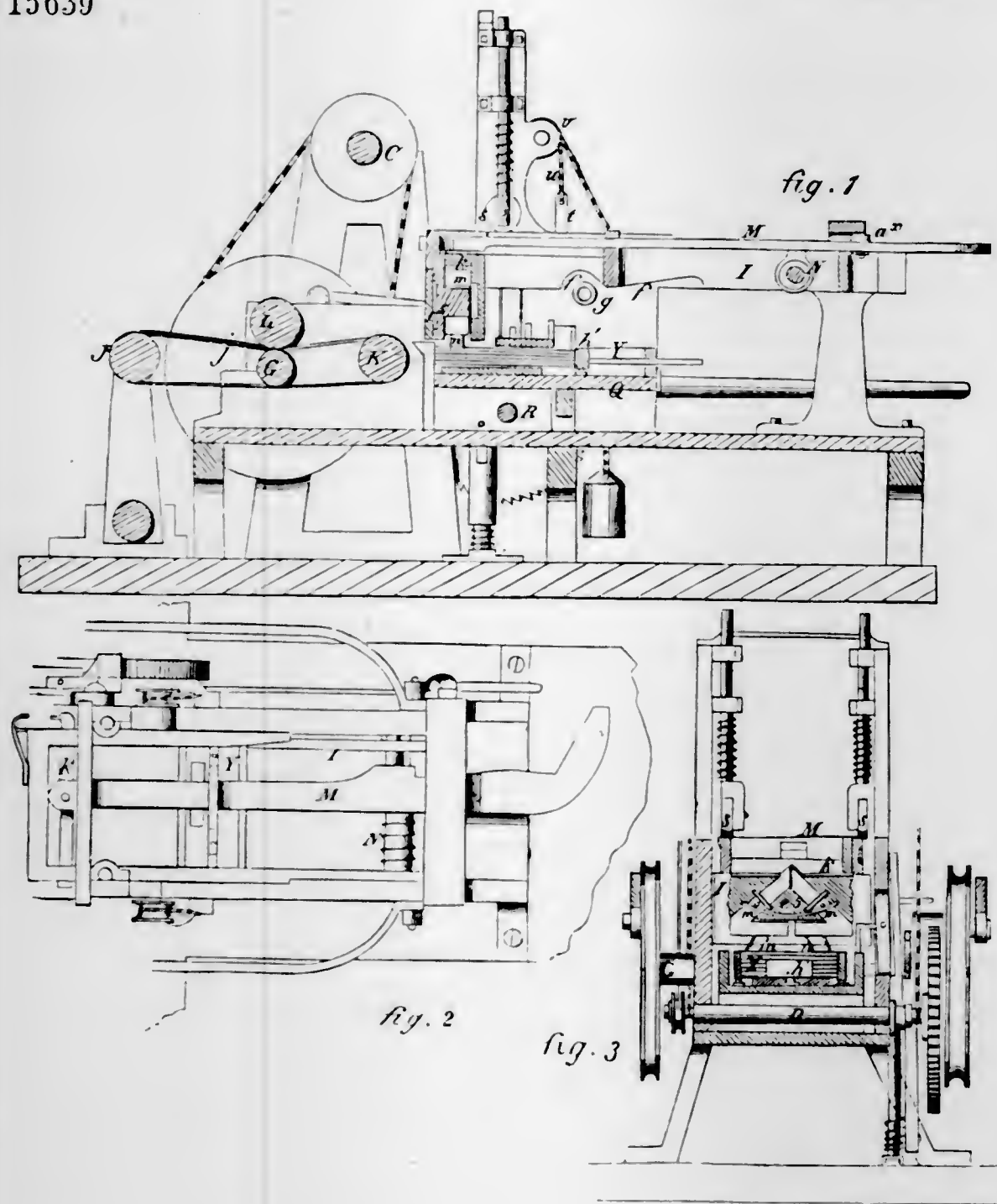


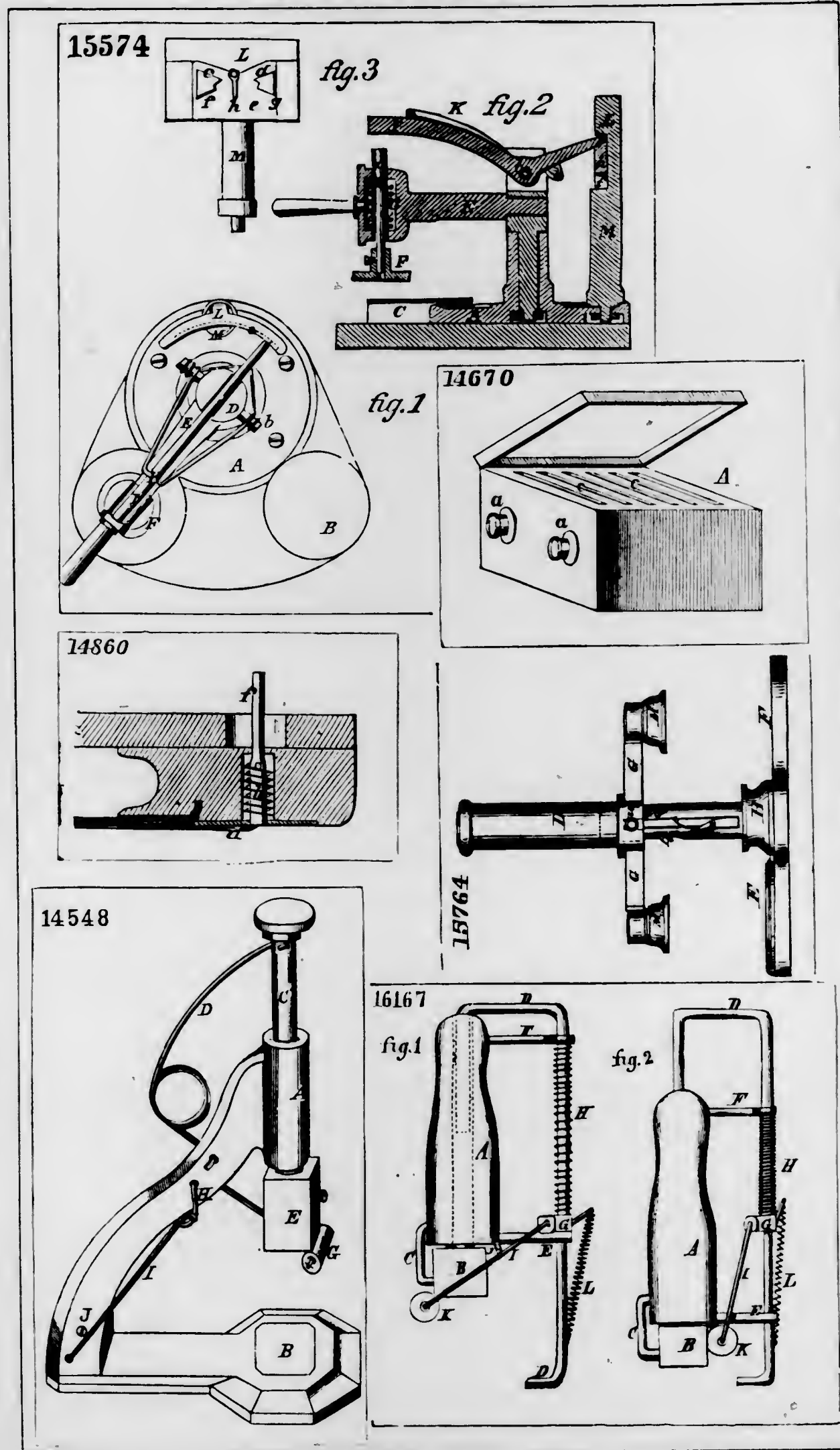
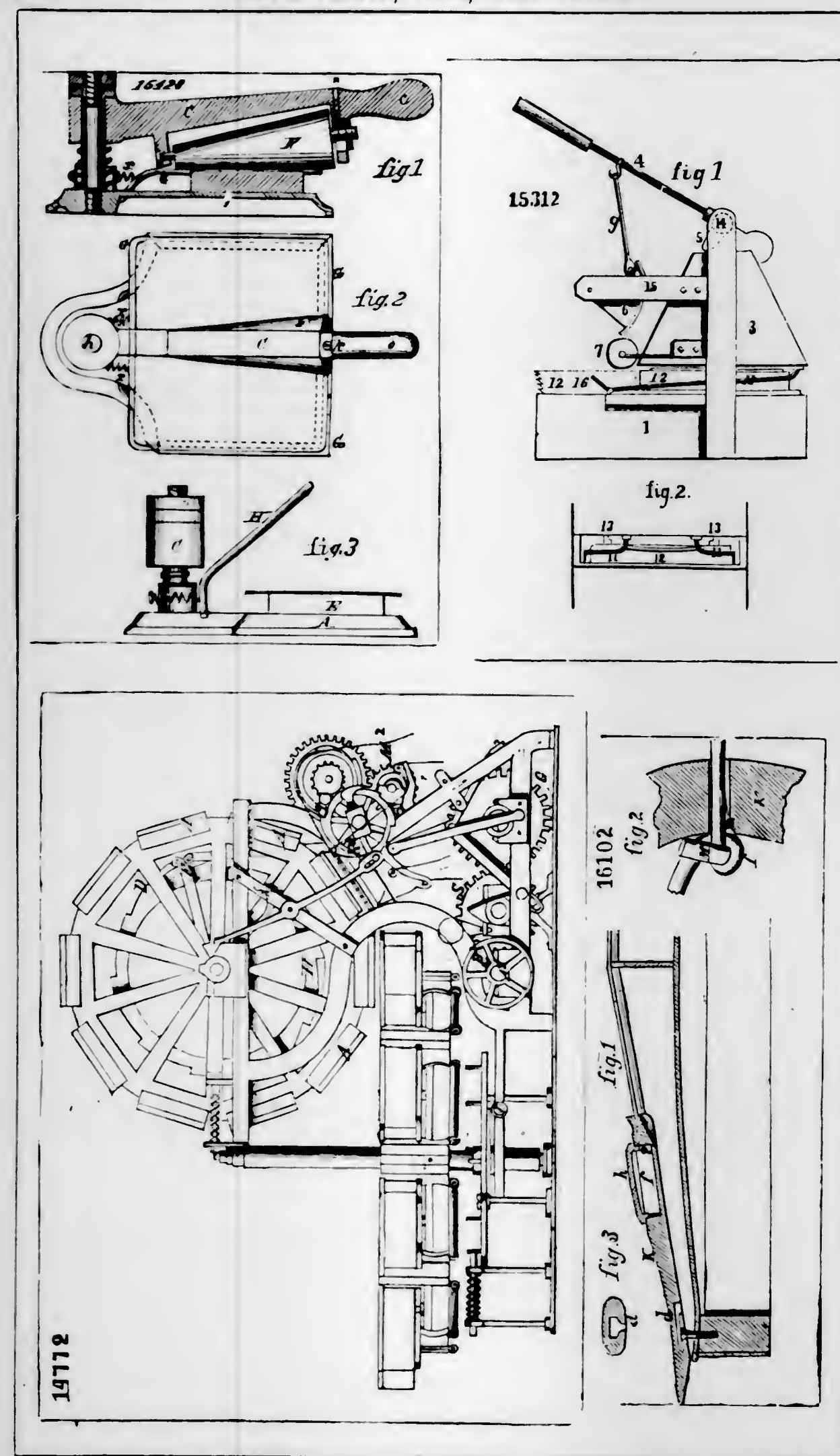


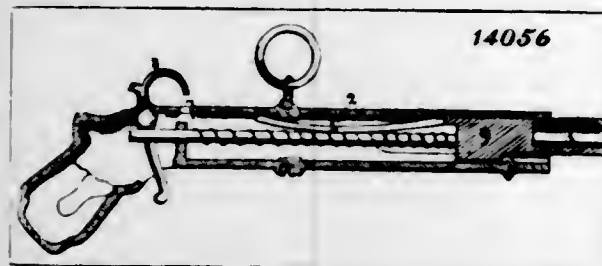




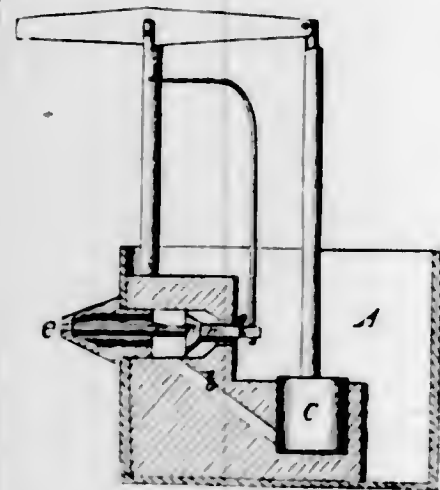
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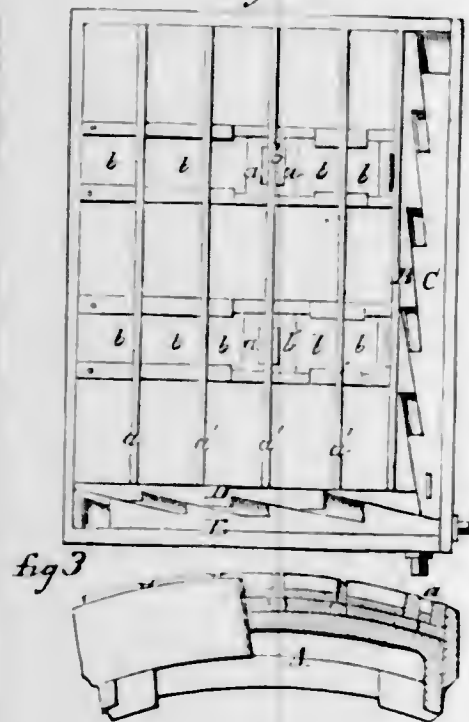
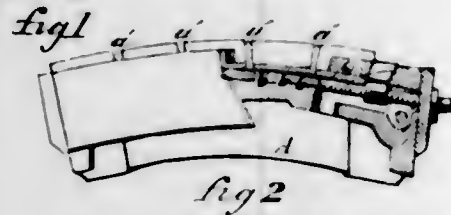




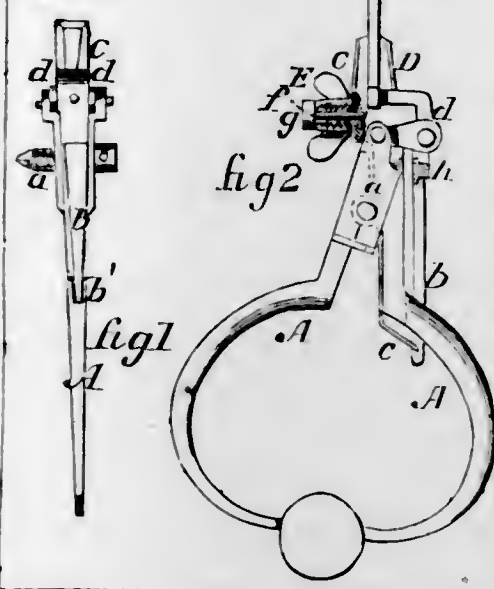
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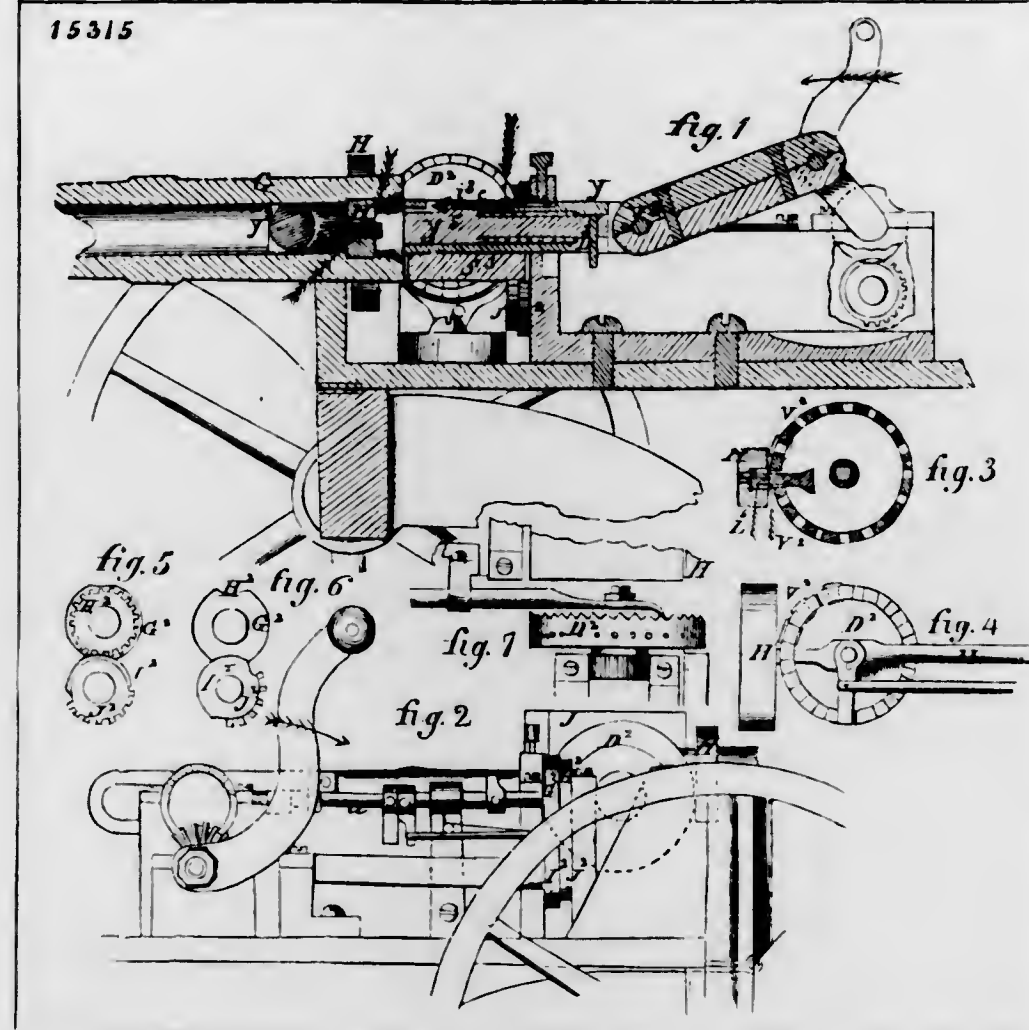
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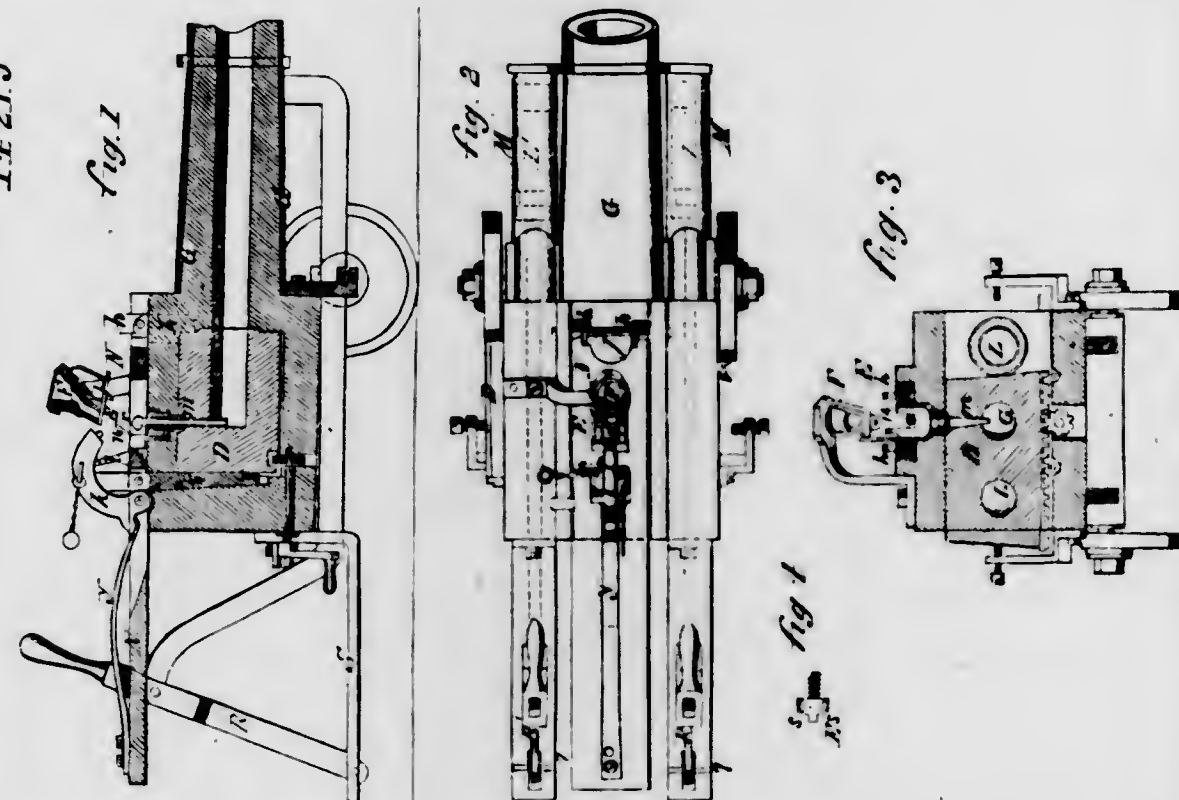
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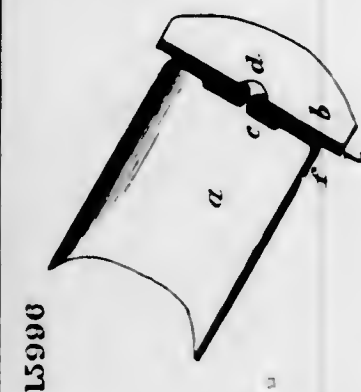


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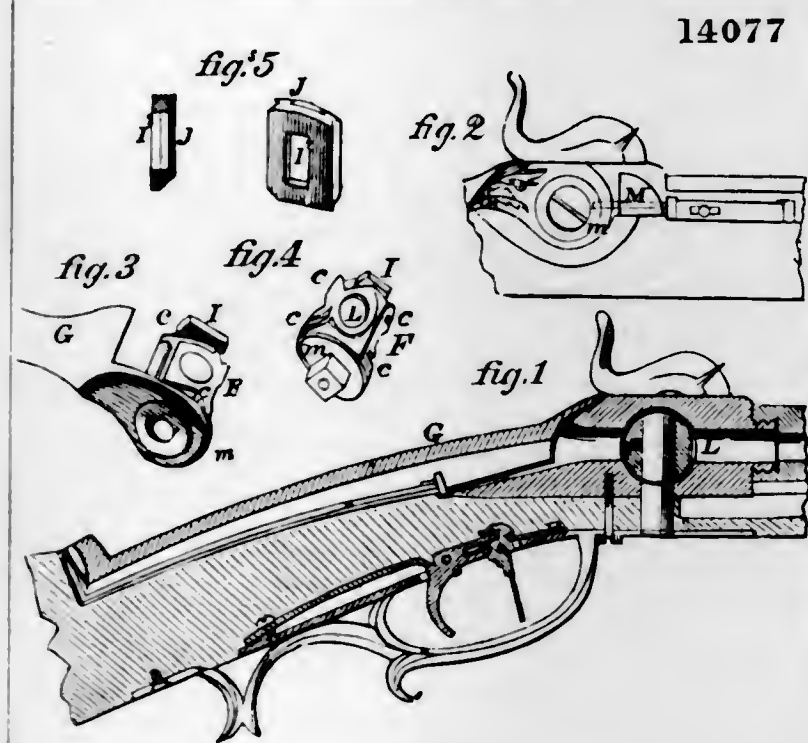
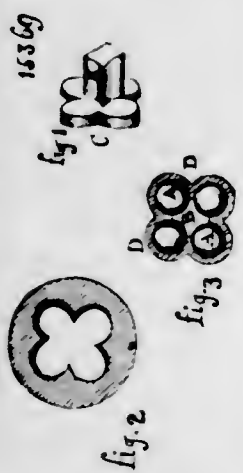
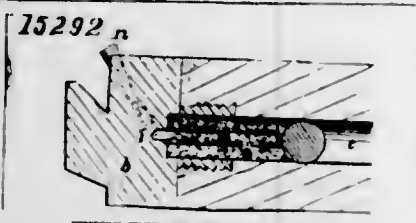


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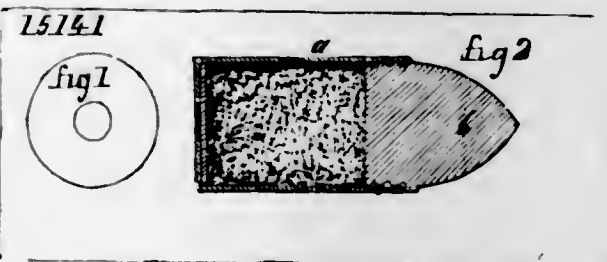
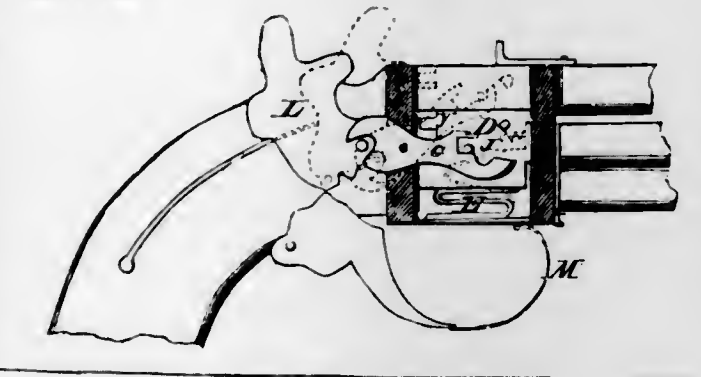




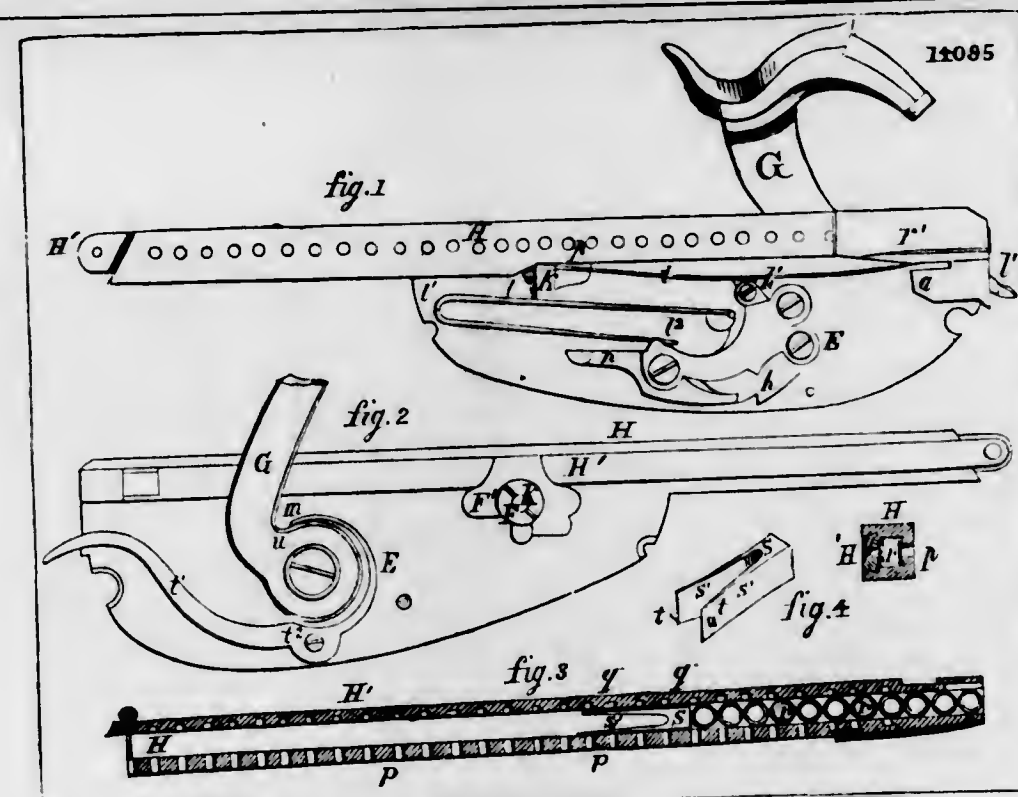
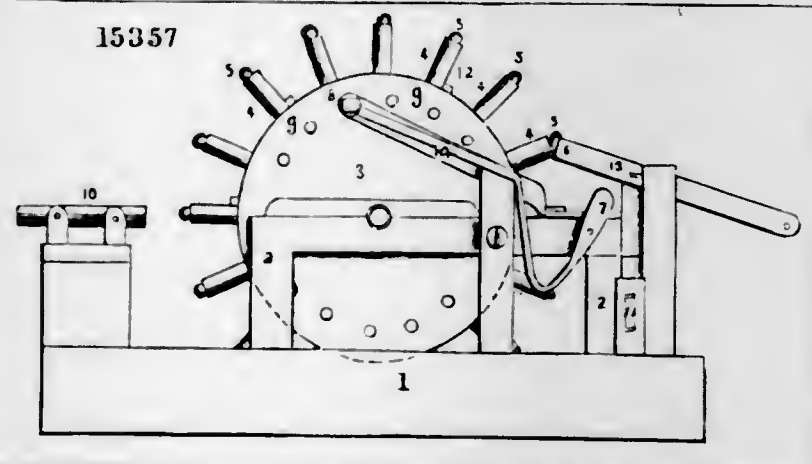
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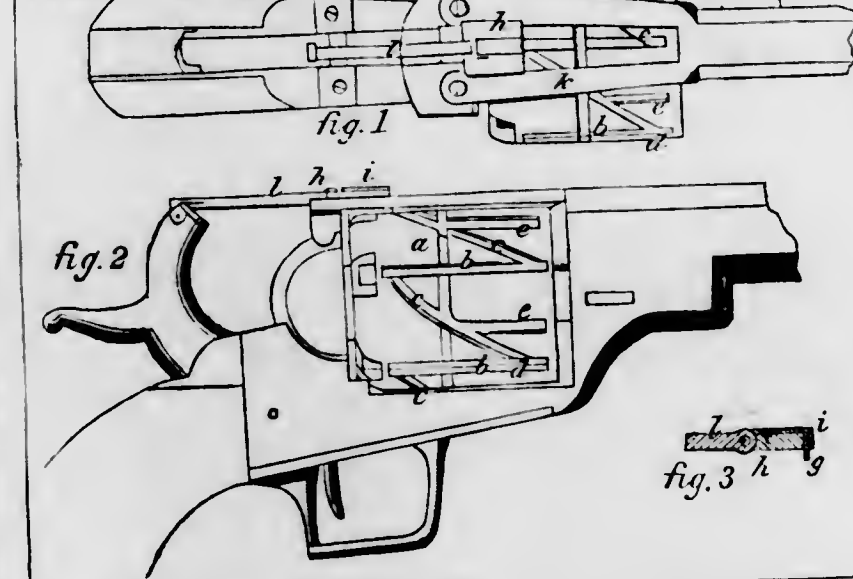
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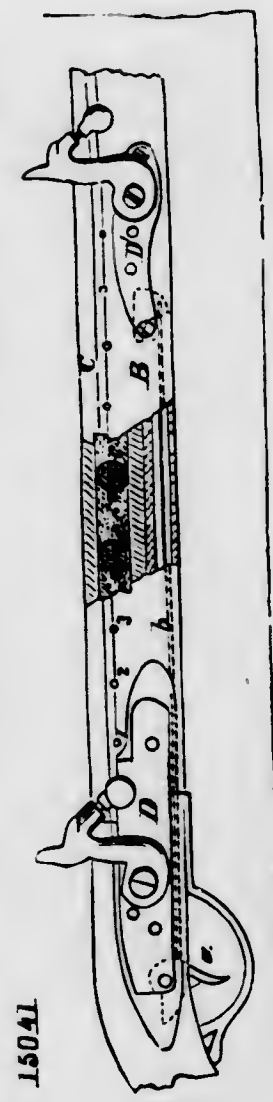
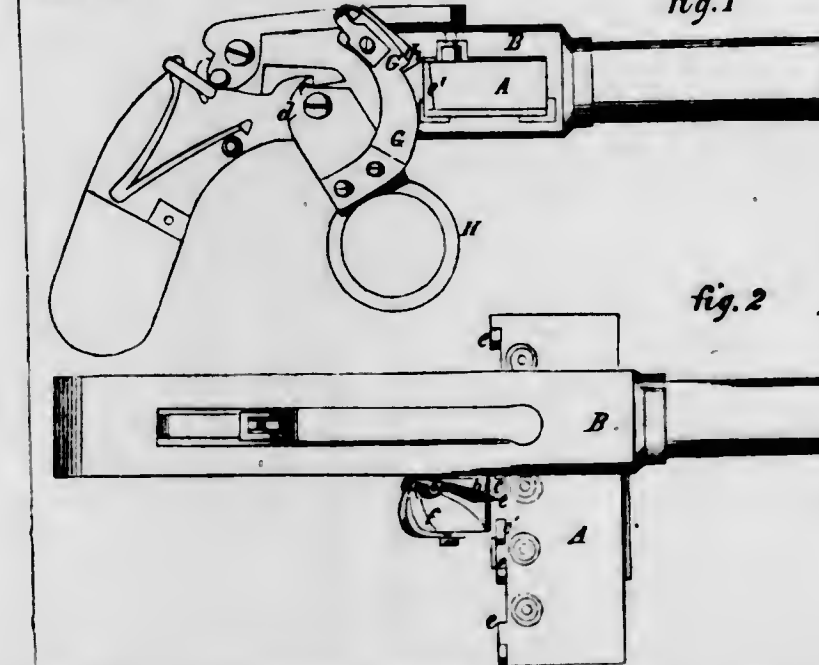
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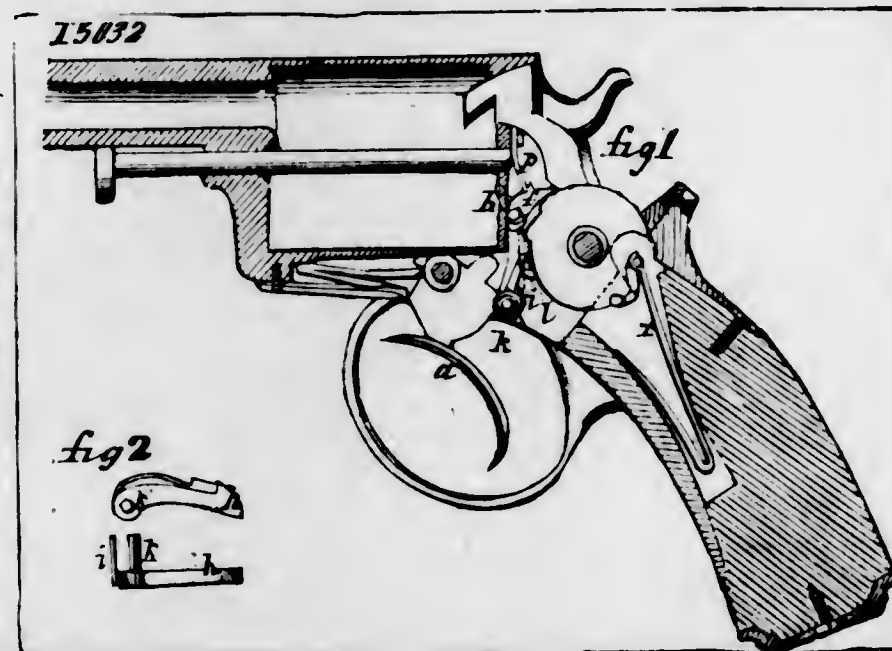
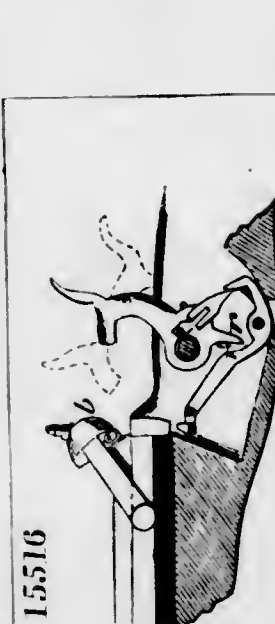
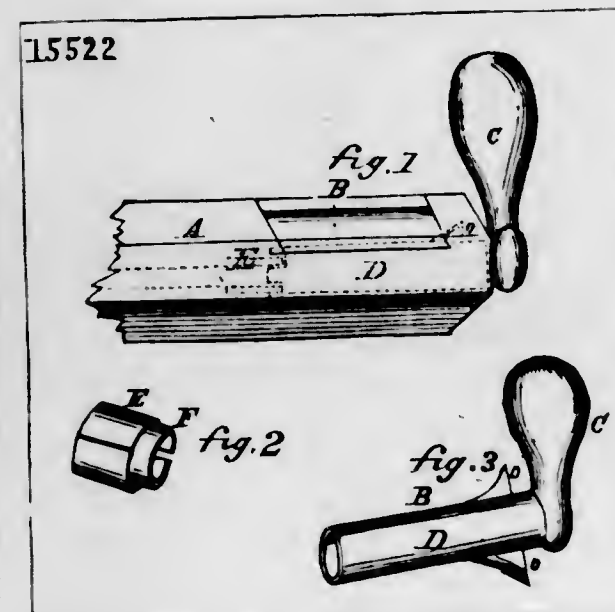
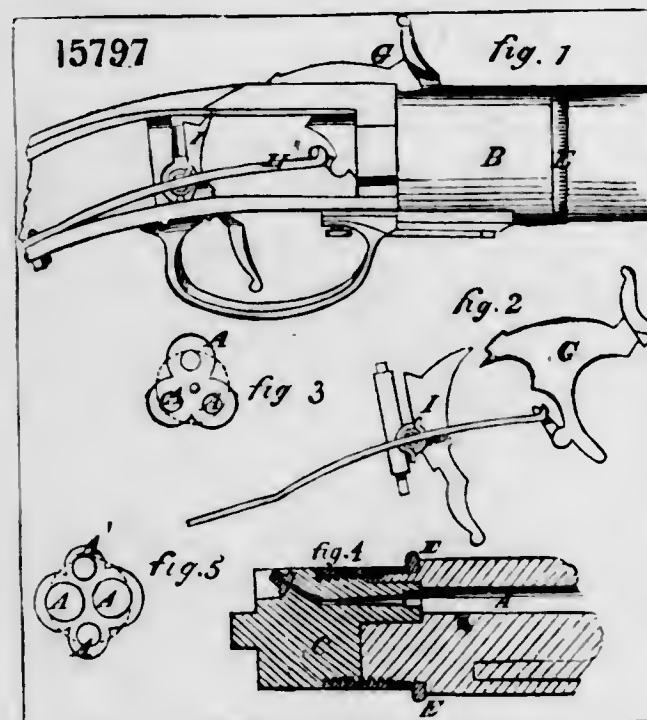
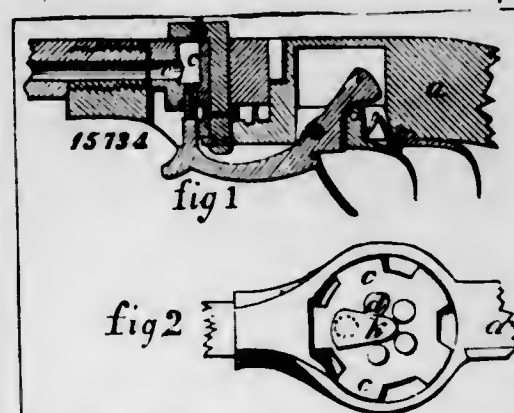
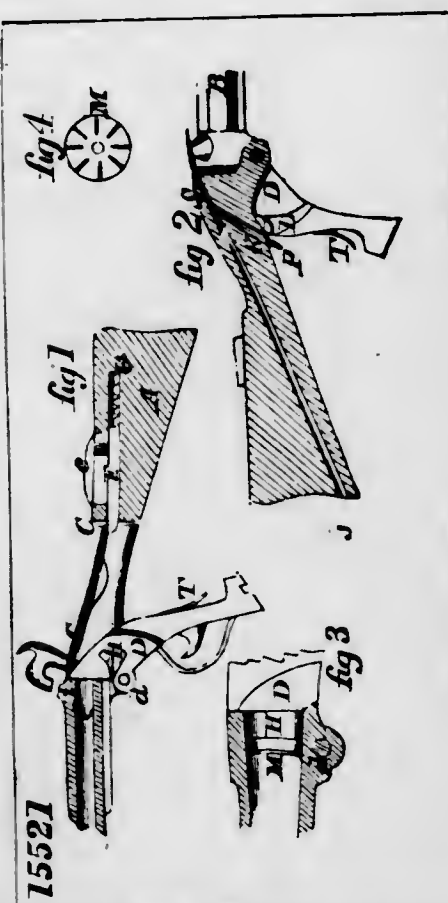
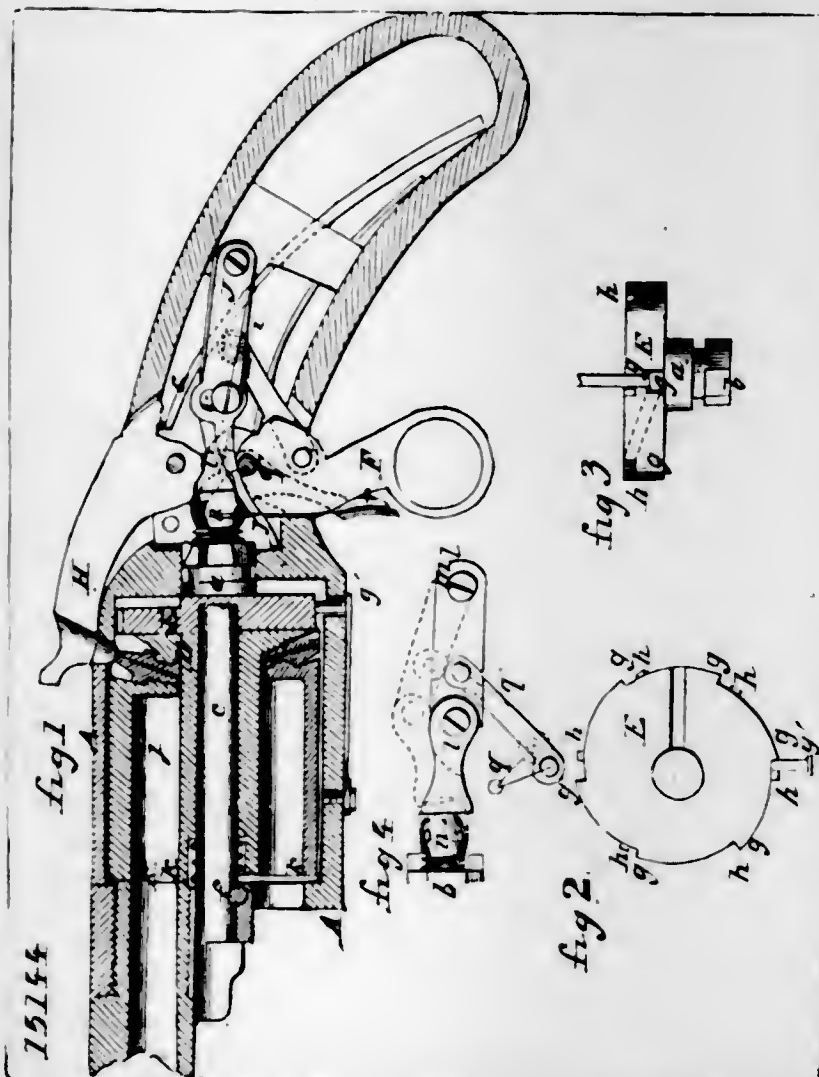
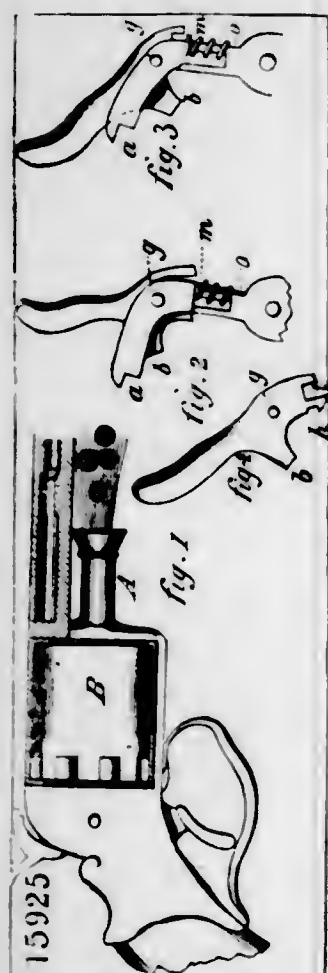
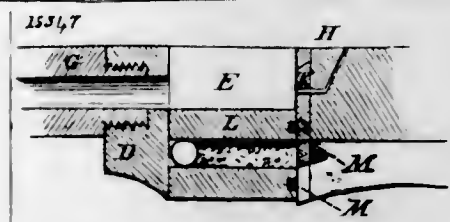
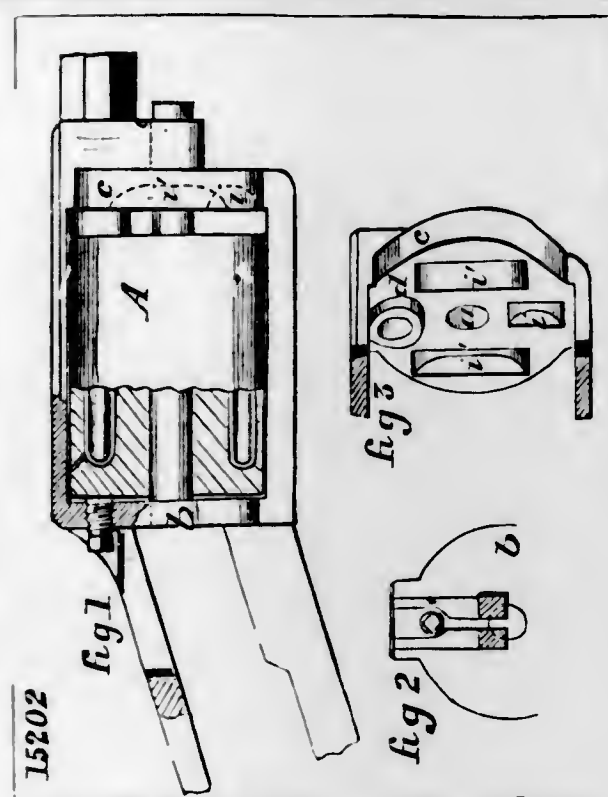
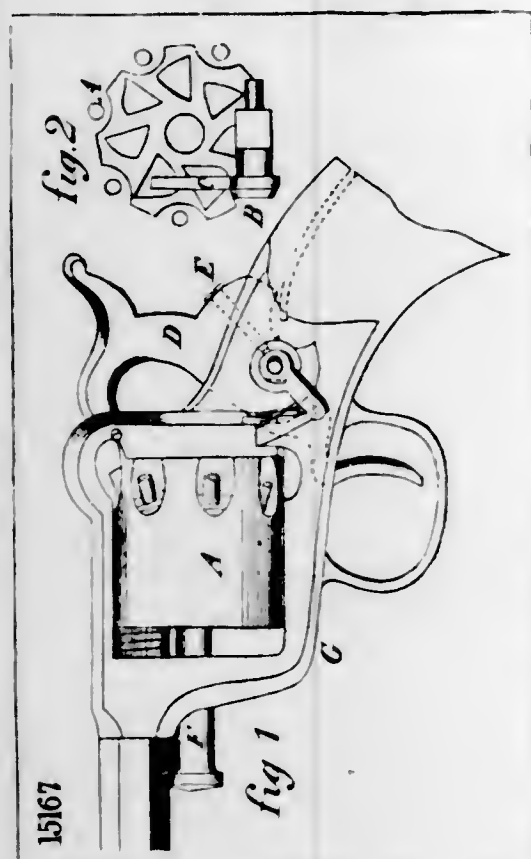


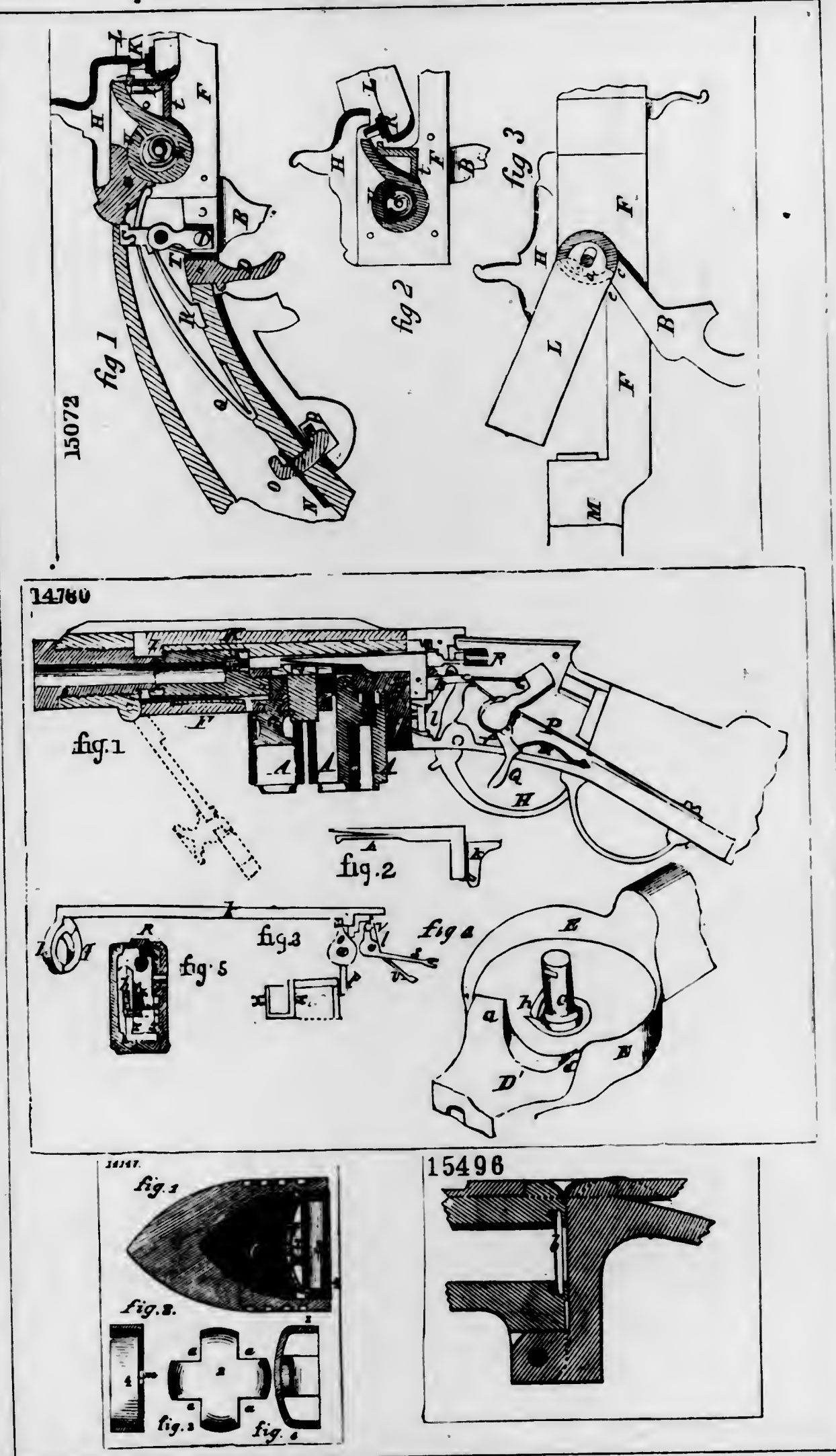
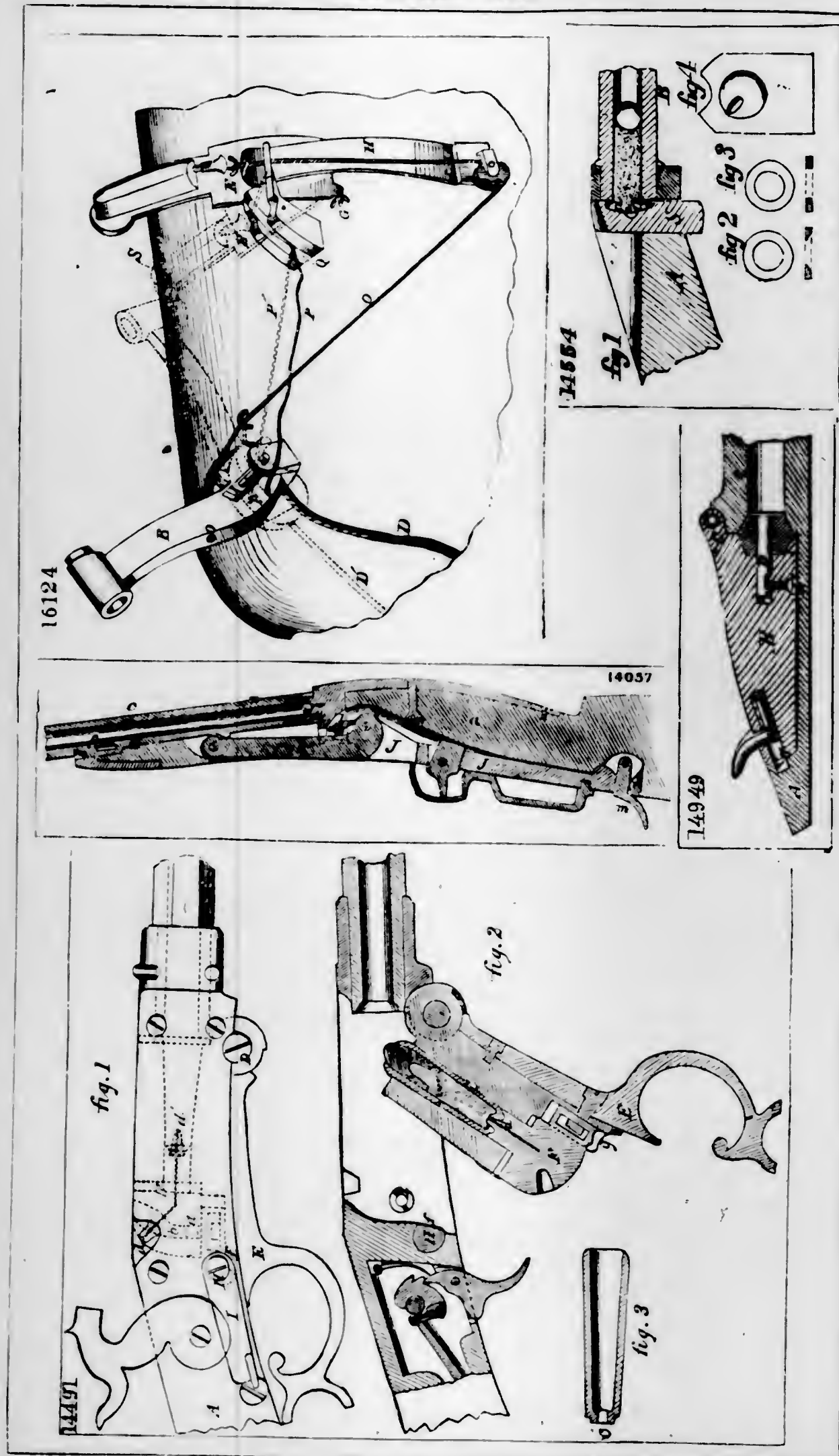
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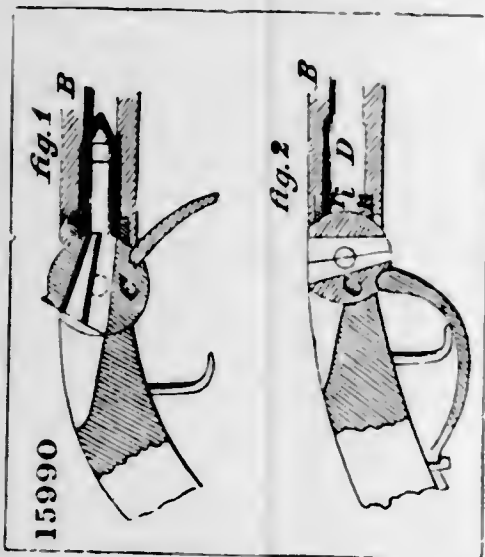
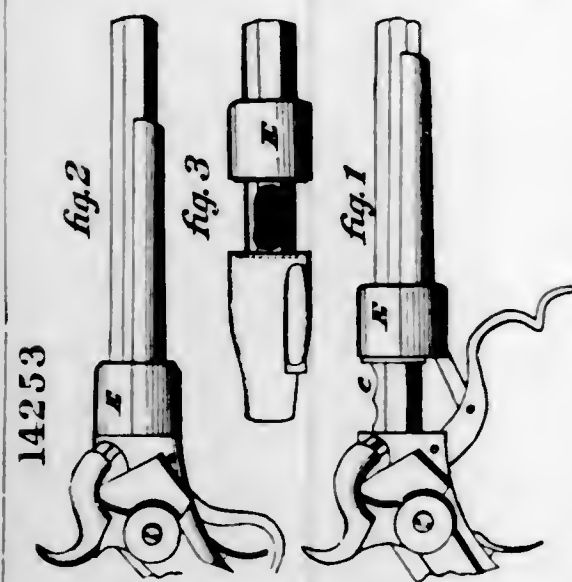


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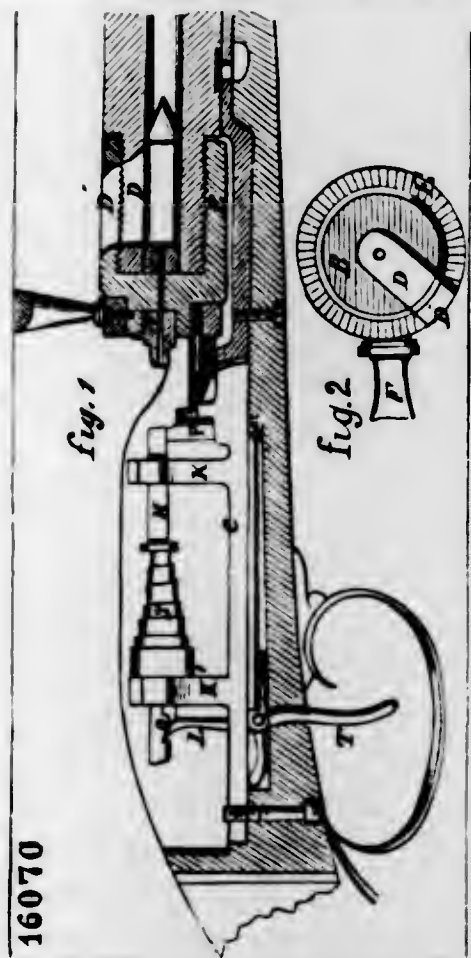
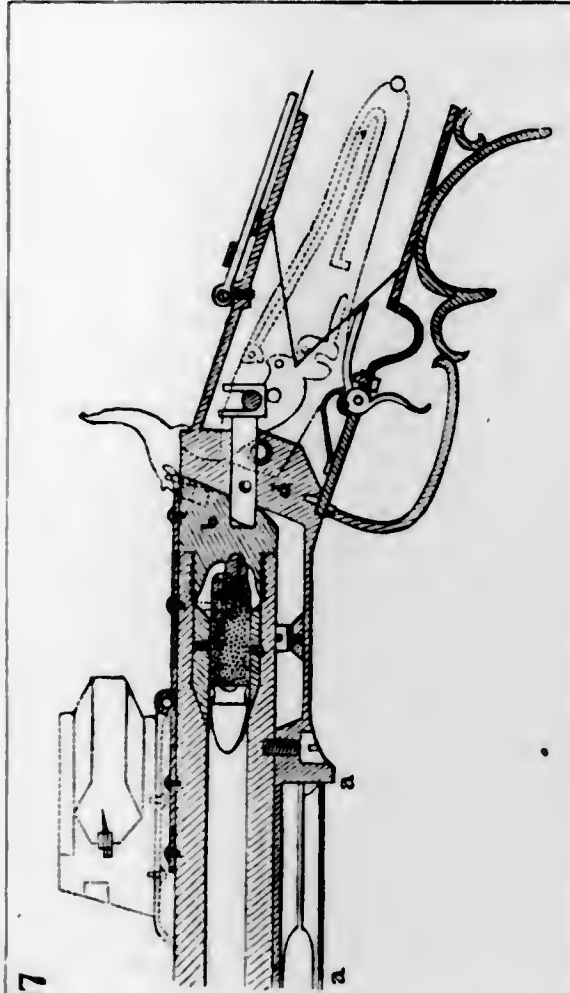
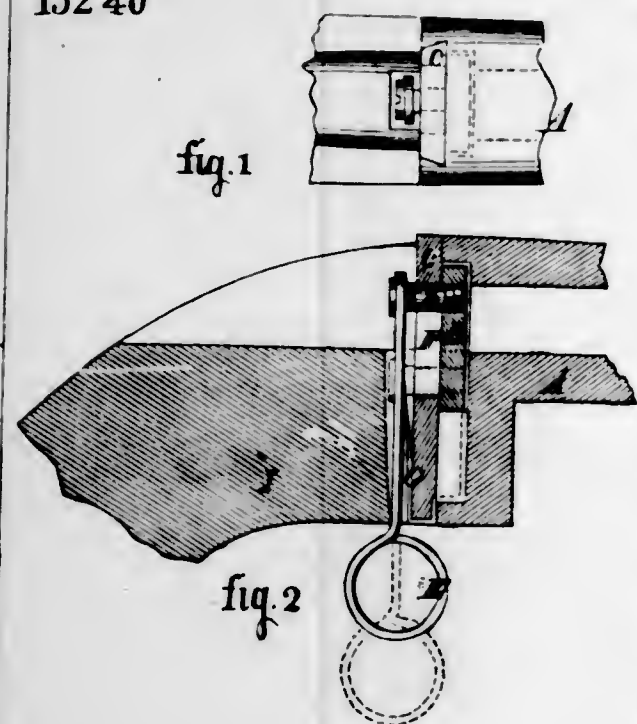
fig. 1



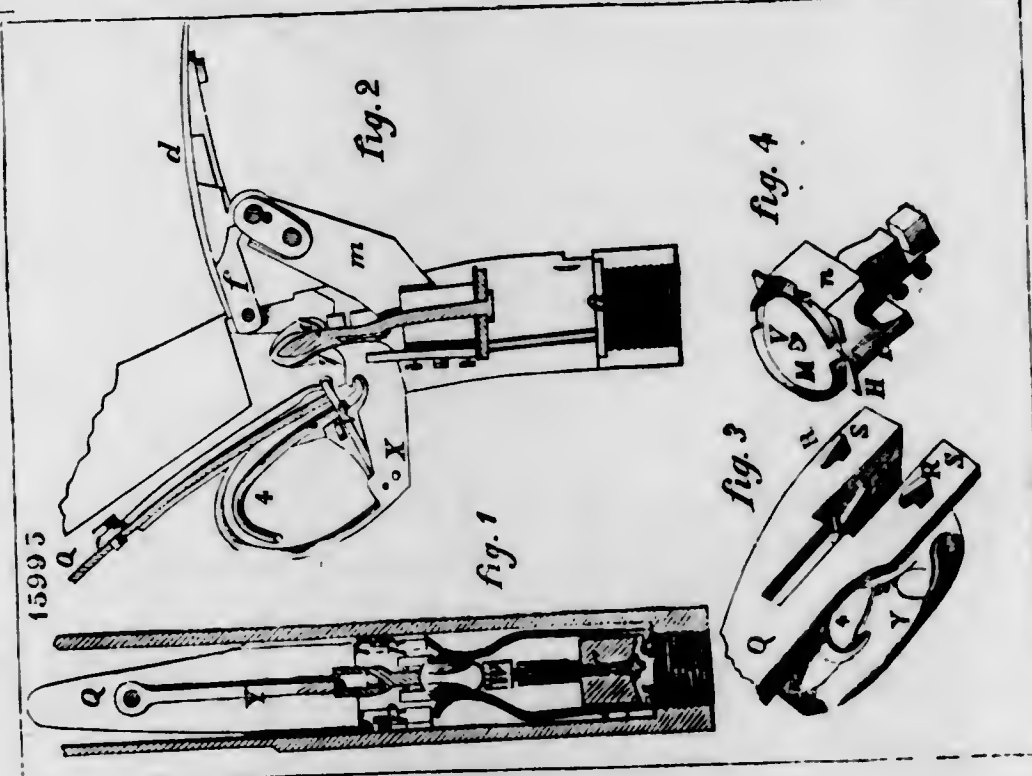
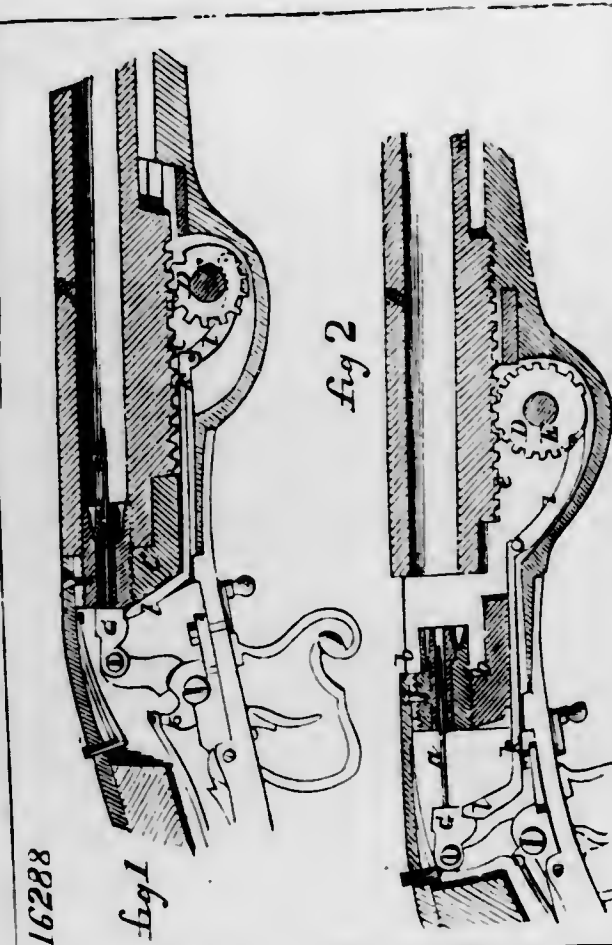
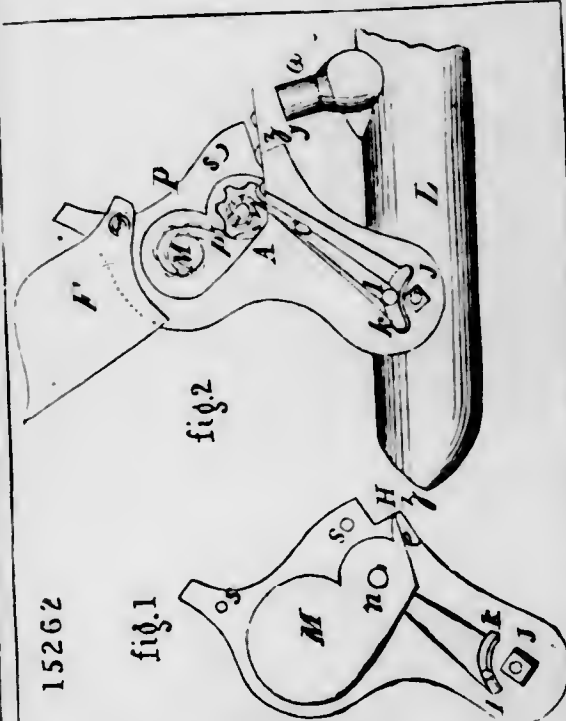
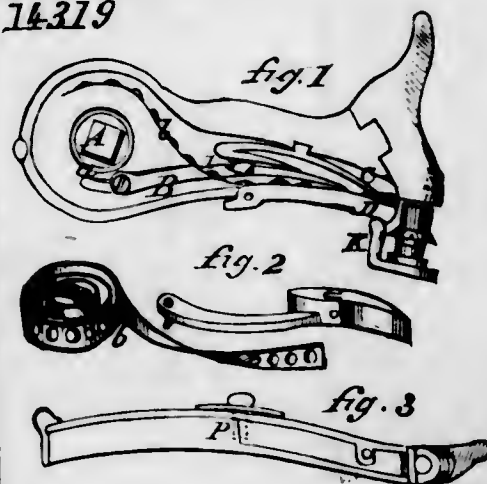




152 40



14379

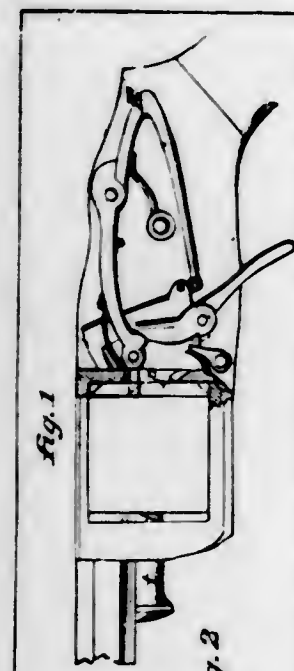


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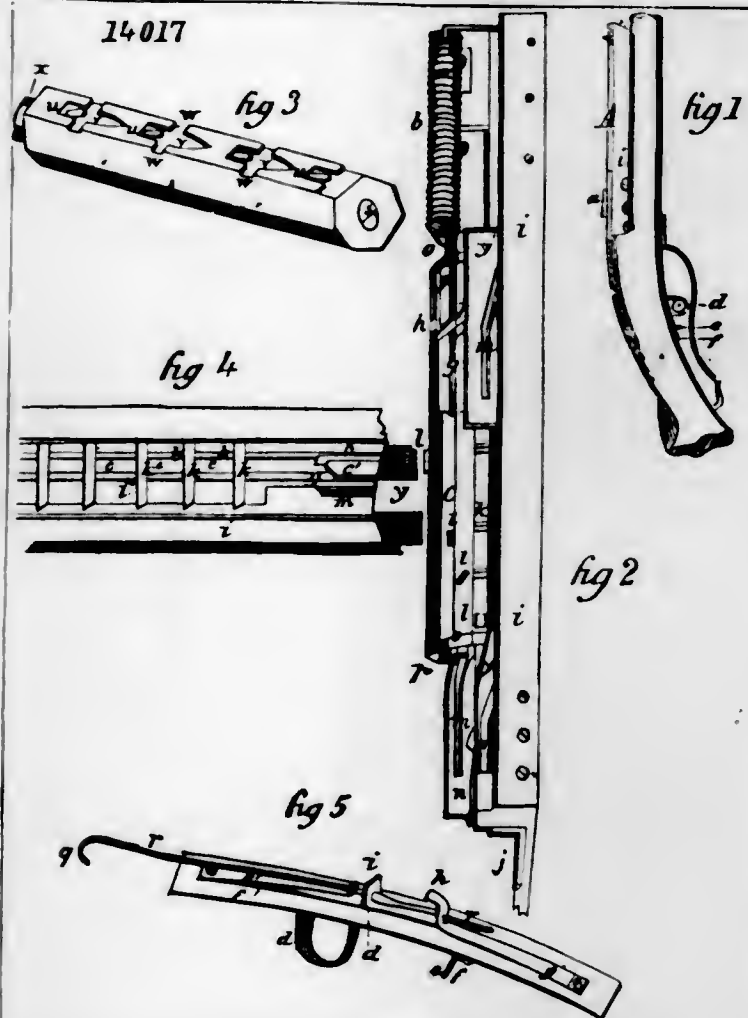


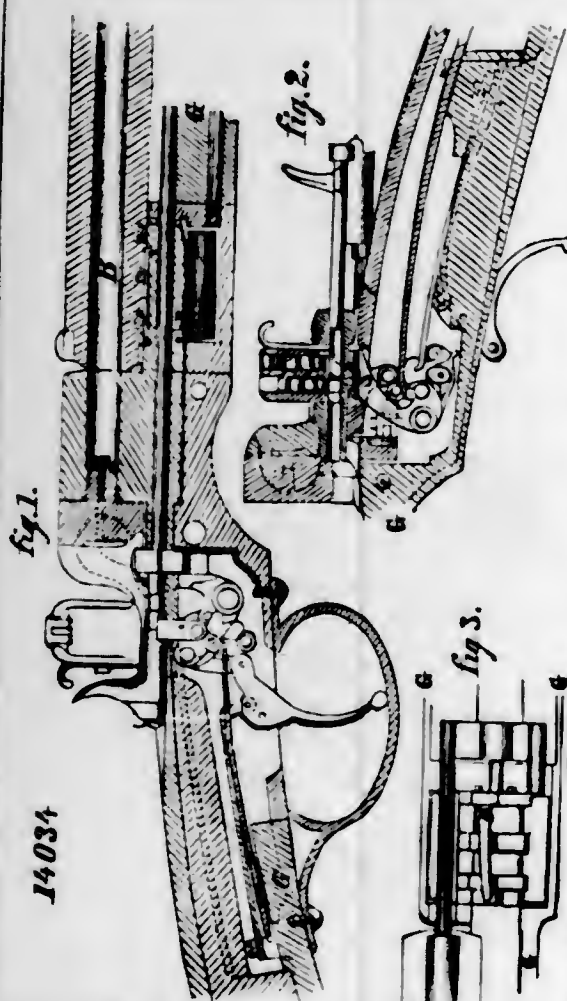
fig 4



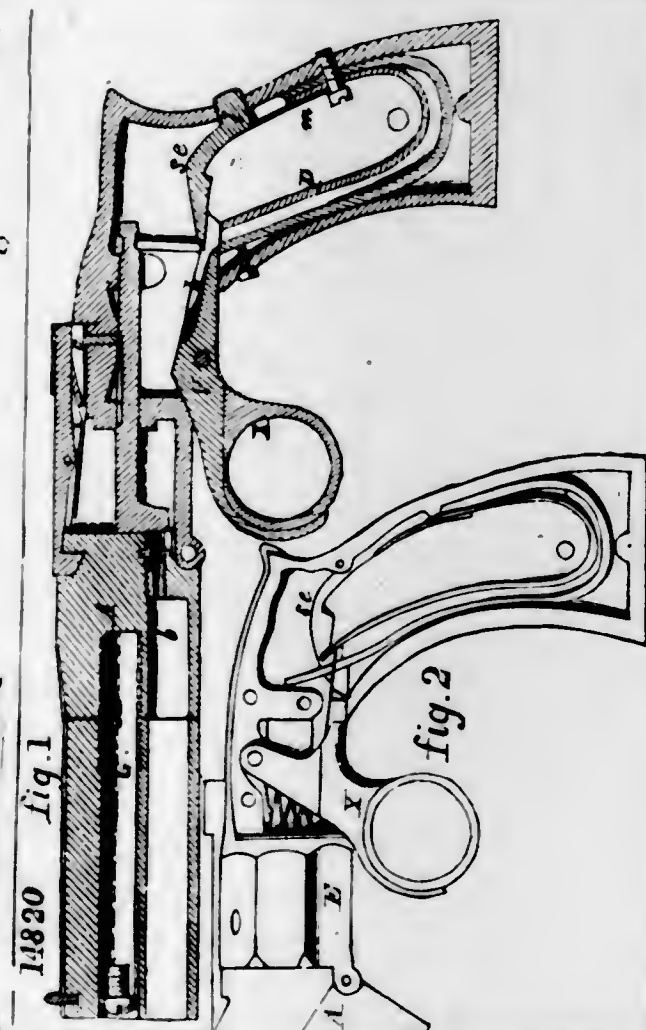
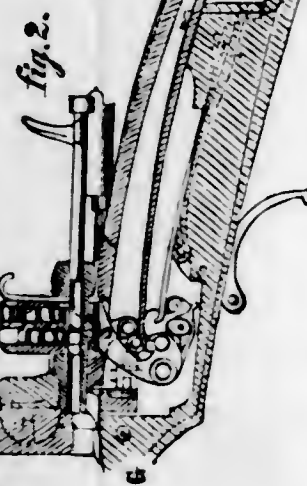
fig 2



fig 5



14034



14820 fig. 1

fig. 2

14710

fig. 1

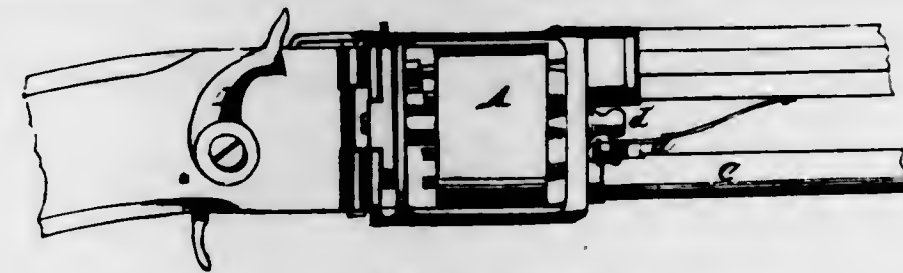


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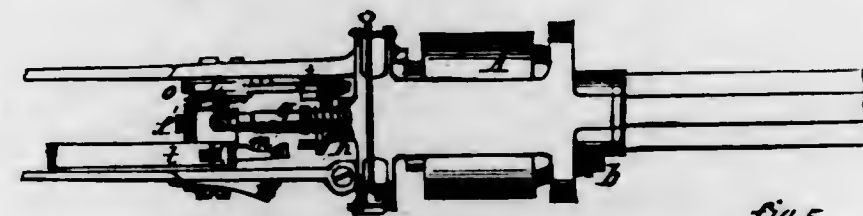


fig. 3



fig. 4

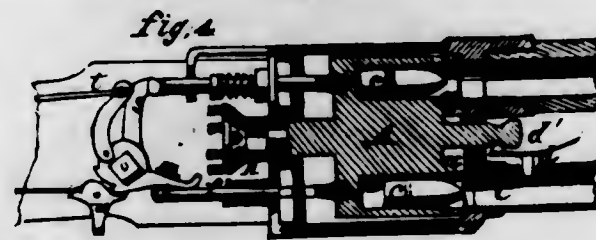


fig. 5



fig. 6



fig. 7

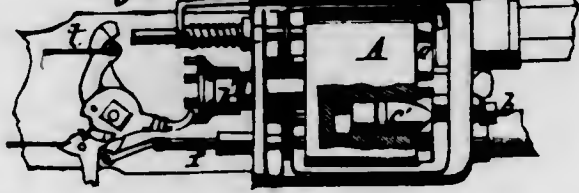
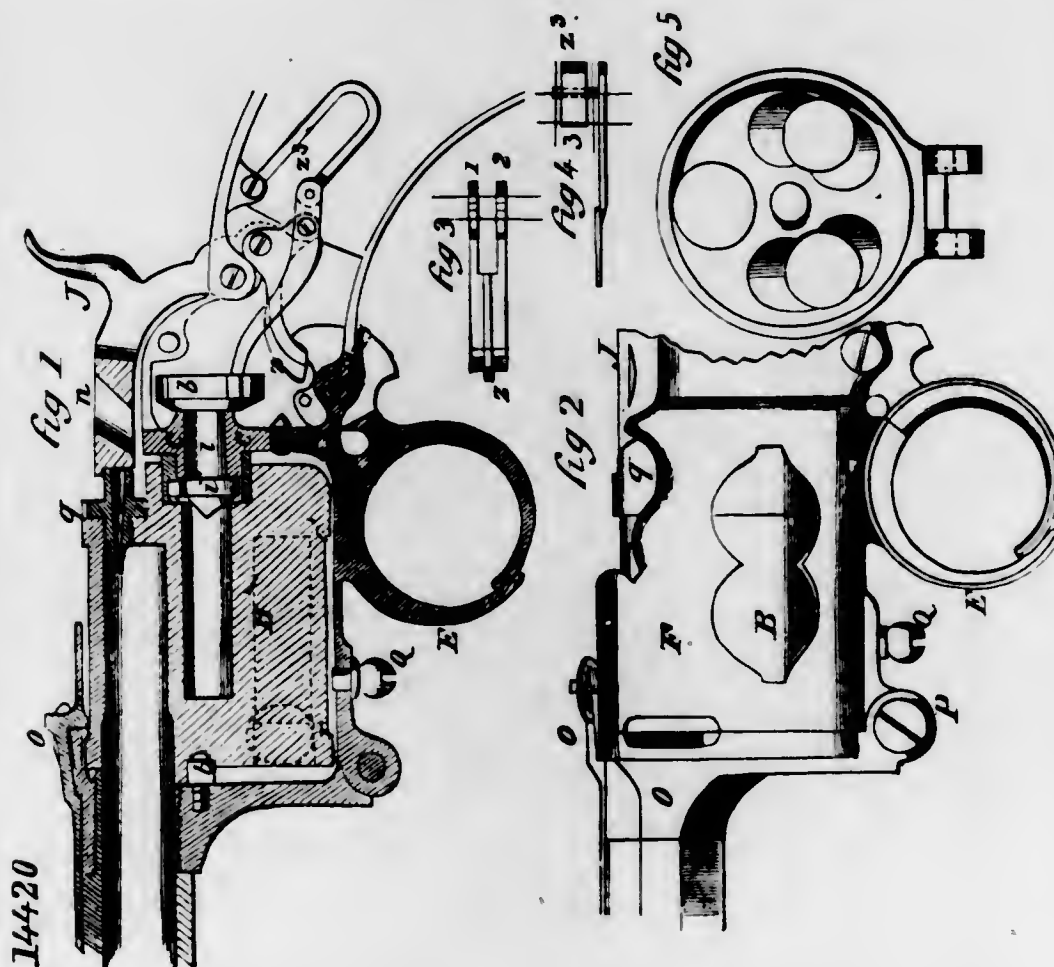
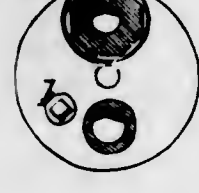


fig. 8



14420

fig. 1

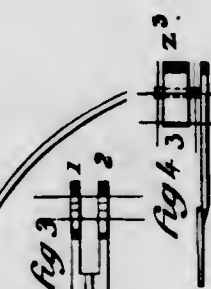


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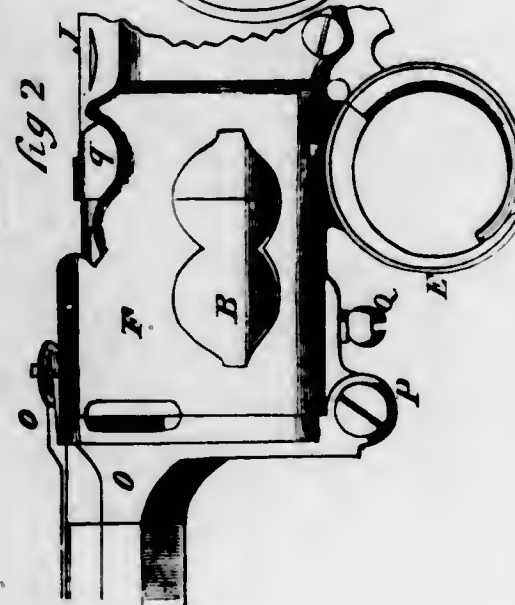
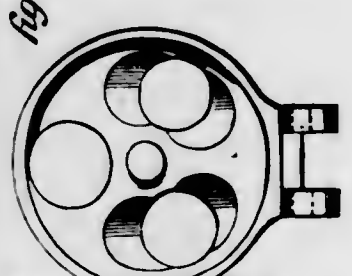
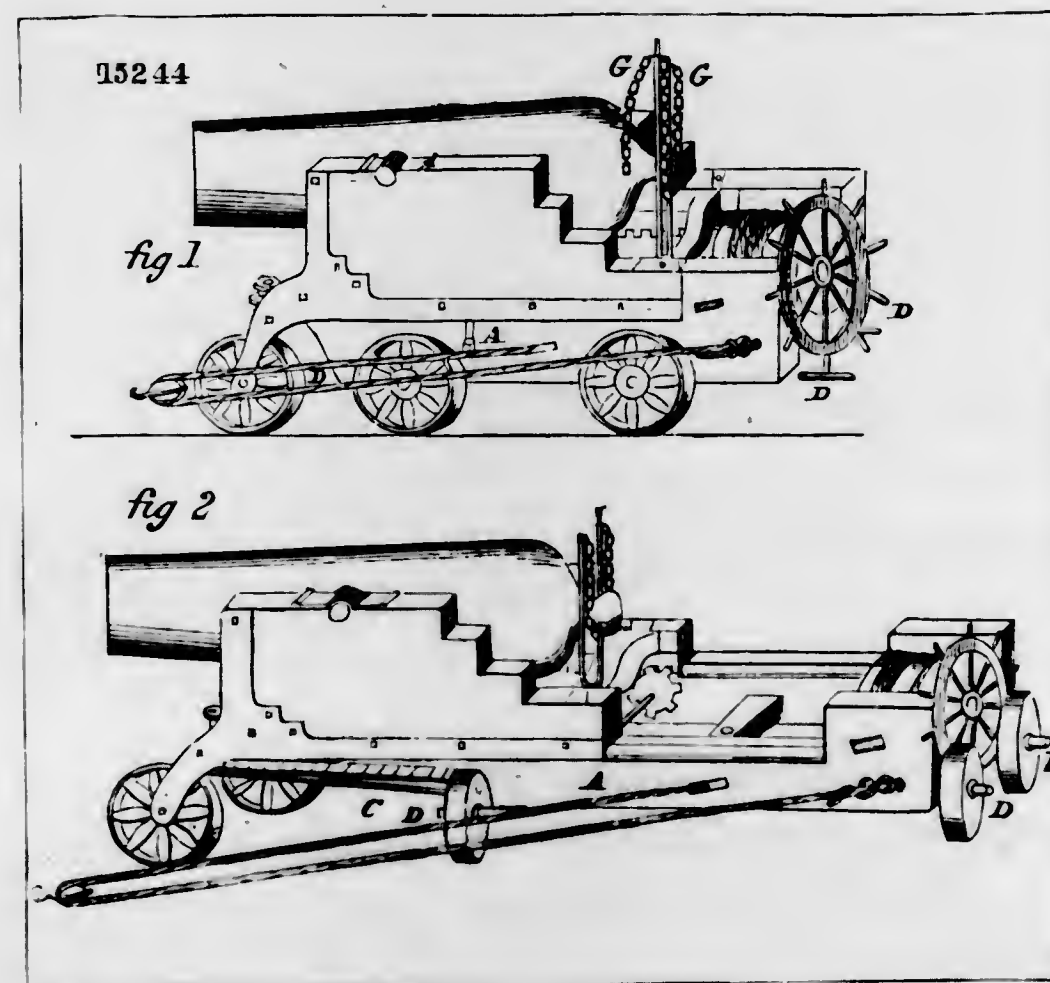
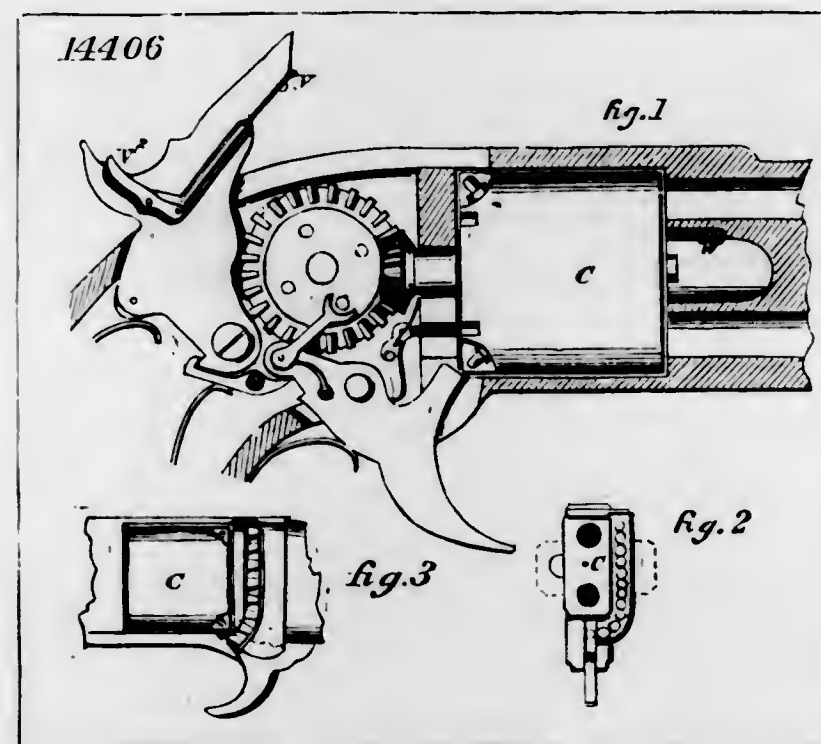
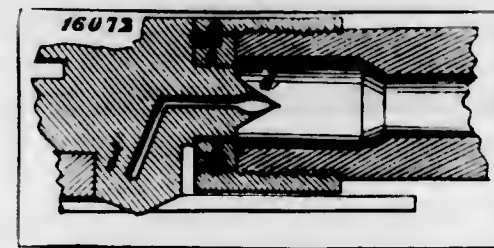
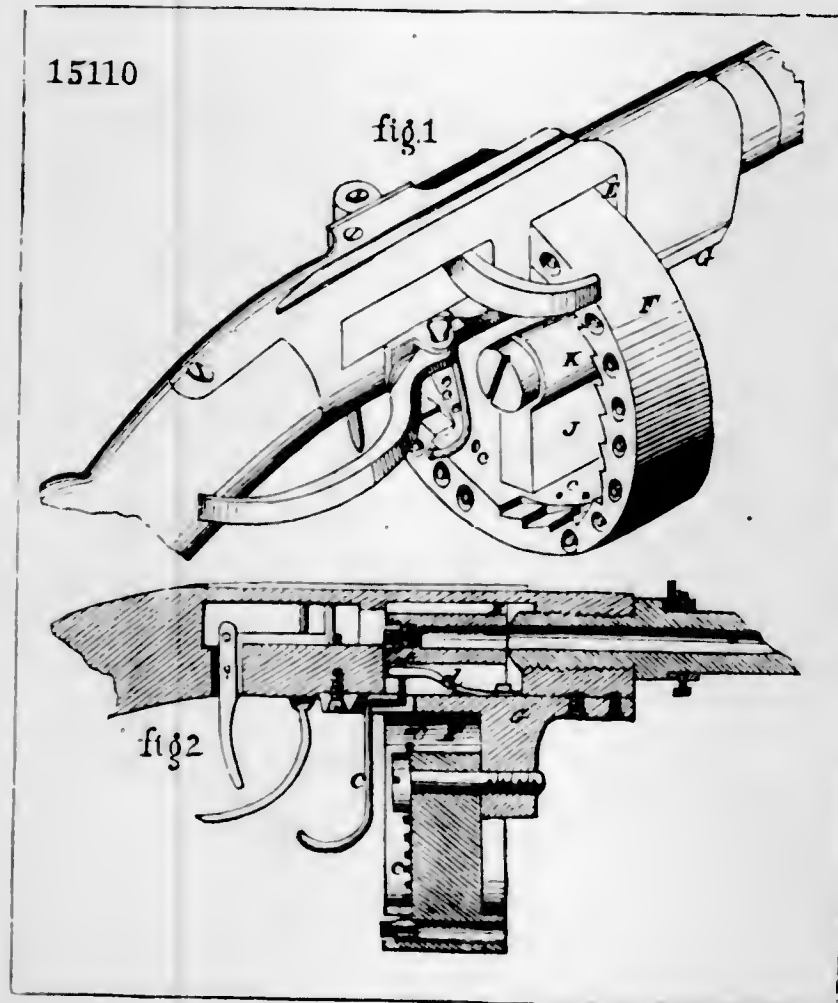
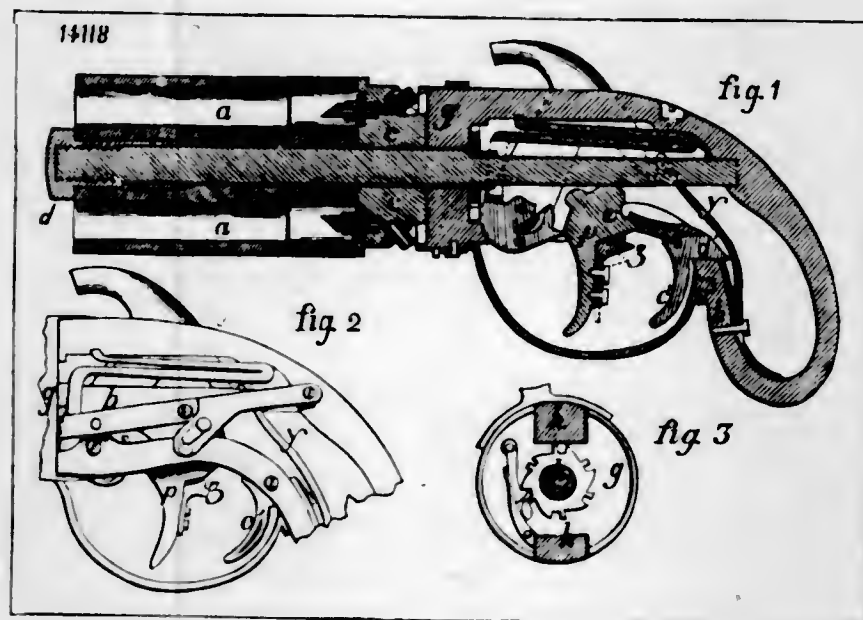
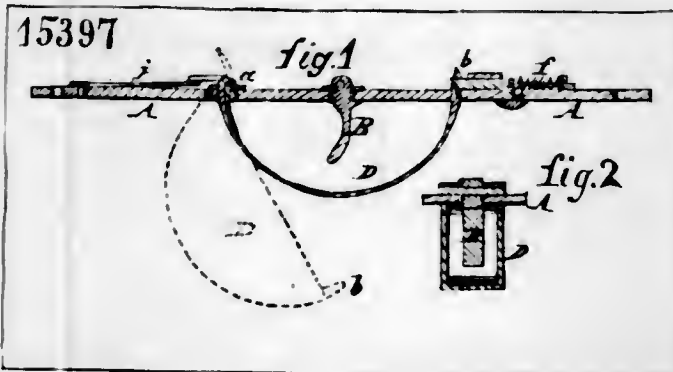
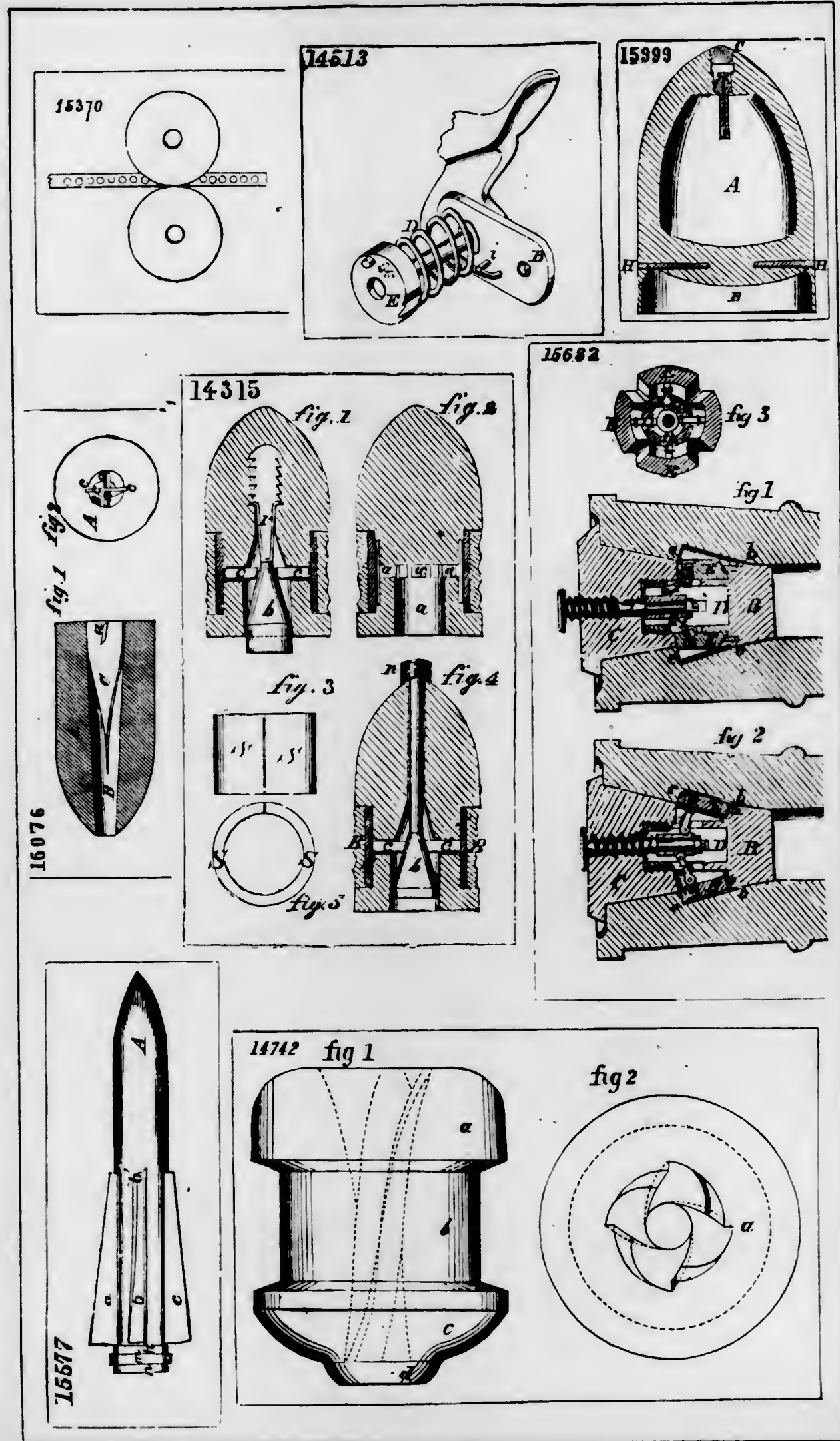
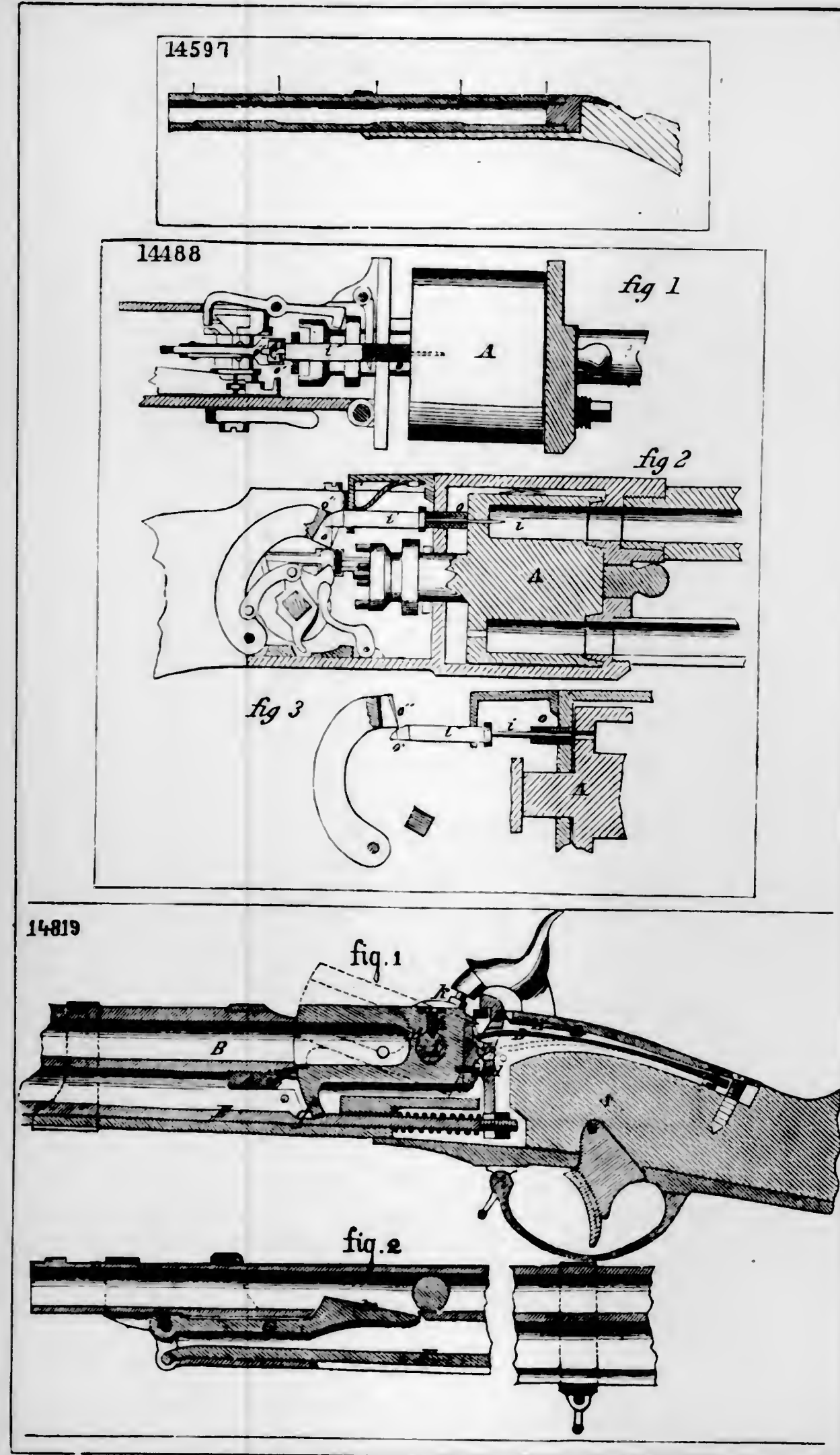
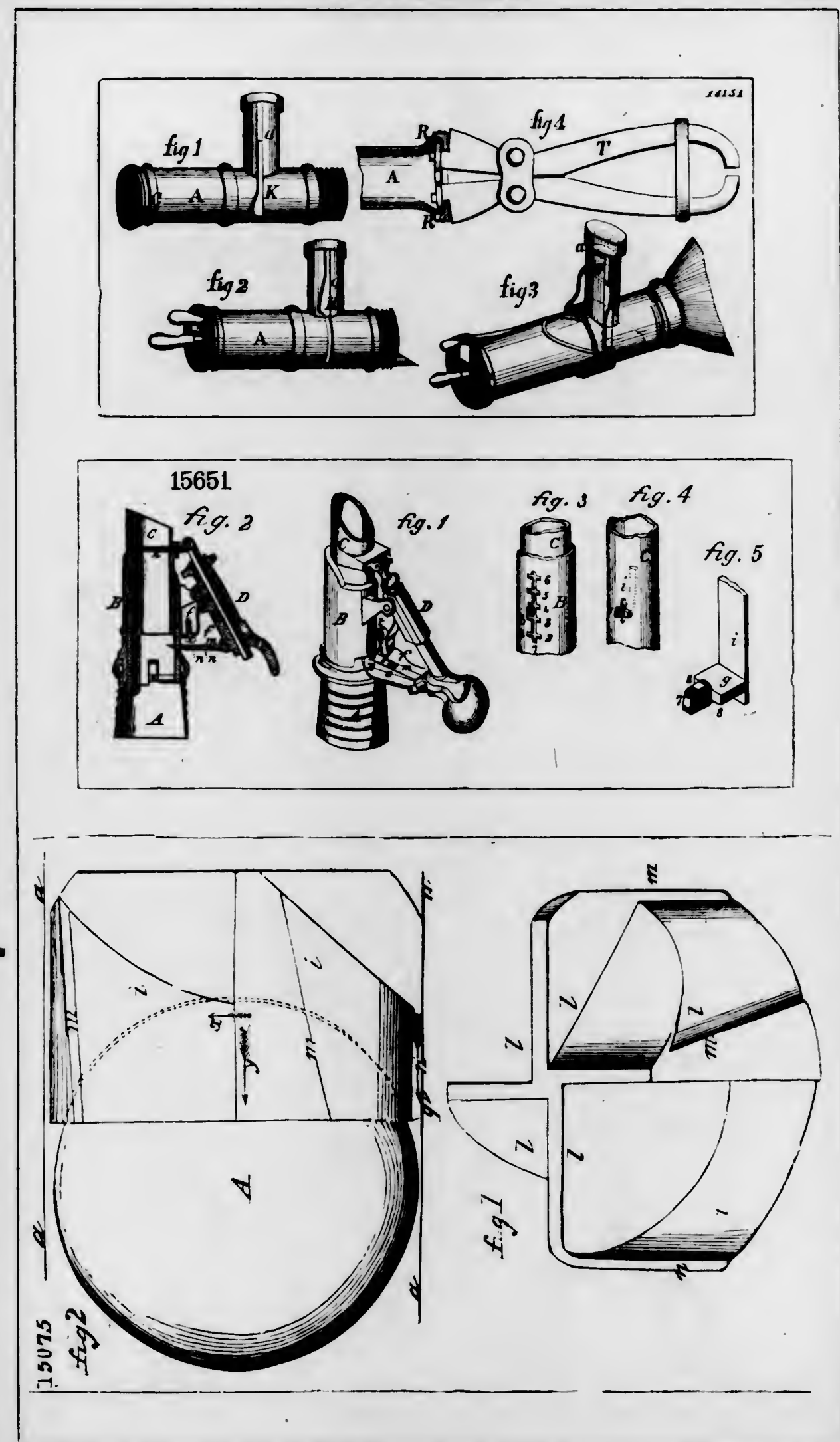
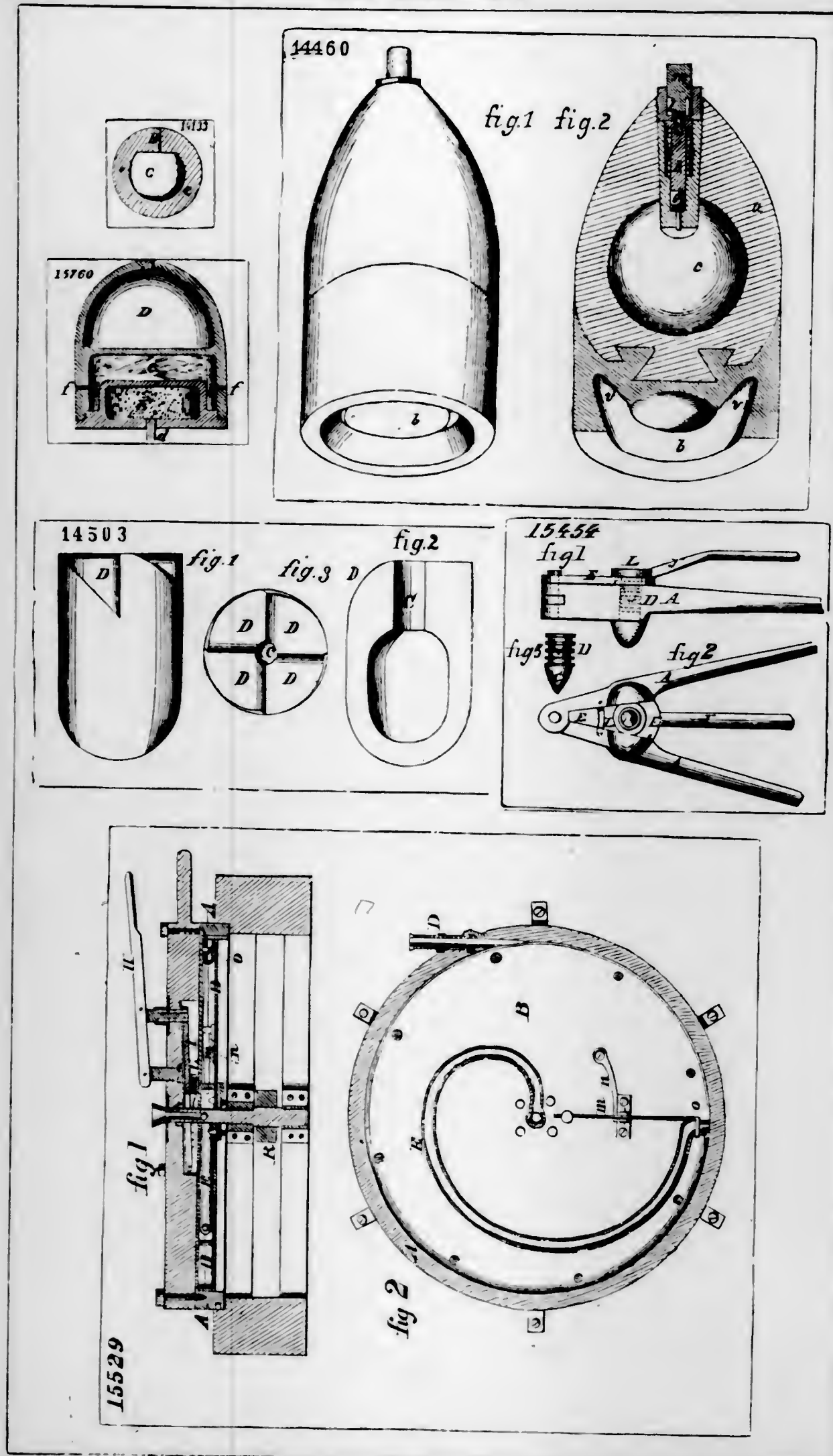


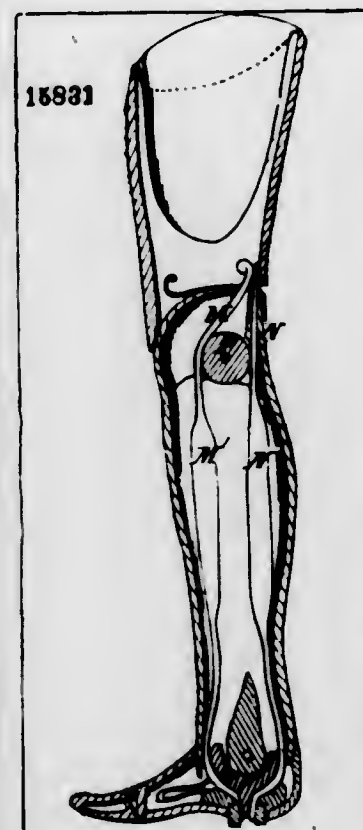
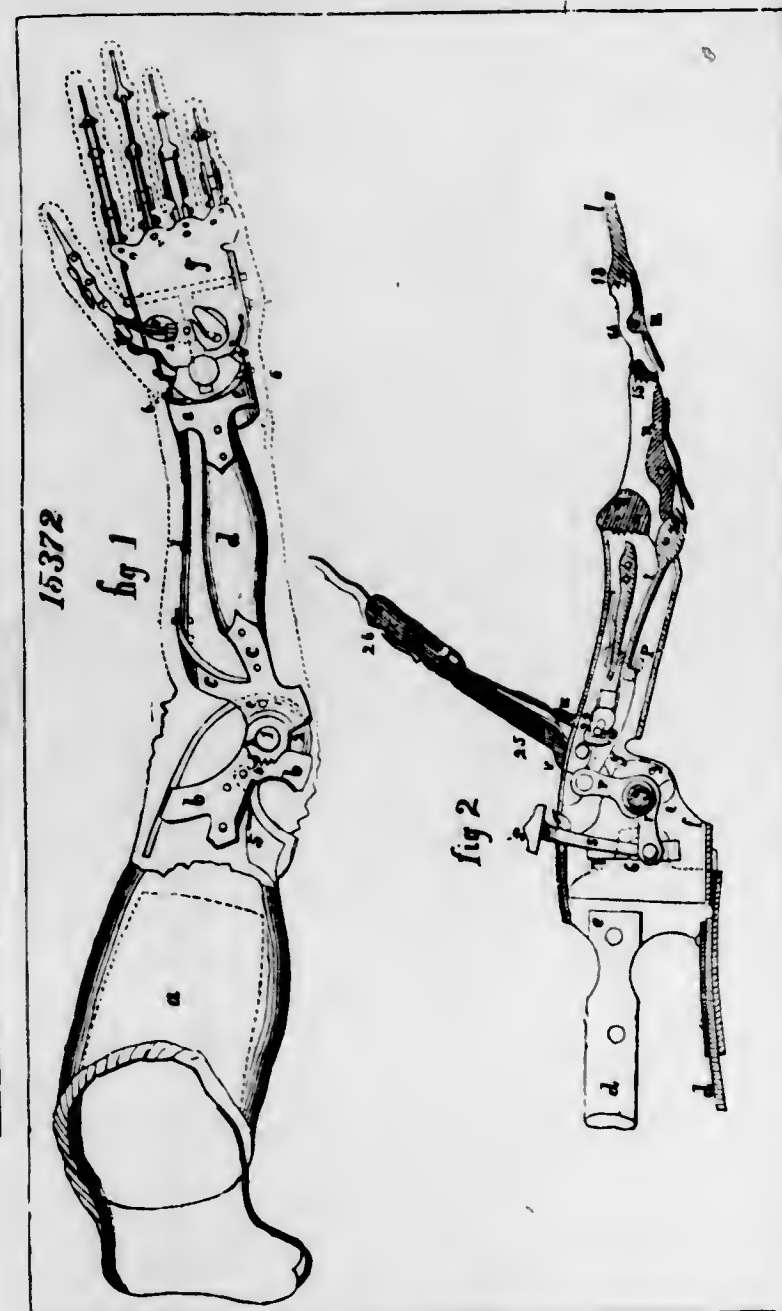
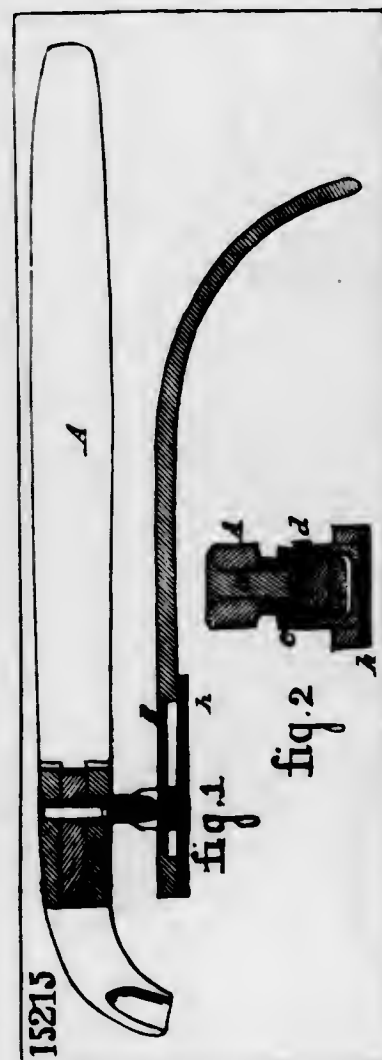
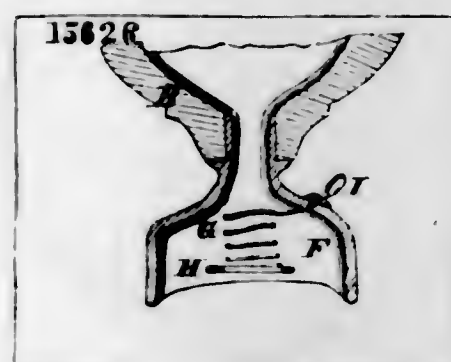
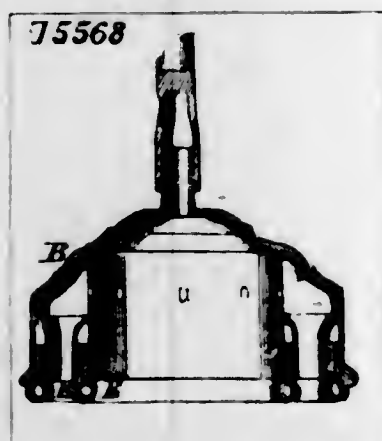
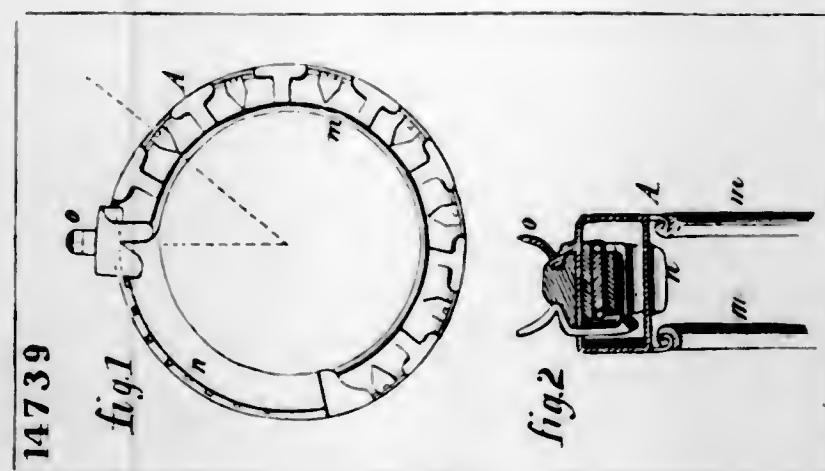
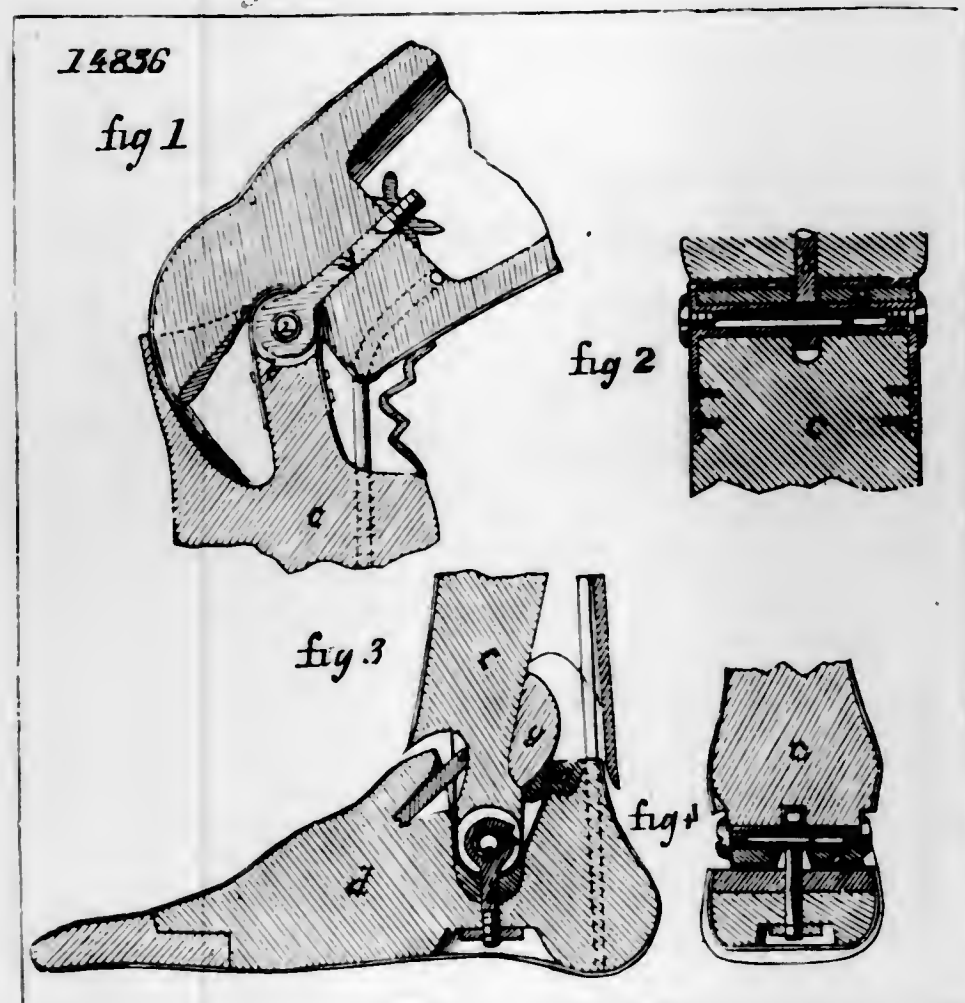
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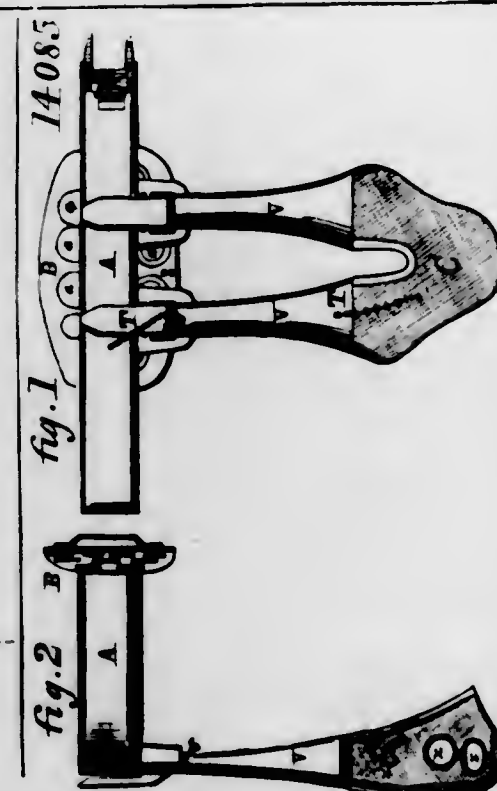








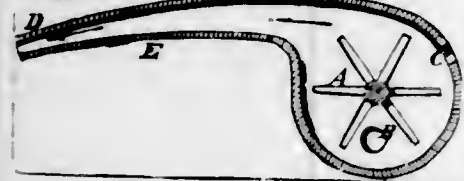
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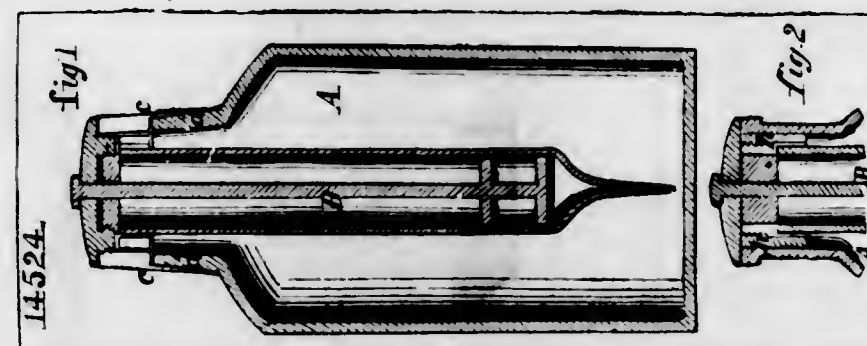
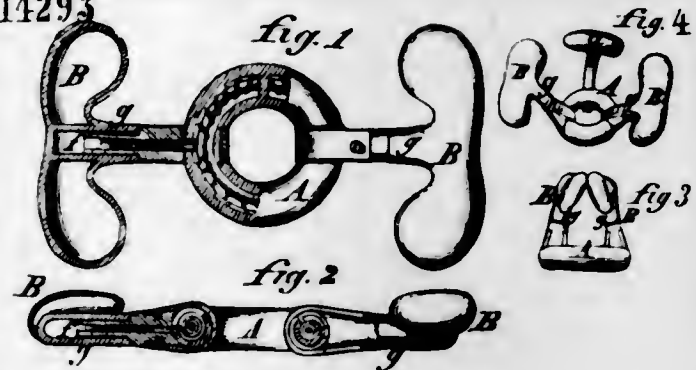
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fig 4

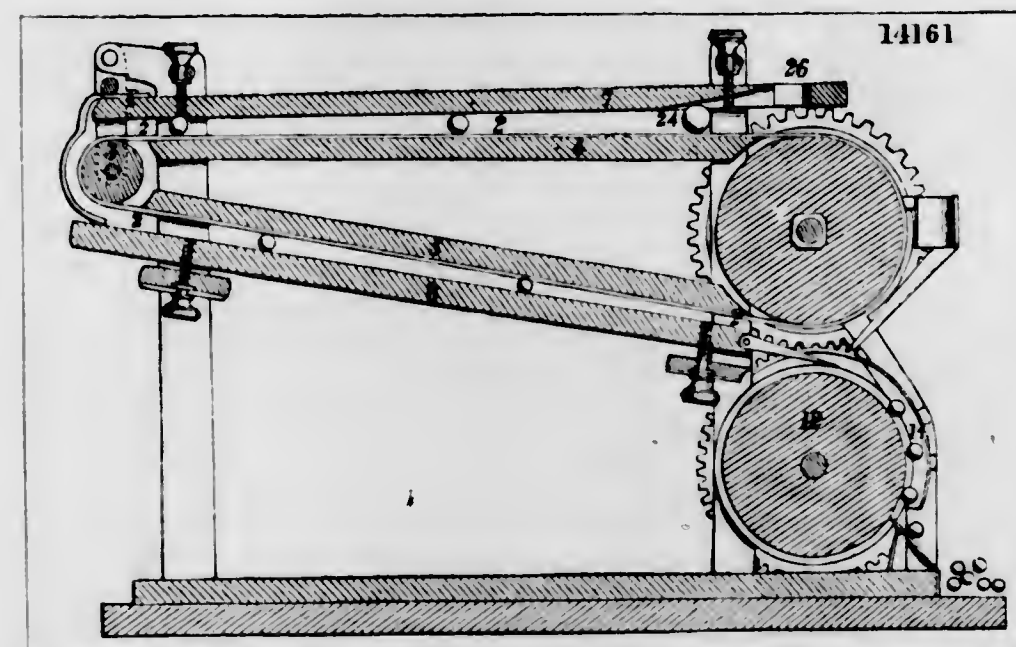
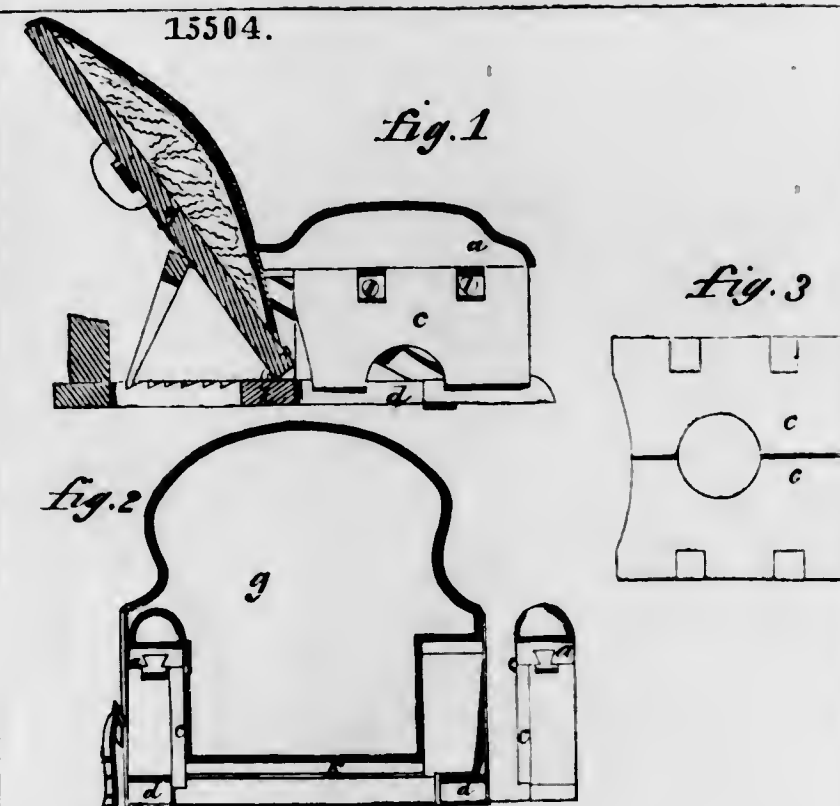
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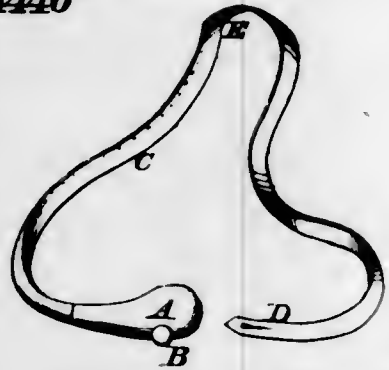
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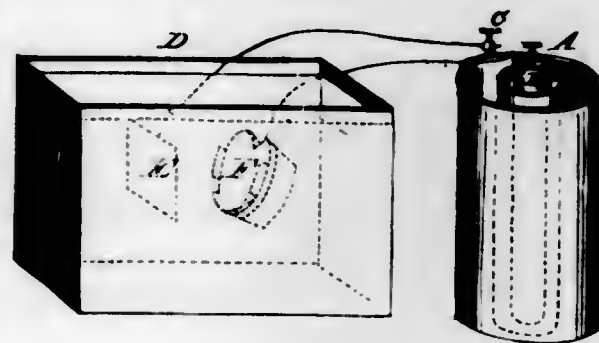
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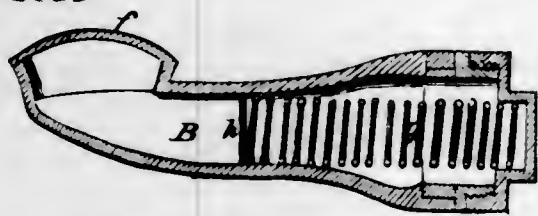
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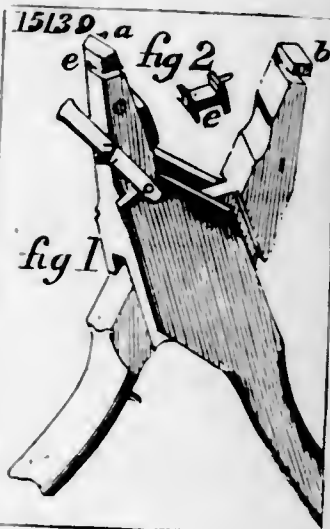
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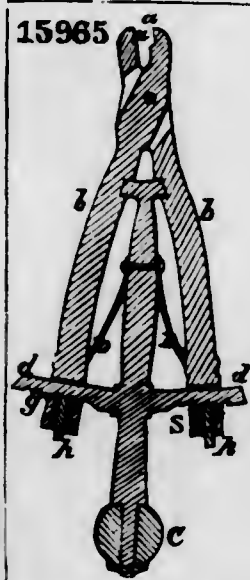
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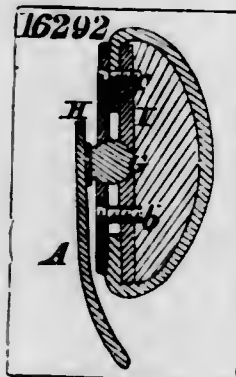
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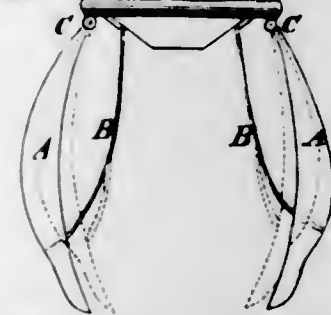
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16292



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15897

fig. 1

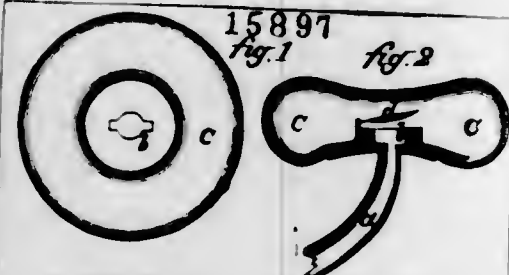
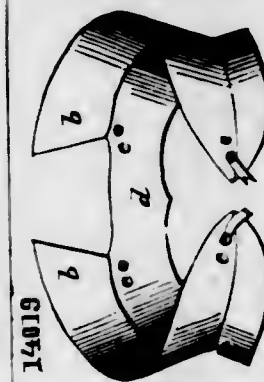
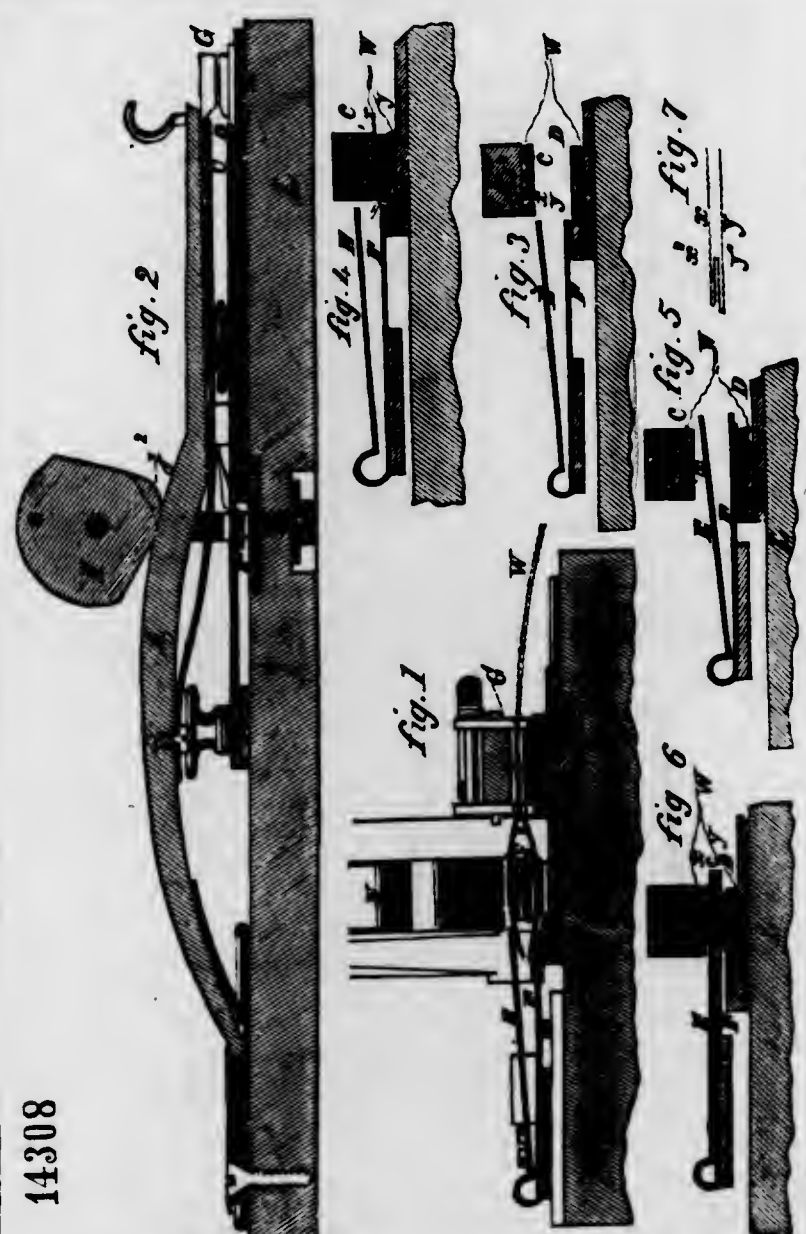
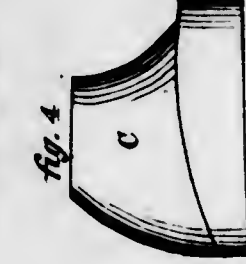
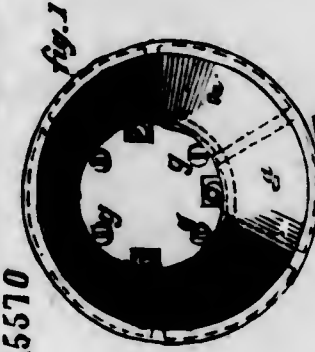


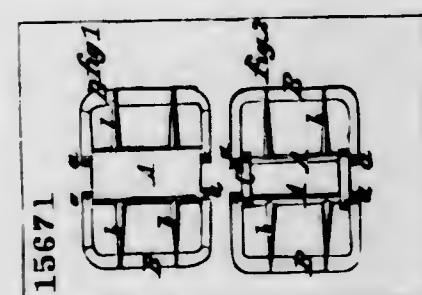
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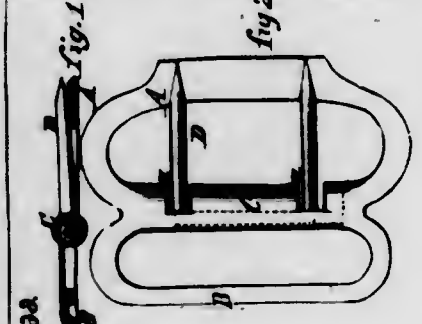
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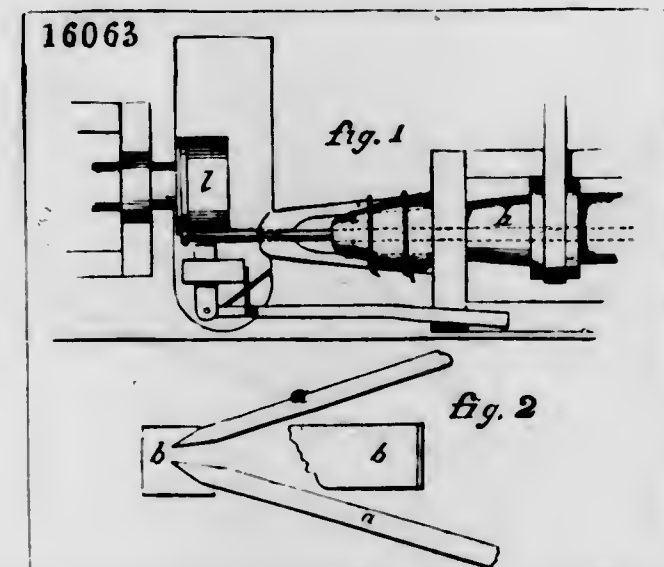
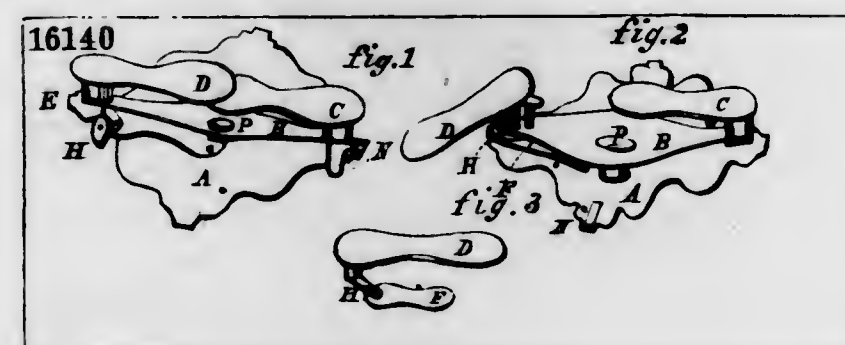
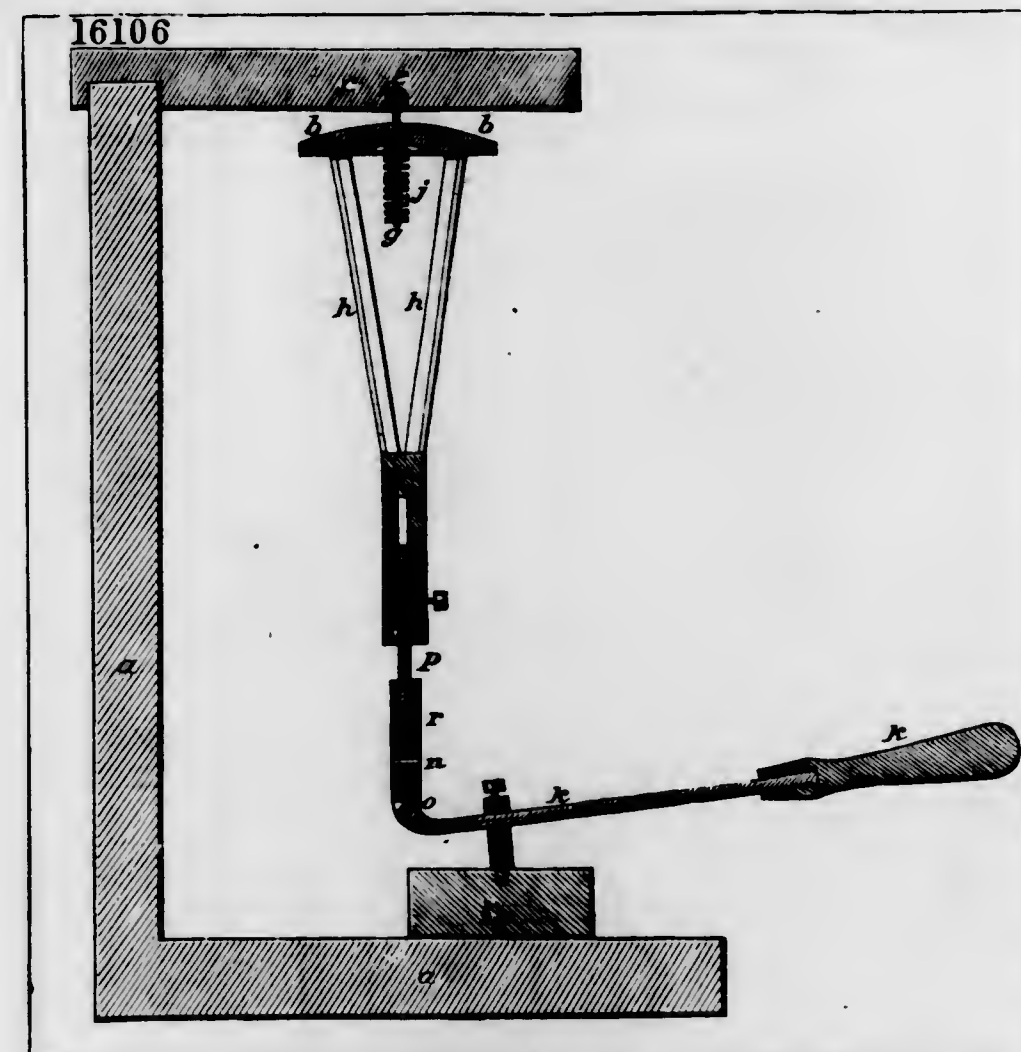
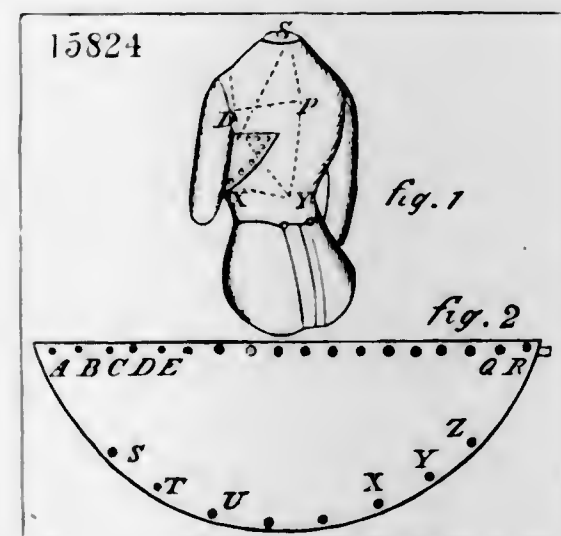
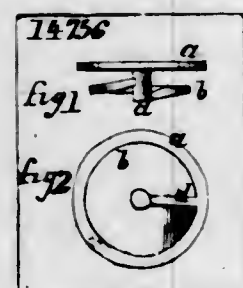
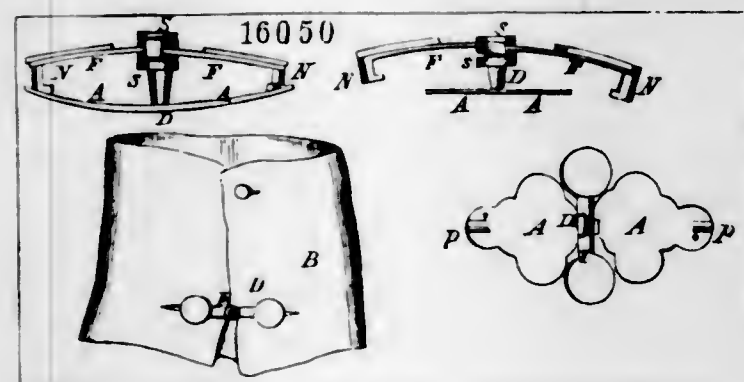
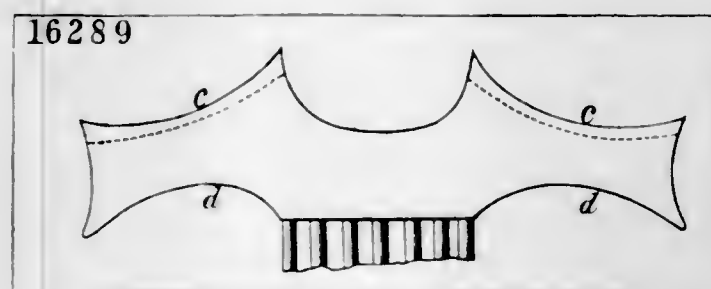
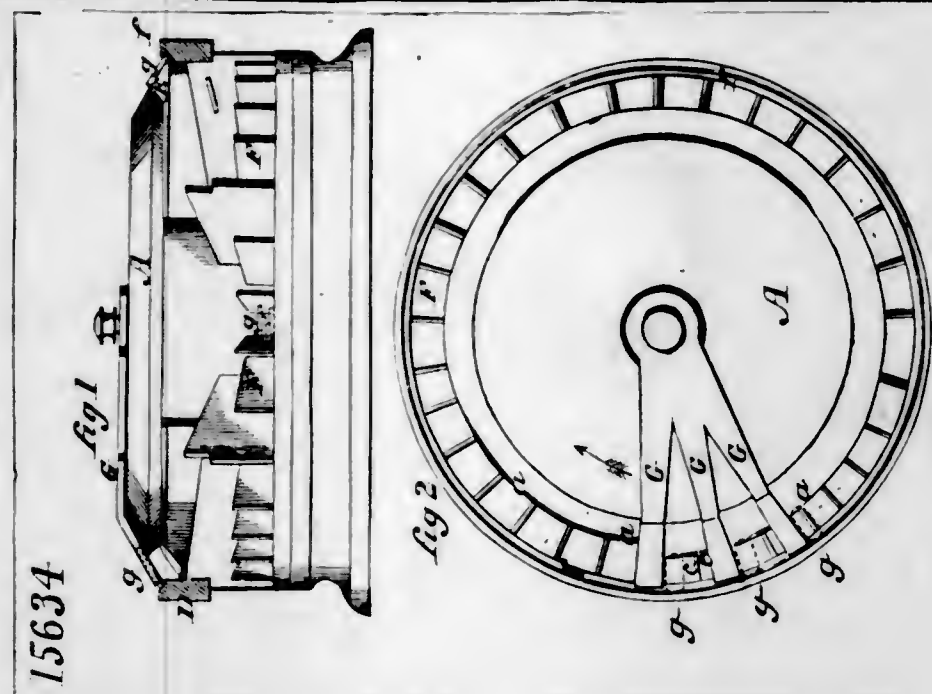


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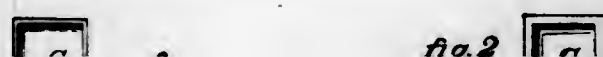


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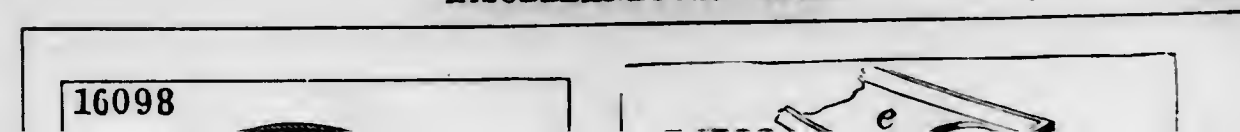
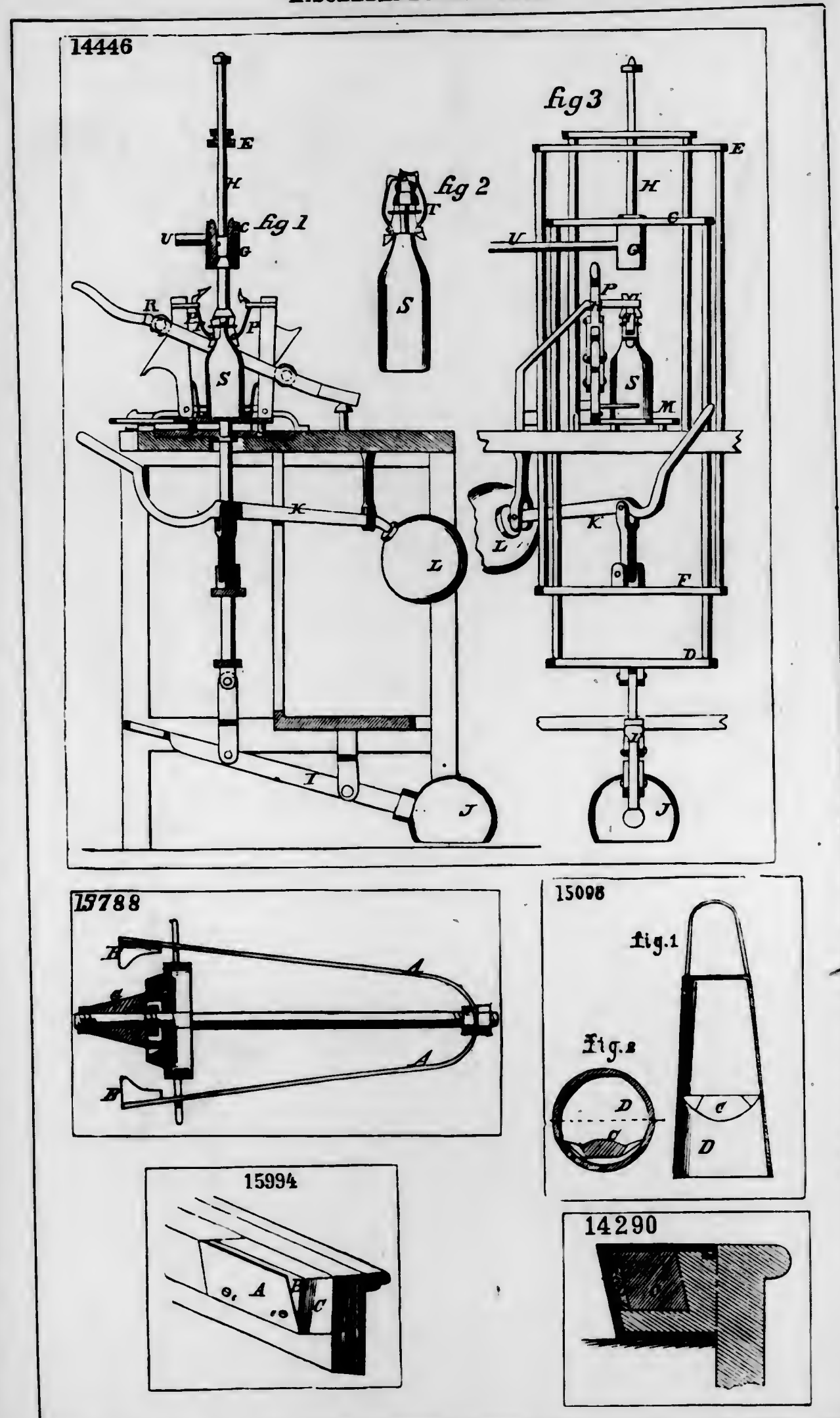
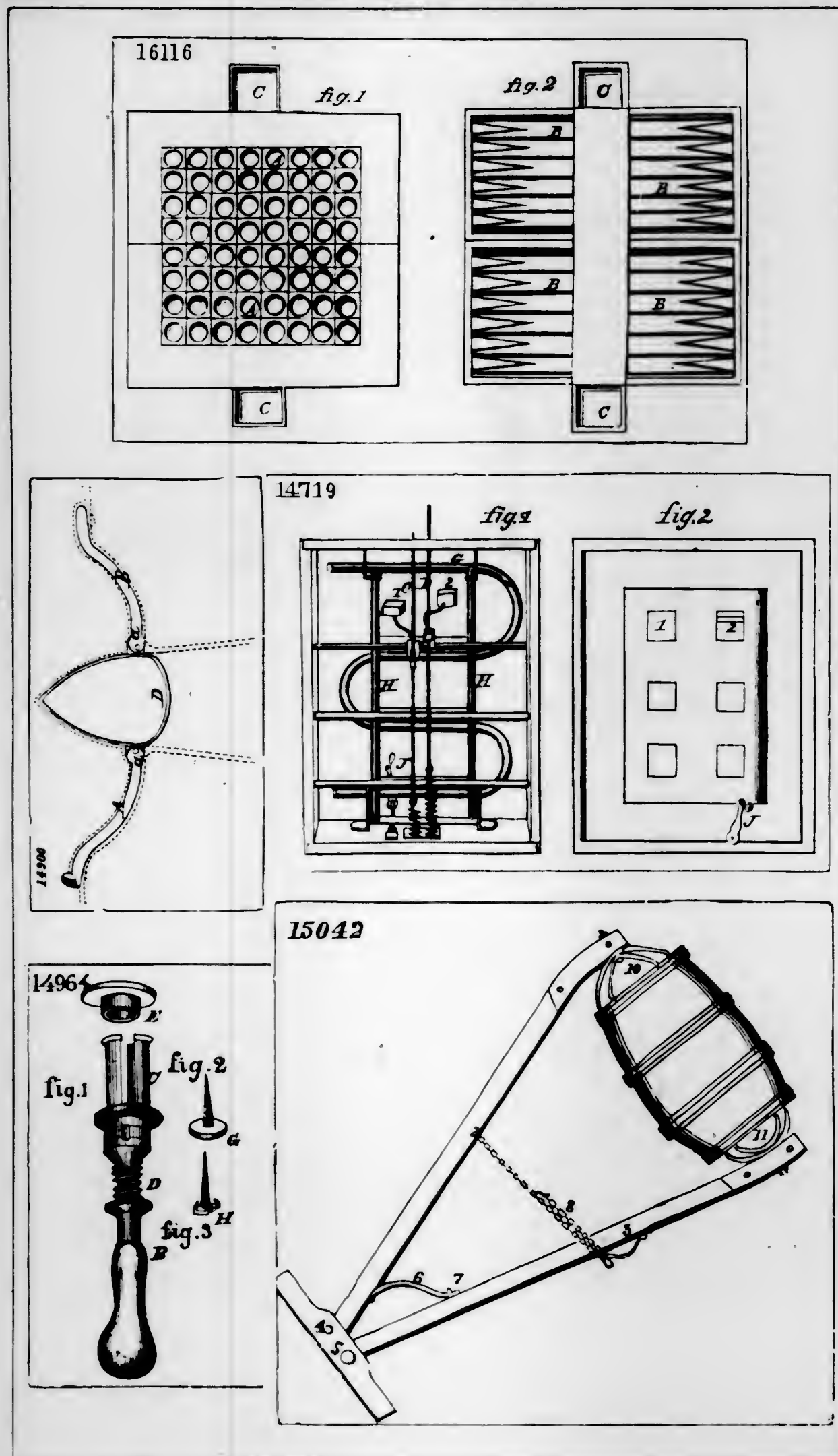


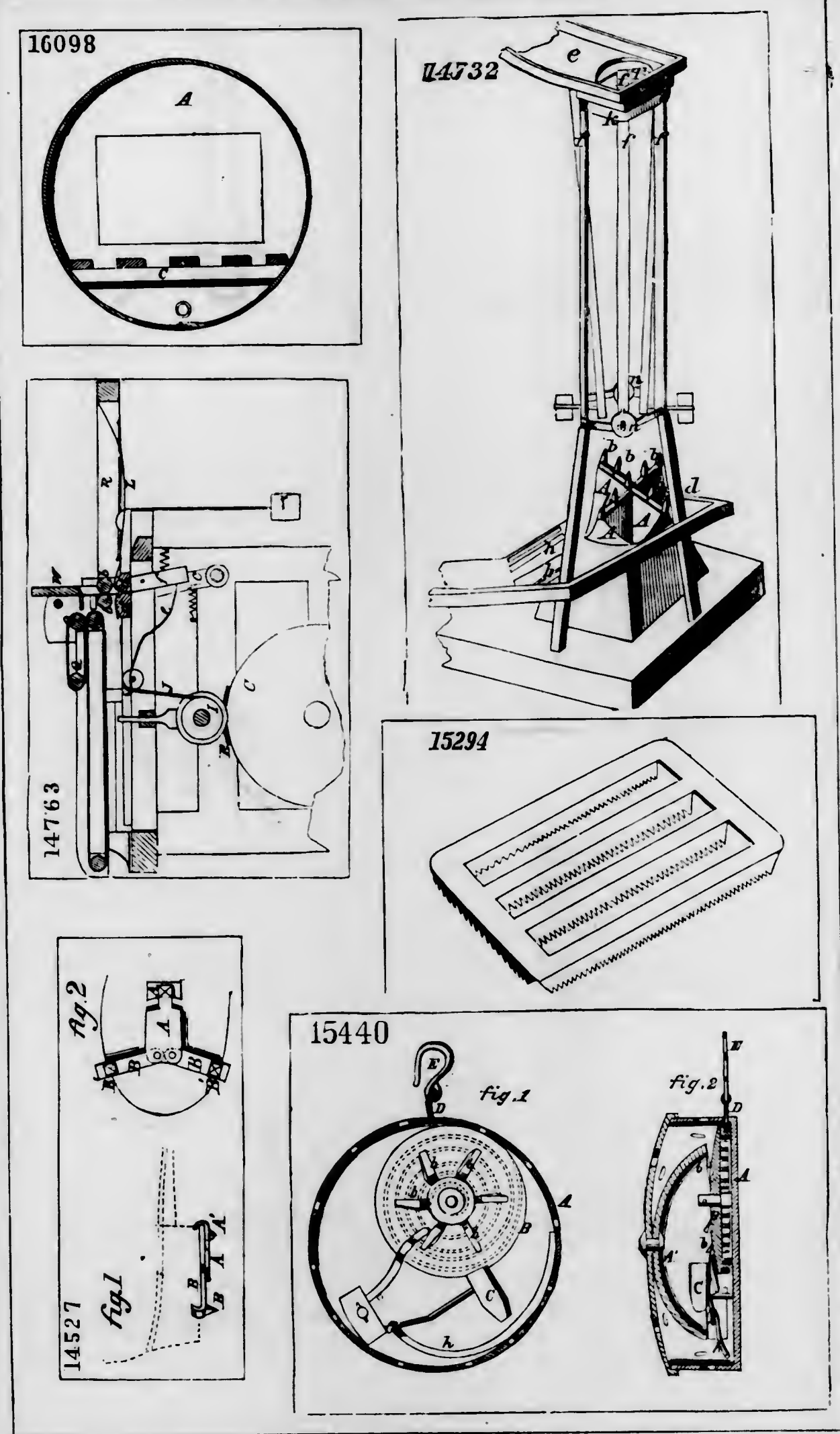
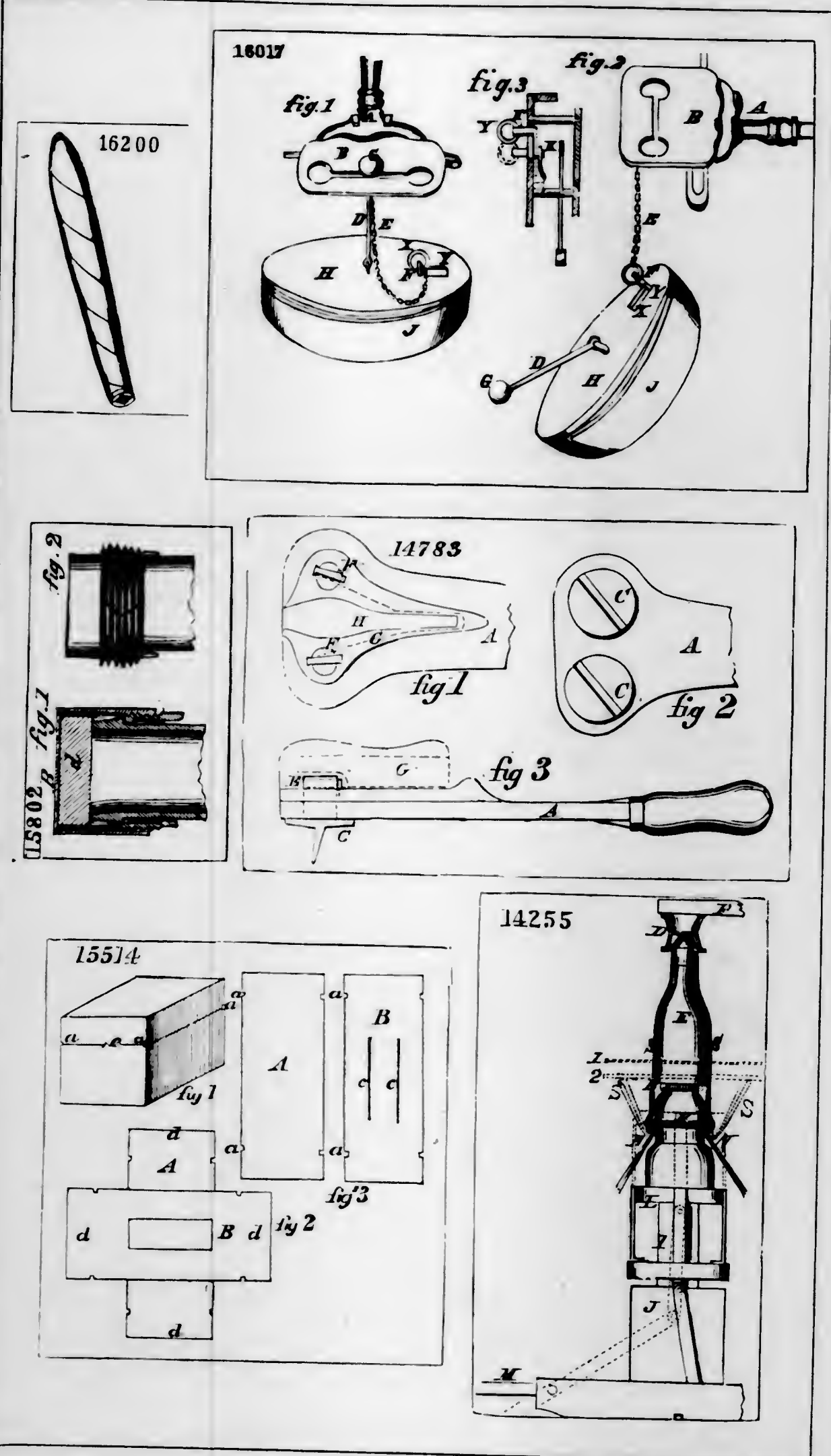
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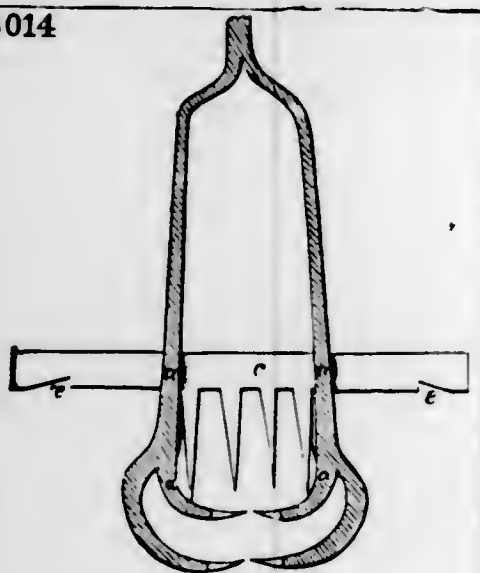
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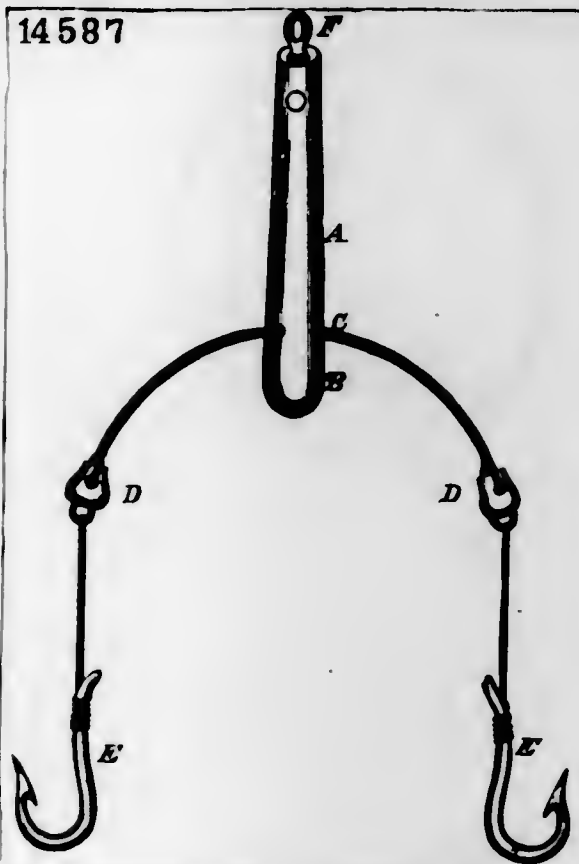




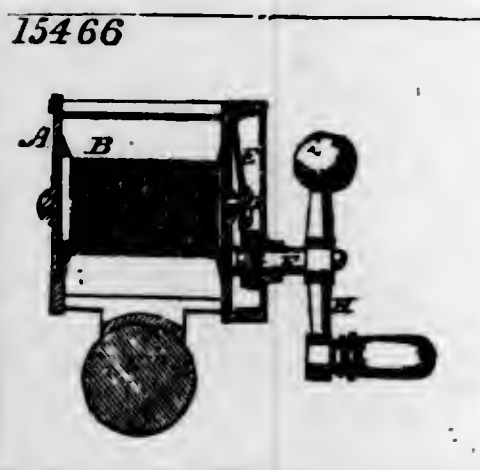
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15466



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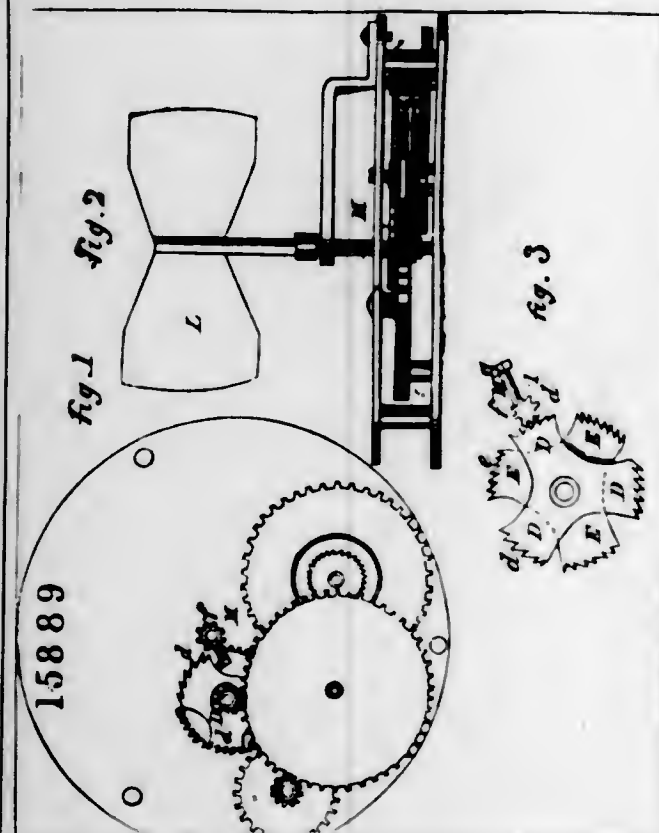
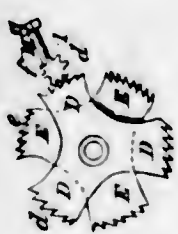


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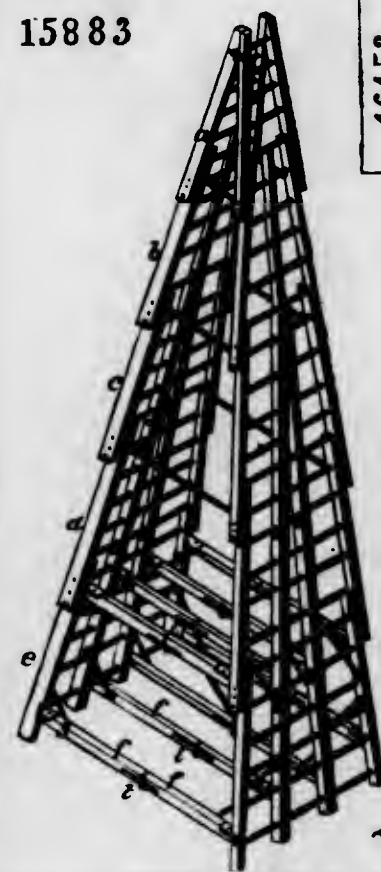


14706

15226
fig 1

fig 2

15883



16152

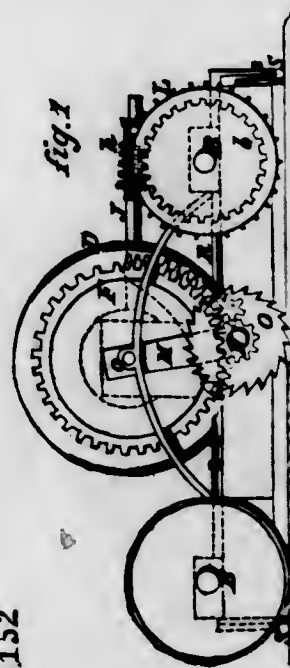
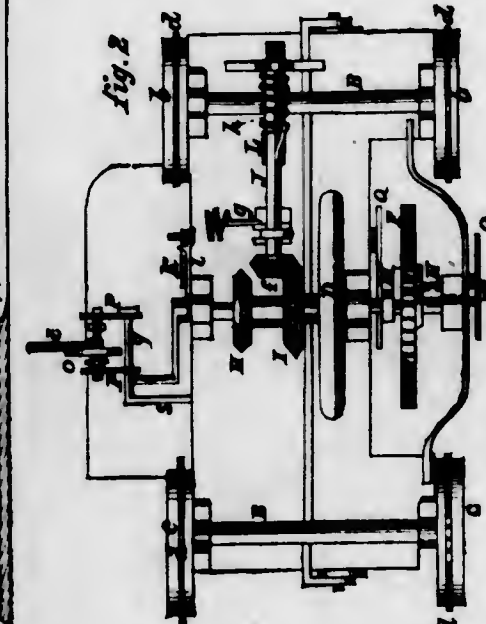
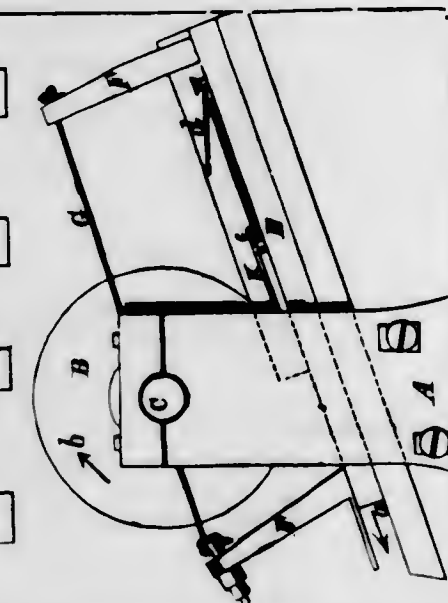
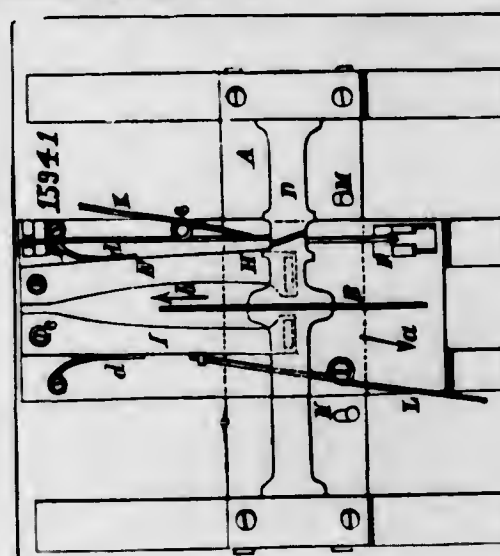
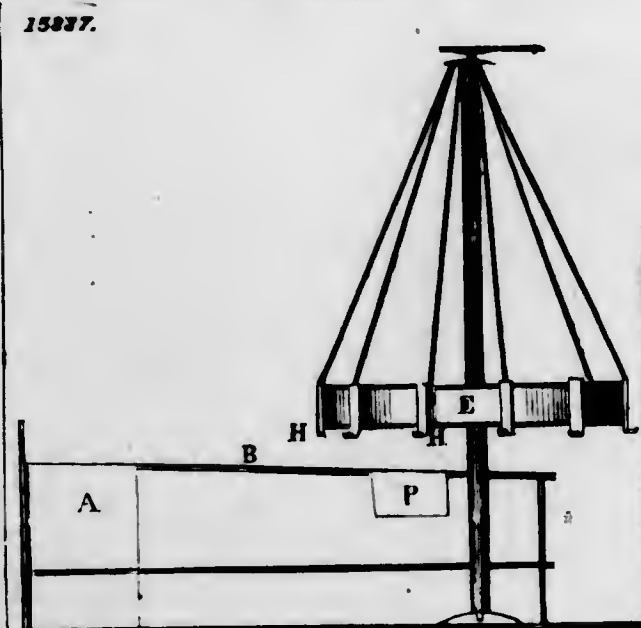
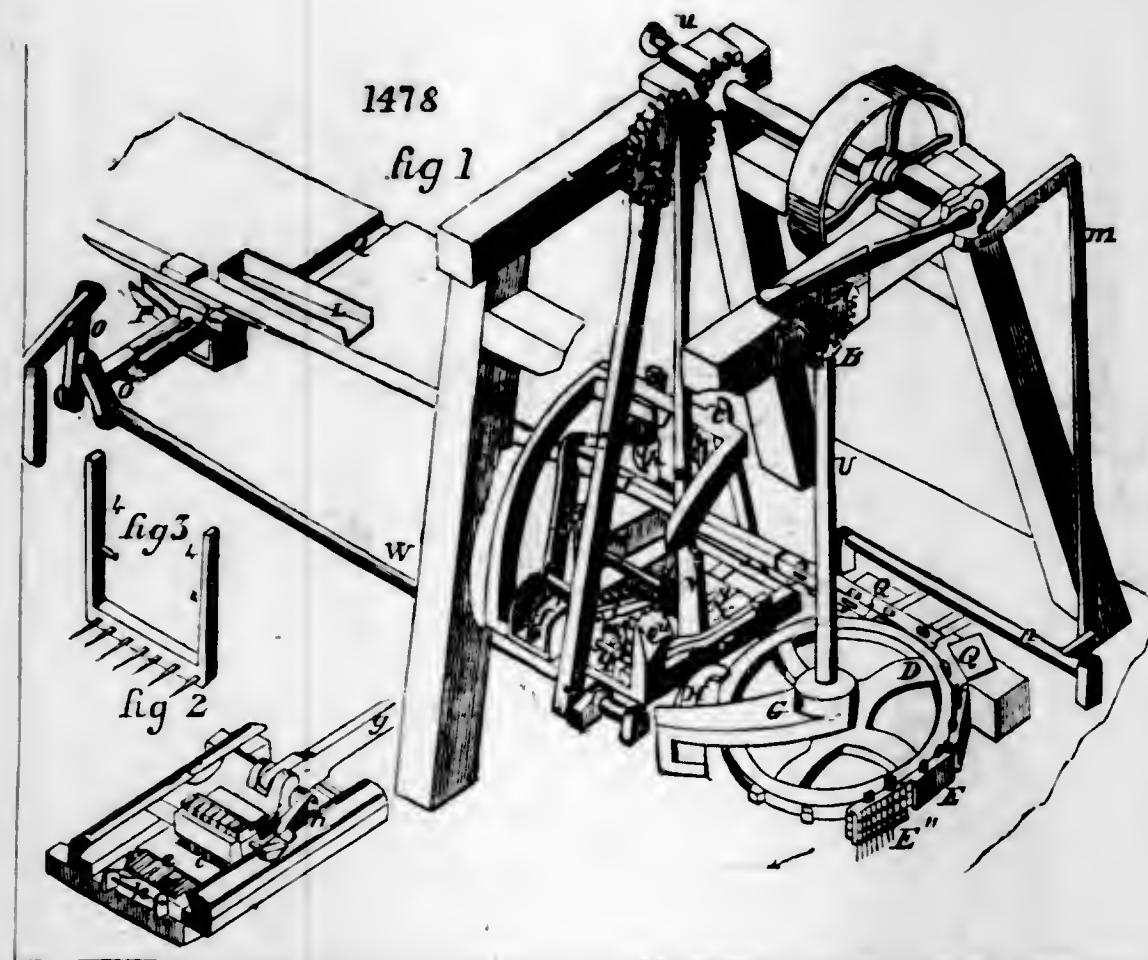


fig. 2



15977.

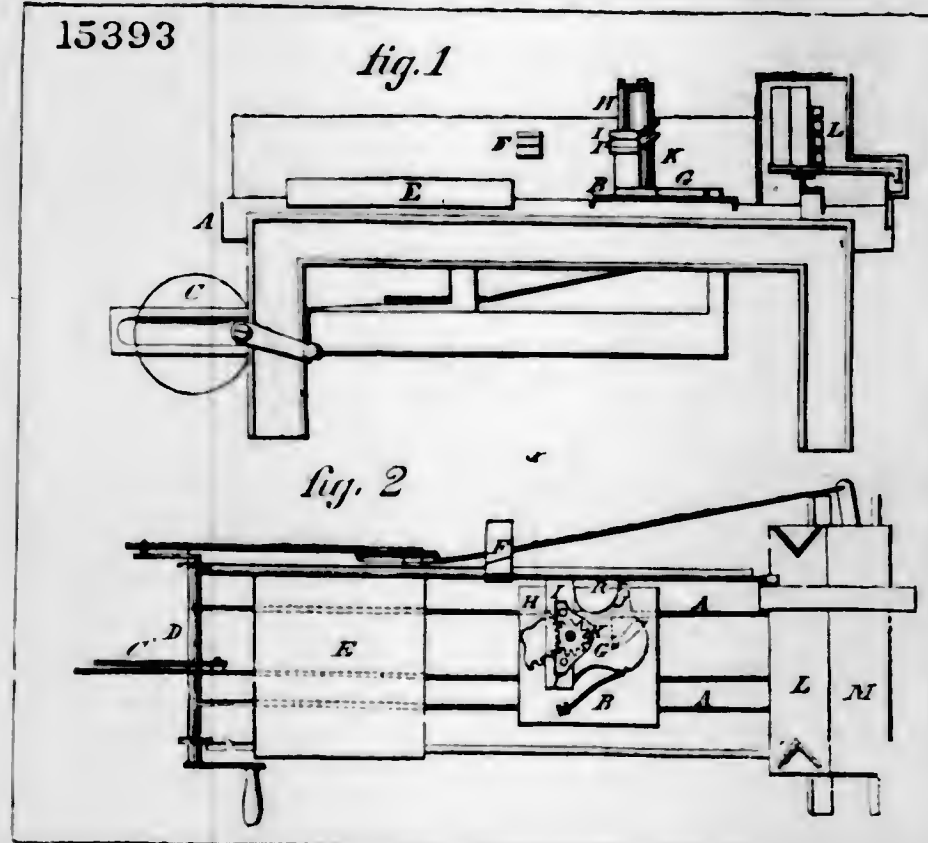




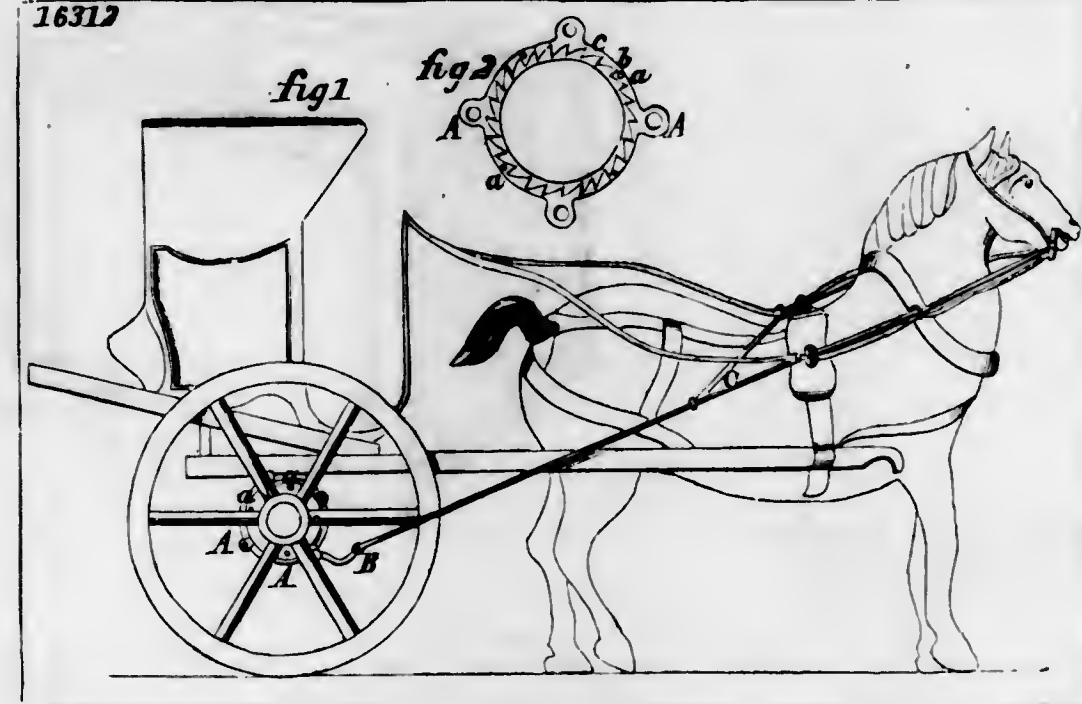
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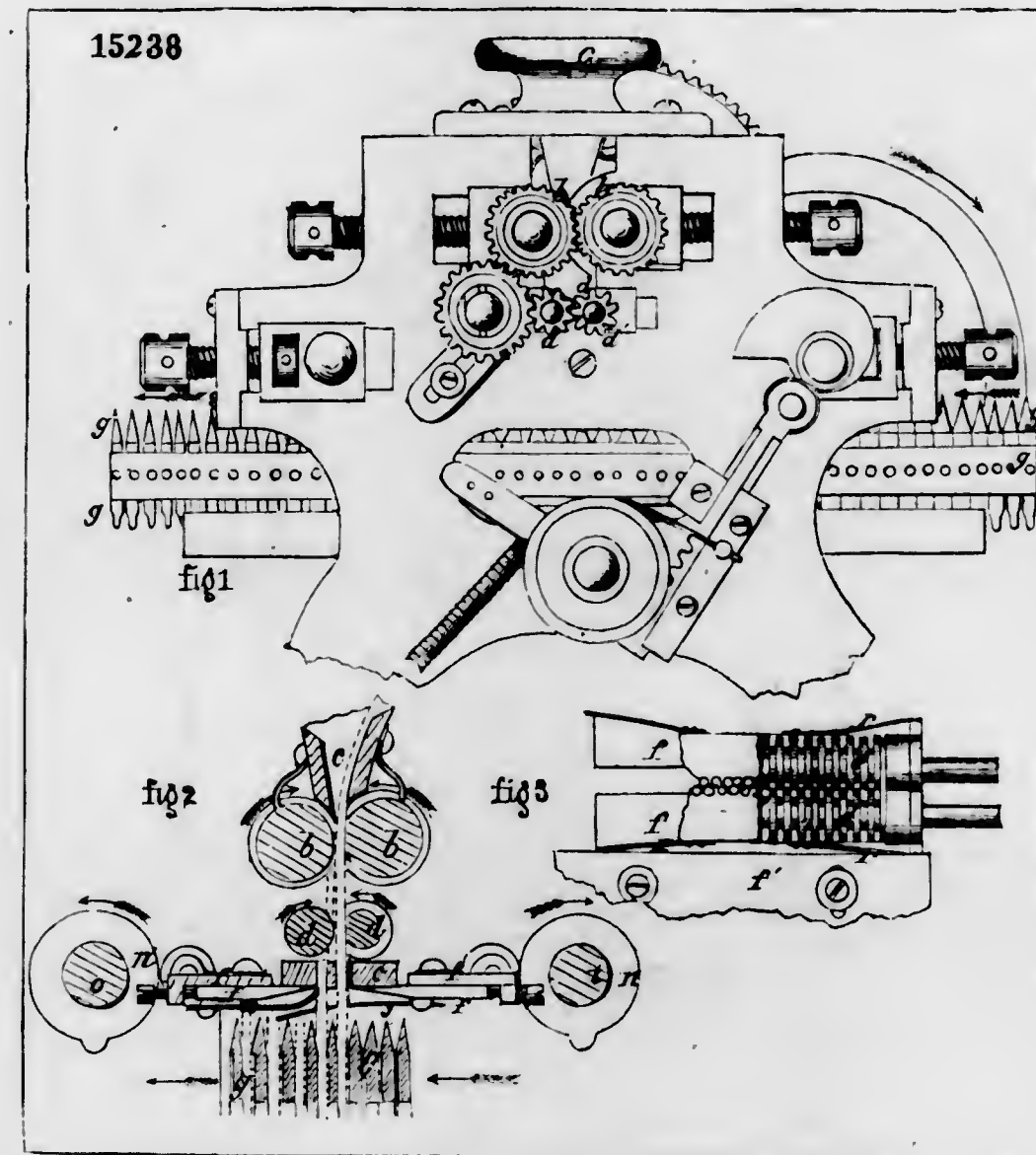
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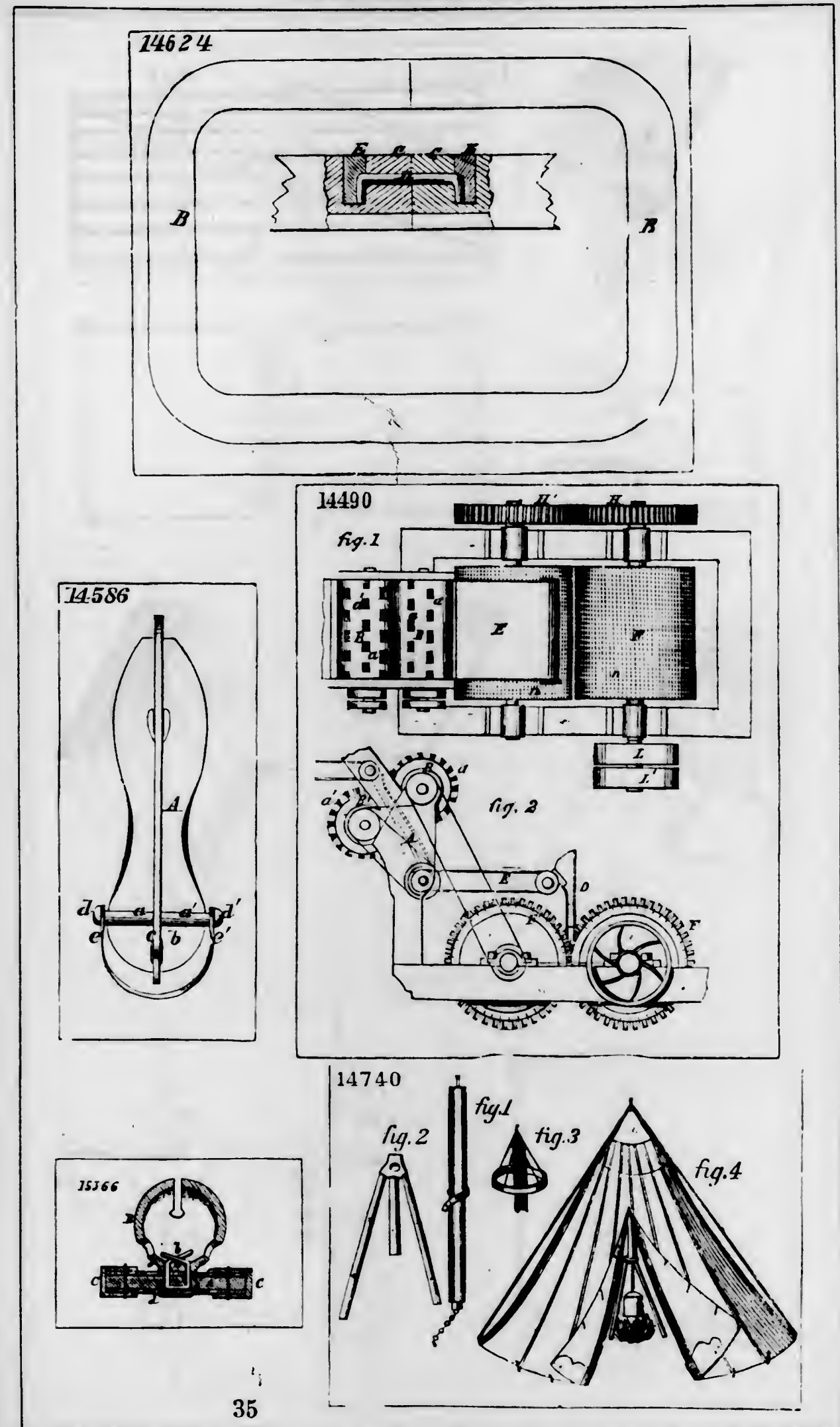
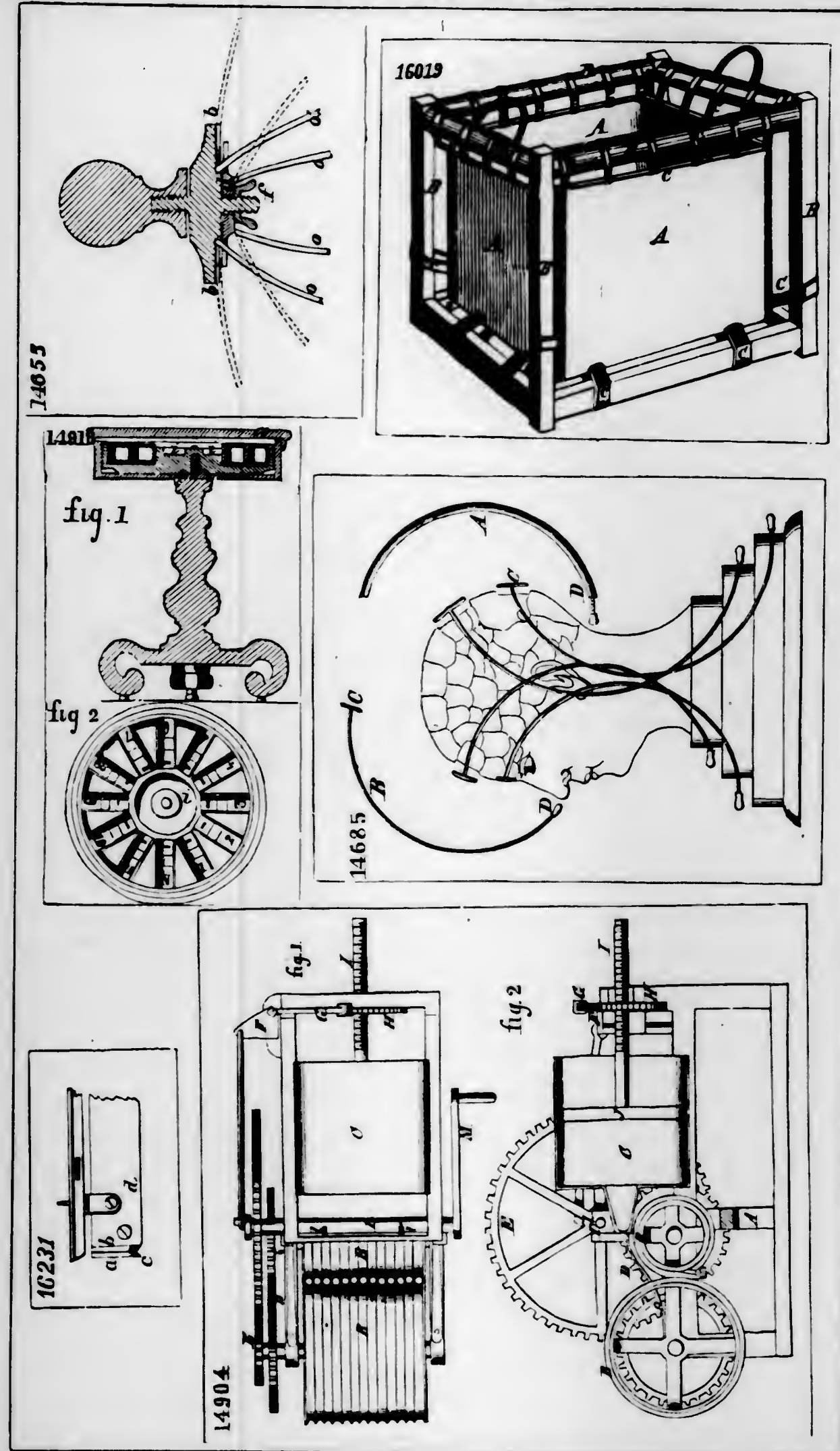
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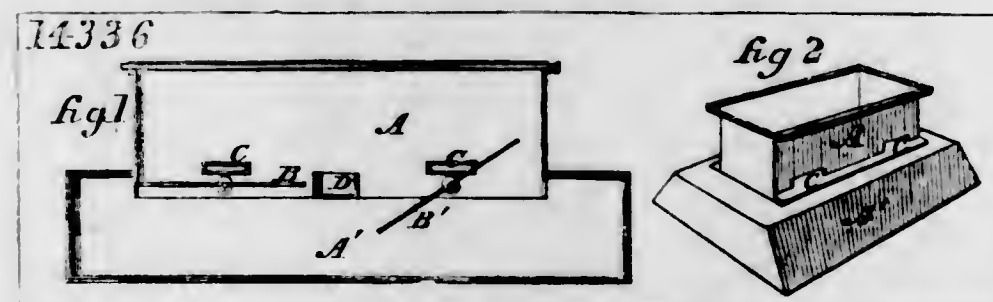
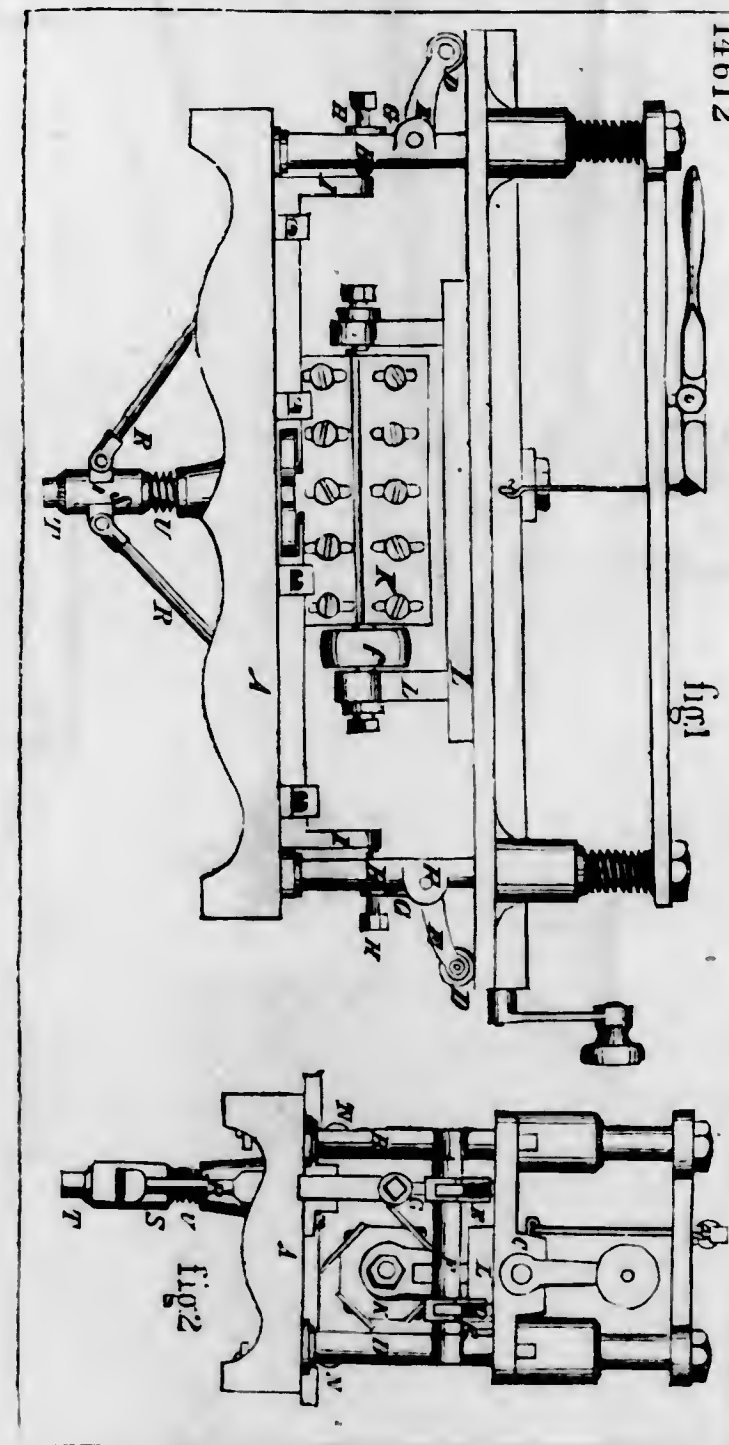
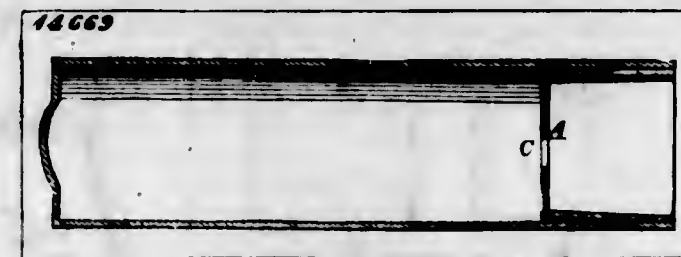
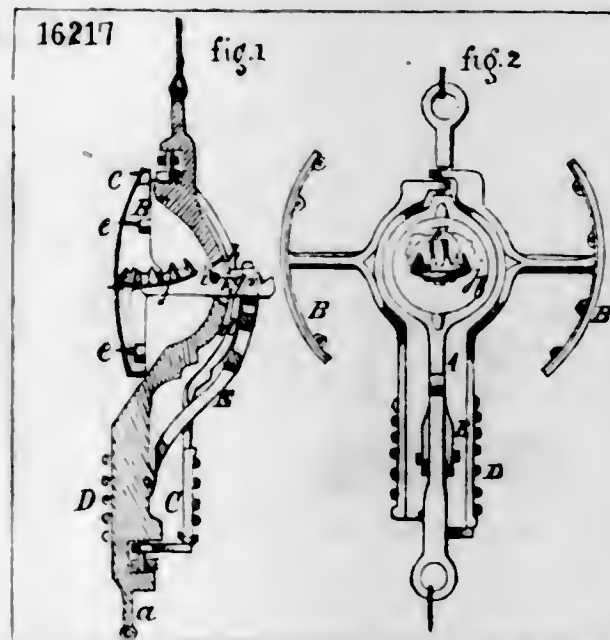
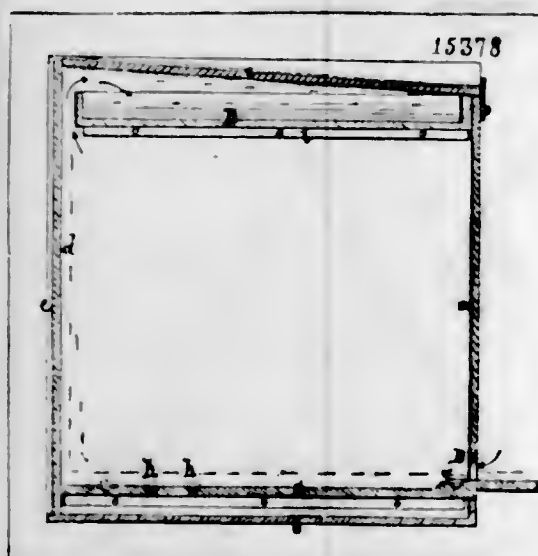
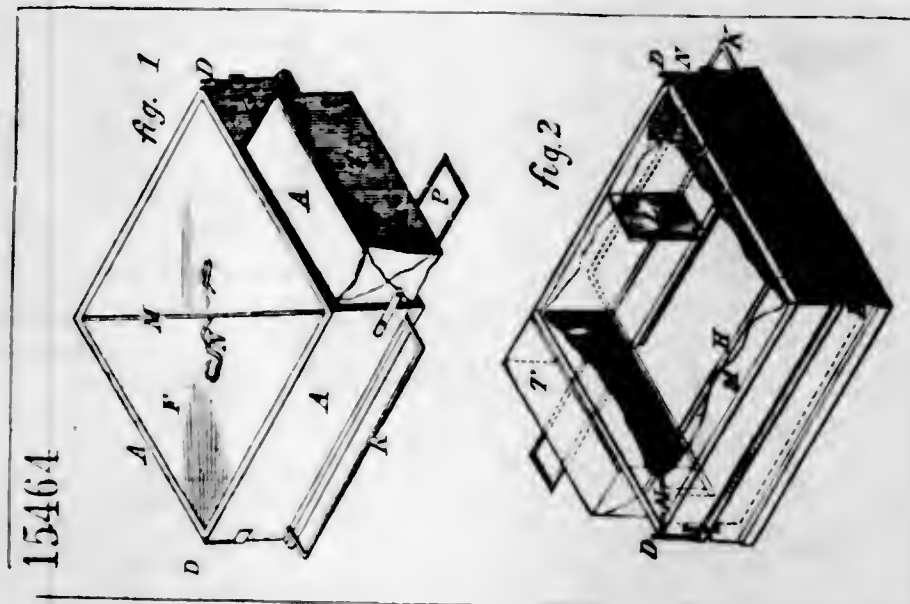
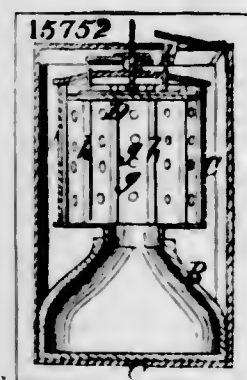
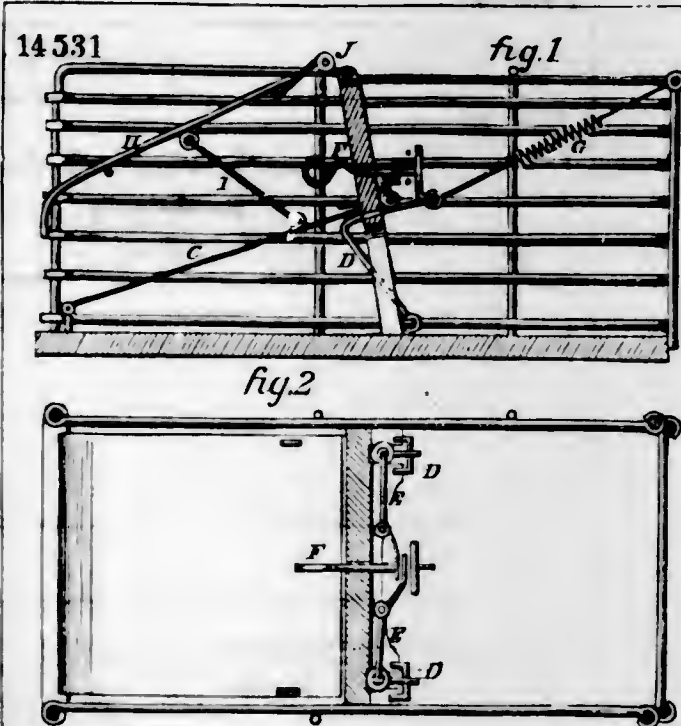
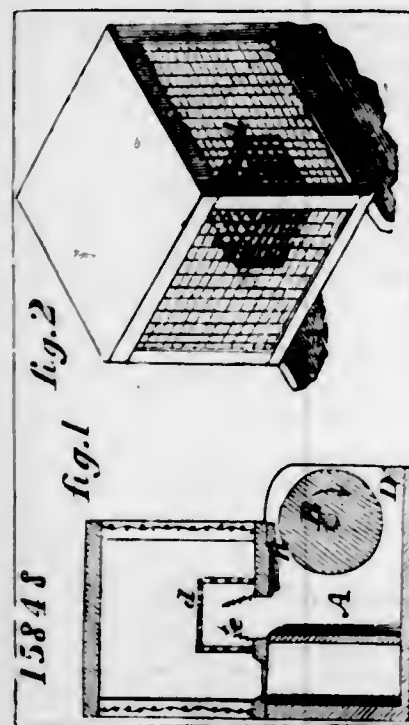


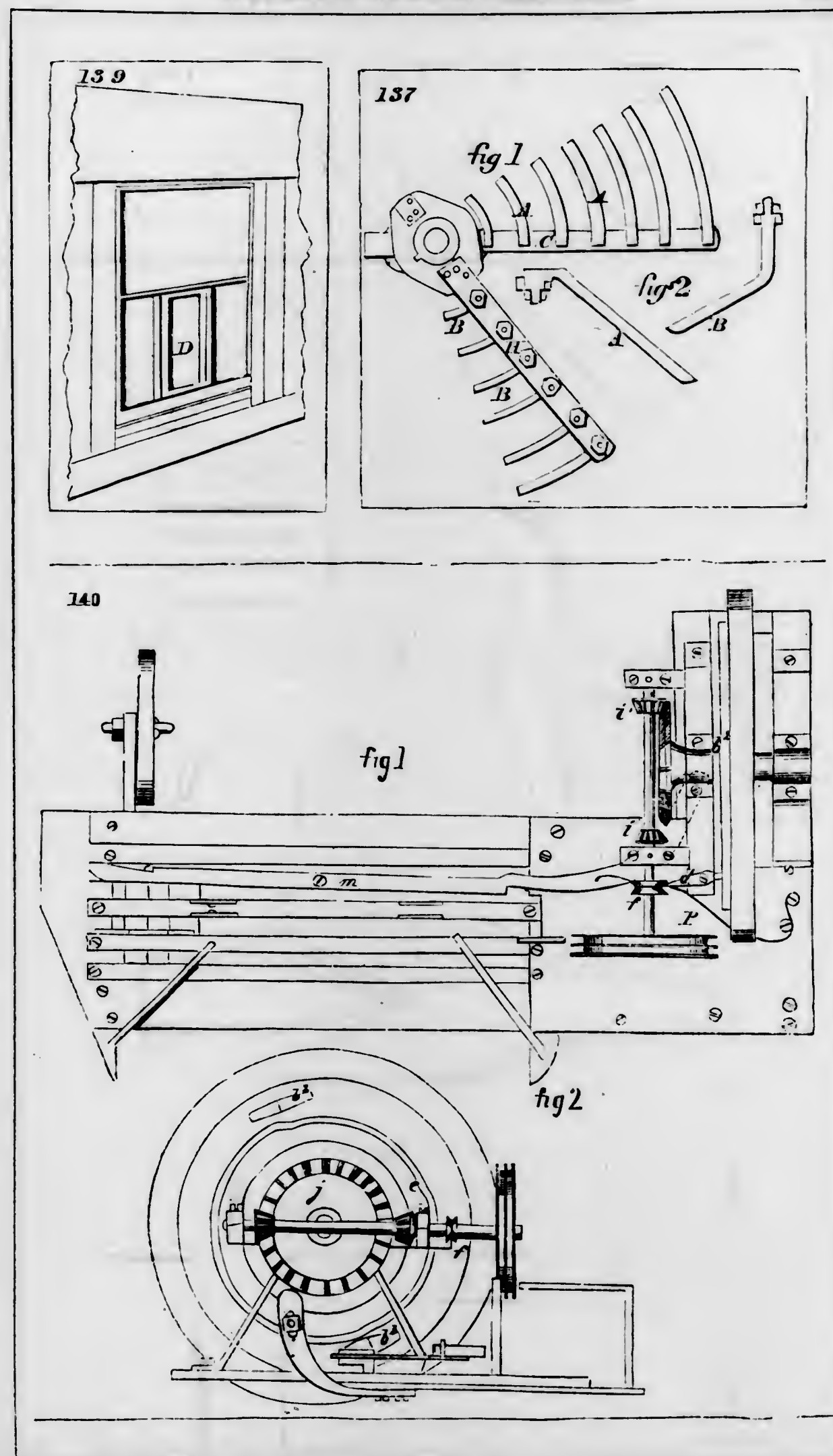
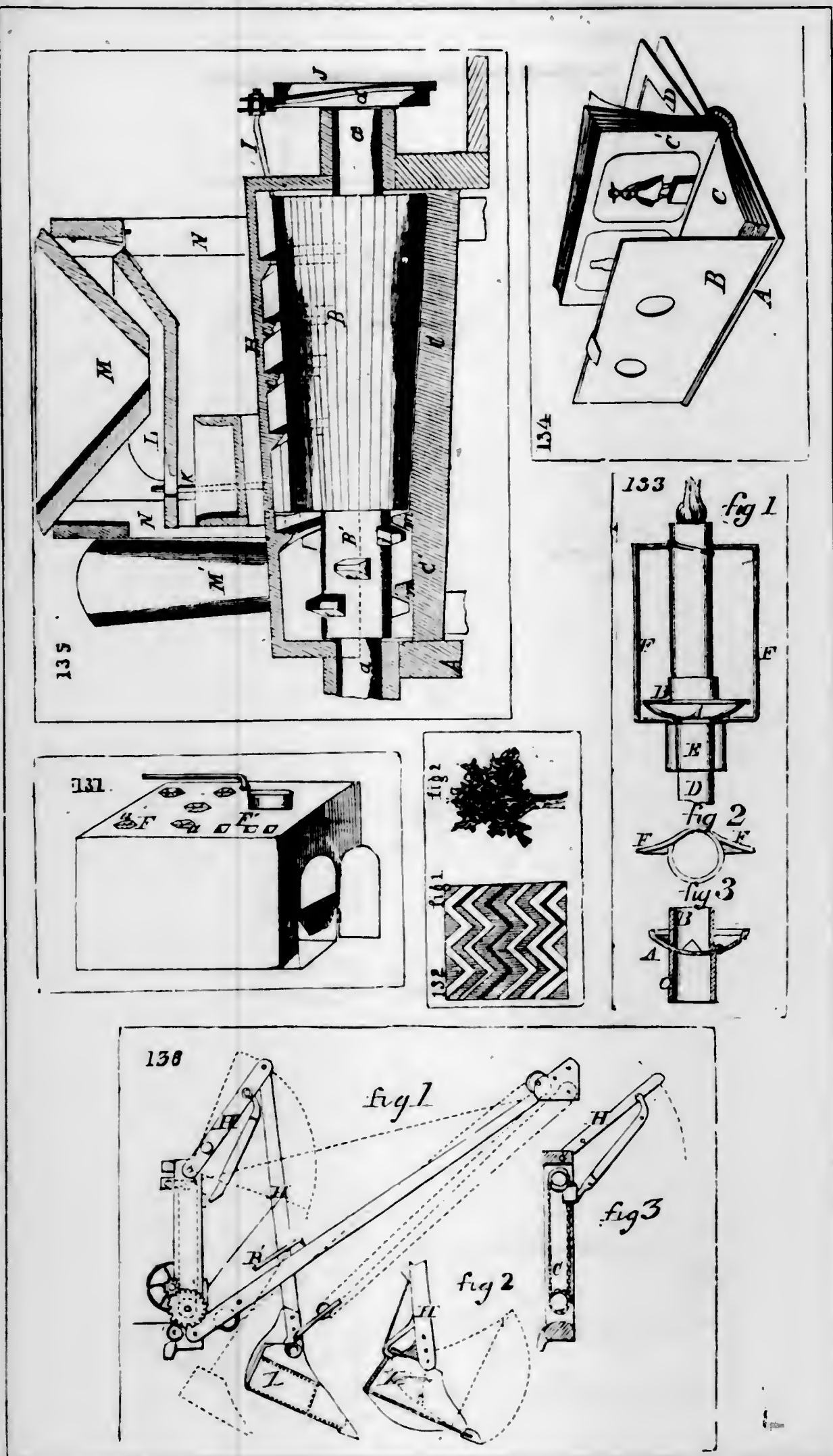
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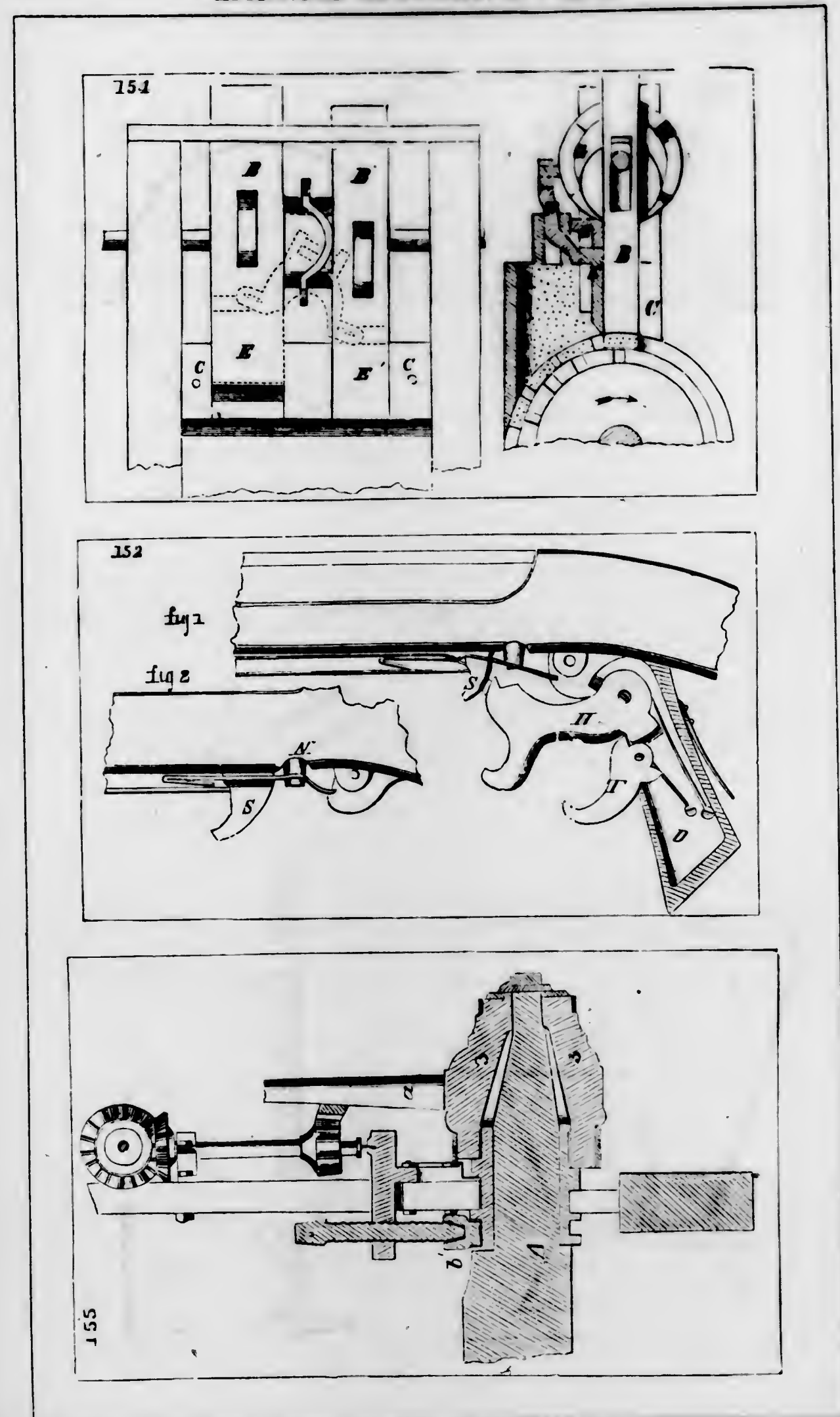
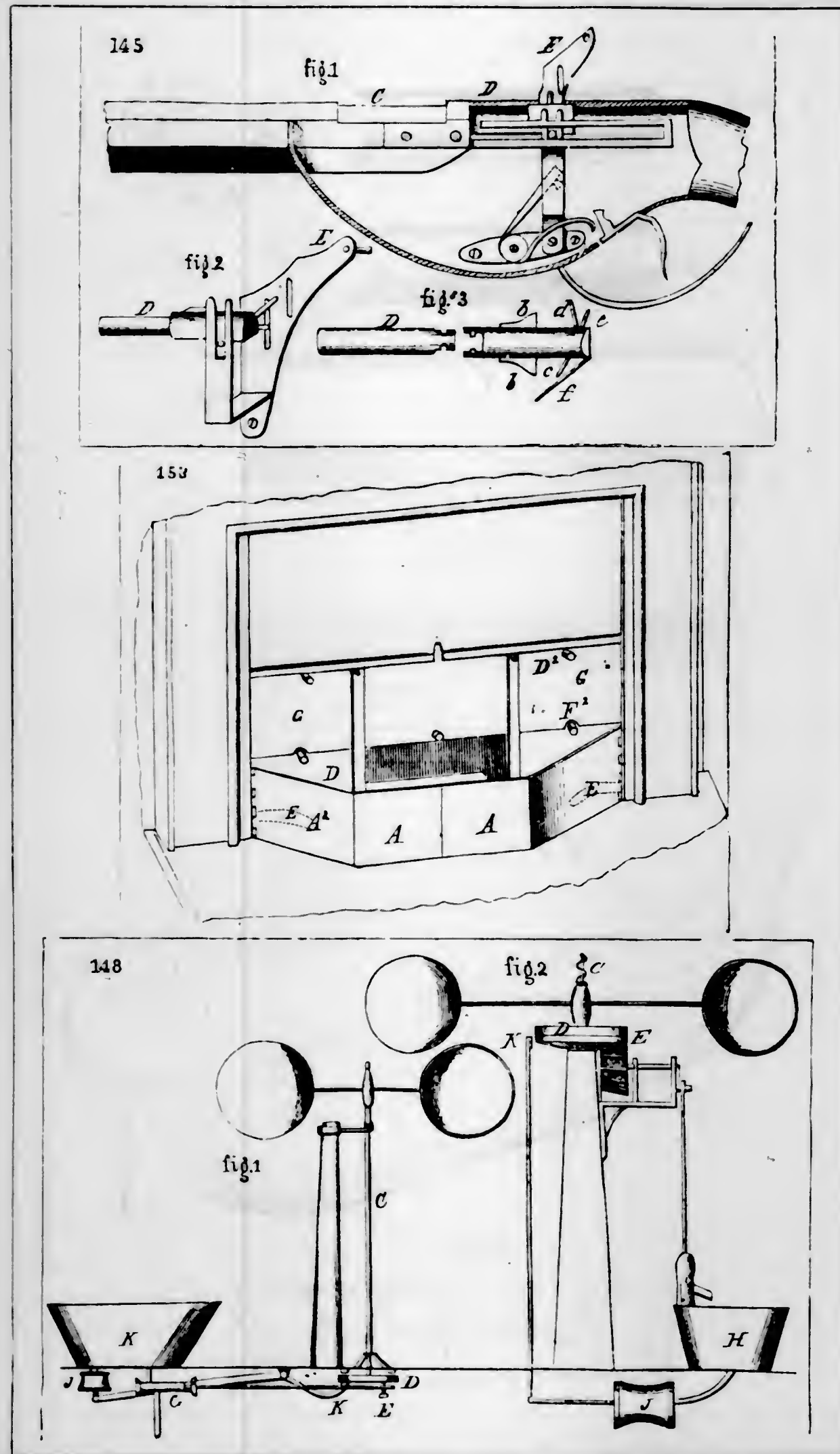


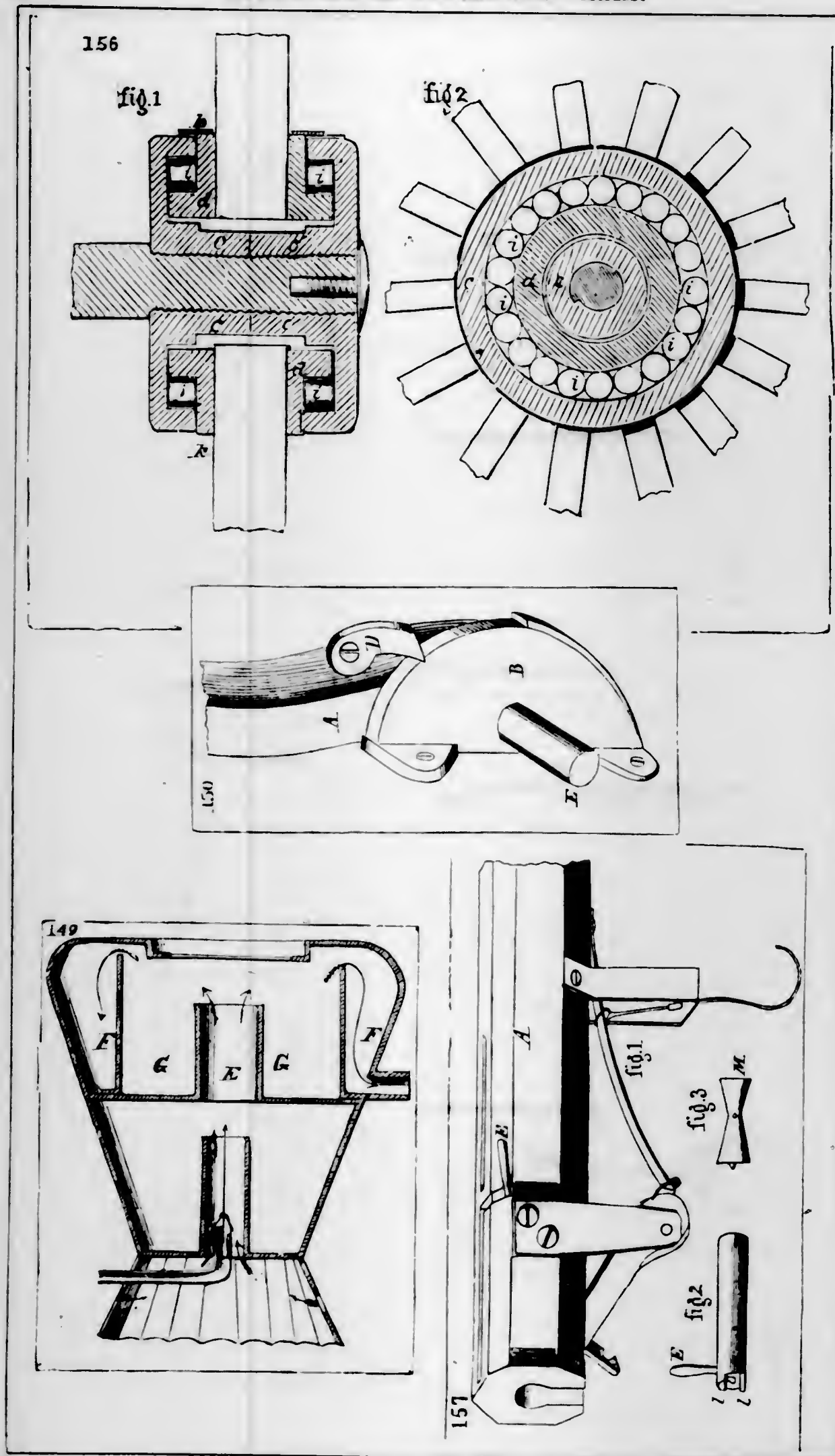
14624











INDEX

TO THE

DESCRIPTIONS AND ILLUSTRATIONS.

[The descriptions contained in the second volume are indicated by the number II.]

No.	Invention or Discovery.	Text.	Plates.
14, 008	Furnace for Soldering	547	187
9	Chain for Power-Press	II, 145	342
10	Operating and Lubricating Slide-Valves.....	618	231
11	Nut-Box	400	104
12	Brick Press.....	II, 245	415
13	Plough	320	44
14	Safety-Guard for Railroad Cars.....	II, 83	299
15	Wind-Mill	II, 132	333
16	Printing-Press	II, 368	501
17	Repeating Fire-Arm	II, 405	520
18	Spoke-Shave	II, 224	401
19	Shirt-Collars	II, 430	533
20	Machine for Pegging Boots and Shoes	II, 271	440
21	Smoke-House.....	II, 50	278
22	Sewing-Machine	476	154
23	Gold-Amalgamator.....	351	71
24	Pump	II, 116	318
25	Machine for making Eave-Troughs	II, 29	263
26	Harvester.....	272	13
27	Bed for Lath-Sawing Machines.....	II, 183	371
28	Sash-Lock	416	114
29	Pump	II, 115	318
30	Padlock	381	89
31	Hay and Cotton Press.....	II, 145	342
32	Automatic Electrical Circuit-Breaker.....	II, 5	247
33	Steam-Boiler Alarm	585	209
34	Repeating Magazine Fire-Arm	II, 408	520
35	Velocimeter for Vessels	640	244
36	Grain-Binder for Harvesters	292	29
37	Composition for Treating Wool.....	502	-----
38	Feed-Rollers for Planing-Machines.....	II, 194	378
39	Hydro-Pneumatic Pump for Diving Bells	II, 117	320
40	Manufacture of Leather Shoe-Bindings.....	II, 285	449
41	Screw-Machine	417	114
42	Treating Oils.....	523	-----
43	Harvester Raking Apparatus.....	271	13
44	Plough	320	48
45	Making Illuminating Gas	508	170
46	Harvester.....	273	13
47	Hanging Double Doors.....	II, 28	262
14, 048	Constructing the Bottoms of Vessels.....	631	238

No.	Invention or Discovery.	Text.	Plates.
14, 049	Machine for Sheet-Metal Bending	393	99
50	Scuttle Cover	II, 48	277
51	Bee-hive	257	1
52	Form of Building Bricks	II, 246	419
53	Disinfecting Fecal Matter	505	-----
54	Street-Paving Machine	II, 43	274
55	Filing Saws	II, 213	394
56	Watch-Key	II, 382	510
57	Breech-Loading Fire-Arm	II, 395	516
58	Attaching Hammer-Heads to Shafts	370	87
59	Padlock	388	94
60	Peg-Cutter for Boots and Shoes	II, 270	439
61	Machinery for making Weaver's Harness	490	161
62	Manufacture of Hats	452	134
63	Mode of Burning Wet-Fuel	547	-----
64	Gas-Cooking Stove	581	206
65	Cheese-Press	II, 143	341
66	Machine for Loading Dirt-Cars	II, 79	297
67	Horse Hay-Rake	329	57
68	Excavating-Machine	II, 30	264
69	Preventing Bank-Notes, &c., from being Counterfeited ..	II, 334	-----
70	Blades of Mowing-Machines	306	39
71	Mortising-Machine	II, 187	375
72	Machine for Sawing Marble Obelisk	II, 255	424
73	Seeding-Machine	337	54
74	Candle-Stick	536	182
75	Cultivating Plough	324	51
76	Corn-Harvester	282	20
77	Fire-Arm	II, 386	512
78	Mowing-Machine	303	35
79	Harvester	273	14
80	Manufacture of Boots and Shoes	II, 270	438
81	Supporting Propeller-Shaft and Receiving Rudder	606	222
82	Variable Dial for Dividing Engines	603	220
83	Extension Railroad-Car	II, 70	291
84	Feeding Sheets of Paper to Printing-Presses	II, 375	505
85	Curing Varicocele, Sterility, &c.	II, 422	-----
86	Machine for Heading Bolts	356	73
87	Lantern	570	200
88	Heading Spikes	423	121
89	Operating Fire-Engines	II, 104	313
90	Hydrant	II, 112	316
91	Gas-Burner	554	191
92	Lock-Gate Valve	II, 41	273
93	Extension Table	II, 324	469
94	Reefing Sails	629	237
95	Fire-Arm	II, 387	513
96	Attaching Thills to Axles	II, 63	287
97	Implements for Pruning Trees	327	54
98	Cotton Press	II, 143	341
99	Regulating the Speed of Wind-Mills	II, 138	337
100	Brick-Machine	II, 238	411
101	Shingle-Machine	II, 217	397
102	Grain and Grass-Harvester	286	25
103	Shingle-Machine	II, 218	397
104	Steering-Wheel Stopper	637	242
105	Bits for Boring Fellows and Tenoning Spokes	II, 167	357
106	Mortising-Machine	II, 187	375
107	Safety Coal-Hole Cover	II, 26	260
108	Steam Stop-Valve	620	229
14, 109	Machine for Dressing Mill-Stones	II, 161	353

No.	Invention or Discovery.	Text.	Plates.
14, 110	Making Clothes-Pins	II, 308	461
111	Wash-Board	II, 325	469
112	Door-Fastening	361	76
113	Cargo-Ports for Ships and other Vessels	630	238
114	Remelting Iron Scraps	375	84
115	Castings Metals	395	96
116	Straw-Cutter	345	65
117	Ditching-Machine	II, 28	262
118	Revolving Fire-Arm	II, 409	522
119	Platform Scales	II, 146	343
120	Yarn-Dressing Frame	493	162
121	Machinery for Felting Hat-Bodies	450	133
122	Box for Coating Daguerreotype Plates	II, 335	475
123	Curtain Fixtures	II, 312	462
124	Oscillating Engine	594	214
125	Working Steam-Valves as Cut-Offs	619	230
126	Lath-Machine	II, 182	370
127	Grain and Grass Harvester	286	1
128	Hanging Mill-Stone	II, 161	353
129	Hydro-Carbon Vapor Apparatus	532	180
130	Machine for Bending Plough Handles, &c.	II, 196	382
131	Opening and Closing Farm-Gates	II, 37	268
132	Flouring Mill	II, 158	352
133	Eccentric Explosive Shell	II, 419	526
134	Cotton-Seed Planter	310	42
135	Arrangement of Tan-Vats	533	180
136	Machine for Dressing Sticks to Polygonal Forms	II, 228	405
137	Riveting-Machine	413	113
138	Mowing-Machine	303	37
139	Ventilating Railroad Cars	II, 84	301
140	Hammering Leather for Soles and Heels of Boots and Shoes ..	II, 273	441
141	Sewing-Machine	471	156
142	Grate-Bars	559	194
143	Regulating the Velocity of Wind-Wheels	II, 138	338
144	Seed-Planter	315	51
145	Operating the Steam-Valves in Blower Engines	619	231
146	[Cancelled]	II, 403	517
147	Primers for Cartridges	286	26
148	Grain and Grass-Harvester	269	10
149	Harvester-cntter bars	620	231
150	Operating the Throttle-Valve of Steam Engines	II, 420	527
151	Shot-Pouch	II, 34	265
152	Field-Fence	548	187
153	Locomotive Furnace-Grates	II, 81	298
154	Machine for Replacing Railroad Cars	II, 238	412
155	Brick-Machine	II, 48	277
156	Scaffold	II, 14	254
157	Telegraphic Register	561	195
158	Heating Buildings by Steam	II, 149	343
159	Universal Joint for Connecting Shafts, &c.	II, 189	376
160	Mortising Tool	II, 424	531
161	Pill-Making Machine	II, 332	474
162	Apparatus for Stencilling Window-Shades	519	-----
163	Mastic for Covering Walls	II, 159	352
164	Grinding-Mills	472	150
165	Machines for Cutting Flocks and Paper Stock	412	111
166	Punching-Machine	370	82
167	Hinge	257	1
168	Bee-hive	II, 92	305
14, 169	Machine for Clearing Snow from Railroad Tracks	II, 92	305

No.	Invention or Discovery.	Text.	Plates.
14, 170	Screw-Jack.....	II, 142	340
171	Chimney-Cowl.....	539	183
172	Attaching Teeth to Saw-Plates.....	II, 208	391
173	Tree-Nail Machine.....	II, 230	406
174	Buggy Wagon.....	II, 98	308
175	Belt or Band Fastening.....	II, 140	329
176	Soldering Iron.....	421	116
177	Machine for Cutting Mouldings in Marble.....	II, 255	426
178	Cell Lock.....	380	89
179	Flouring-Mill.....	II, 158	352
180	Bell Stench-Trap.....	II, 54	281
181	Corn-Dryer.....	543	185
182	Ore-Washer.....	403	108
183	Raking Attachment to Harvesters.....	293	29
184	Photographic Plate-Vise.....	II, 360	492
185	Lugs for Cast-Iron Shingles.....	II, 49	278
186	Pump.....	II, 118	319
187	Heating Feed-Water Apparatus for Locomotives.....	605	222
188	Saw-Set.....	II, 211	392
189	Cutting Files.....	365	79
190	Three-Wheeled Vehicle.....	II, 97	308
191	Feed-Water Pump for Steam-Boilers.....	587	210
192	Bench Vise.....	427	120
193	Machine for Bending Ship Hooks.....	372	82
194	Machinery for Making Rope.....	474	141
195	Brick-Press.....	II, 245	417
196	Hot-Air Furnace.....	552	189
197	Carriage-Springs.....	II, 75	295
198	Weighing-Scales.....	II, 147	343
199	Flour-Bolt.....	II, 151	346
200	Fire-Poker.....	573	202
201	Lantern.....	571	200
202	Fastening for the Hinges of Daguerreotype Cases.....	II, 335	475
203	Metallic Pen.....	II, 357	492
204	Oscillating Steam-Engine.....	598	218
205	Harvester.....	274	14
206	Saw-mill.....	II, 206	388
207	Sewing-Machine.....	477	154
208	Constructing Cast-Iron Buildings.....	II, 23	259
209	Alarm Lock.....	378	87
210	Making Wrought-Iron Shafts.....	II, 149	343
211	Machines for Softening Leather.....	II, 279	445
212	Grain and Grass Harvester.....	287	25
213	Belt-Fastening.....	II, 139	339
214	Movement for the Doctors of Calico-Printing Machine.....	II, 367	495
215	Many-Chambered Breech-Loading Cannon.....	II, 383	511
216	Attaching Composition Soles to Boots and Shoes.....	II, 269	438
217	Writing Desk.....	II, 332	474
218	Machinery for Cutting Sand-Paper.....	472	149
219	Scissors.....	II, 321	466
220	Tonguing and Grooving Tapering Boards.....	II, 229	405
221	Wrench.....	429	122
222	Power Loom.....	465	147
223	Machine for Boring and Turning Wood.....	II, 169	359
224	Plough.....	320	49
225	Valves and Exhaust Passages of Steam-Engines.....	613	225
226	Signals for Vessels.....	639	243
227	Regulating Feed-gates for Mills, &c.....	II, 158	351
228	Rotary Planer for Felloes.....	II, 190	377
229	Oil Lamp.....	571	200
14, 230	Removing Incrustations of Boilers.....	583

No.	Invention or Discovery.	Text.	Plates.
14, 231	Adjustable Carriage-Seat.....	II, 75	292
232	Railroad Car Axles.....	II, 61	286
233	Gas and Steam Cooking Apparatus.....	554	191
234	Sticking Pins in Paper.....	405	108
235	Seed-Planter.....	315	46
236	Lubricator.....	517	175
237	Power Loom.....	465	146
238	Hand-Press for Stamping Letters.....	II, 364	495
239	Condensing Steam-Engines used for Pumping.....	593	213
240	Cotton-Seed Planters.....	310	43
241	Hanging and Adjusting Circular Saws.....	II, 211	392
242	Elevator for Puddlers' Balls.....	412	110
243	Wrench.....	430	121
244	Steam Condenser.....	592	212
245	Sealing Preserve Cans.....	II, 302	457
246	Porte-Monnaie.....	II, 362	494
247	Diaphragm Pump.....	II, 457	323
248	Wick-Holder for Argand Lamps.....	564	197
249	Wrench.....	429	121
250	Grain Harvester.....	285	21
251	Shlp's Compass.....	II, 3	245
252	Method of Extinguishing Fires.....	546	186
253	Breech-Loading Fire-Arm.....	II, 396	518
254	Cultivator Teeth.....	267	9
255	Envelope for Bottles.....	II, 437	538
256	Safety Spring-Coupling.....	II, 86	302
257	Fluxing Blast Furnaces.....	368	81
258	Bolt Machine.....	354	74
259	Grating Green Corn.....	II, 311	461
260	Machine for Folding Paper, &c.....	II, 347	488
261	Oil Box for Axles with Conical Journals.....	II, 142	341
262	Clothes Clamp.....	II, 307	460
263	Cutter-Head for Planing Machine.....	II, 195	380
264	Railroad Switch.....	II, 53	281
265	Railroad Car-Coupling.....	II, 87	302
266	Grain and Grass Harvester.....	287	24
267	Construction of Mastic Roofing.....	II, 46
268	Concaving Circular Saws.....	II, 210	392
269	Pegging Boots and Shoes.....	II, 270	440
270	Potato-Planter.....	II, 455	39
271	Caldron.....	535	181
272	Gearing for Feed-Rollers of Planing Machines.....	II, 196	380
273	Construction of Cisterns.....	II, 25	259
274	Machine for Sowing Seed Broadcast.....	342	55
275	Forks.....	II, 313	463
276	Fountain-Pen.....	II, 354	490
277	Machines for Sawing Marble.....	II, 254	426
278	Cooking Stove.....	578	205
279	Rolling Metal.....	392	97
280	Forging Thimbles.....	367	80
281	Vault-Cover.....	II, 56	284
282	Grapple for Raising Stone.....	II, 141	340
283	Sewing Guide.....	475	153
284	Seeding Machine.....	337	57
285	Power-Loom.....	466	148
286	Pen-Holder.....	II, 356	490
287	Mole of Draining-Ploughs.....	325	46
288	Plough.....	321	48
289	Machine for Tenoning Window-Blinds.....	II, 229	405
290	Billiard-Table Cushions.....	II, 436	537
14, 291	Applying Shafts to Axles.....	II, 64	287

No.	Invention or Discovery.	Text.	Plates.
14, 292	Temple for Looms.....	468	147
293	Construction of Pessaries.....	II, 424	530
294	Hubs for Carriages.....	II, 88	302
295	Machine for Printing from Engraved Plates.....	II, 365	497
296	Machine for Sawing Marble in Obelisk Form.....	II, 253	422
297	Machine for Preparing Vegetables for Preservation.....	II, 324	469
298	Furnace for Heating Slugs for the use of Hatters and others.....	550	188
299	Stave-Machine.....	II, 226	404
300	Photographic Pictures on Japanned Surfaces.....	II, 360	-----
301	Machine for Depositing Coal in Cellars.....	II, 24	259
302	Pitman.....	II, 190	376
303	Machine for Edging Wall Paper.....	II, 352	486
304	Wagon.....	II, 97	308
305	Mill Saw.....	II, 204	385
306	Combined Knife and Pencil Case.....	II, 340	477
307	Dovetailing Machine.....	II, 173	363
308	Machinery for making Shirt Collars.....	II, 430	533
309	Churn.....	259	2
310	Box for Carriage Hubs.....	II, 88	302
311	Coupling for the Joints of Felloes.....	II, 85	301
312	Air Cock for Steam-Heating Apparatus.....	575	203
313	Girder for Bridges.....	II, 23	259
314	Arched Trussed Bridge.....	II, 21	257
315	Projectile.....	II, 415	525
316	Machine for separating Gold, &c., from foreign substances.....	369	82
317	Lamp.....	563	196
318	Domestic Steam Generator.....	575	203
319	Percussion-Lock for Fire-Arms.....	II, 404	519
320	Painting or Varnishing Woven Wire.....	526	-----
321	Horse Rake.....	329	52
322	Binding Guide.....	432	123
323	Constructing Walls and Floors of Cellars.....	II, 24	-----
324	Sewing Machine.....	477	156
325	Apparatus for Heating by Gas.....	556	192
326	Door Springs.....	362	77
327	Boring Machine.....	II, 171	359
328	Velocimeter for Vessels.....	640	244
329	Instruments for Measuring the length of Braces.....	II, 172	362
330	Machinery for Hardening Hats.....	451	133
331	Excluding Dust from Railroad Cars.....	II, 82	299
332	Bending Sheet Metal.....	392	98
333	Cultivating-Plough.....	324	51
334	Coffee-Pot.....	II, 309	460
335	Water-Metre.....	II, 114	318
336	Roach Trap.....	II, 452	547
337	Wheelwright's Machine.....	II, 233	407
338	Operating the Valves of Steam-Engines.....	615	228
339	Sawing Machine.....	II, 200	383
340	Apparatus for Cooking with Quick Lime.....	543	184
341	Machine for Sweeping Streets.....	II, 50	278
342	Machine for Sawing Marble in Taper Form.....	II, 254	426
343	Manufacturing Hats.....	452	135
344	Corn Harvester.....	282	19
345	Skein for Axle-Arms.....	II, 60	286
346	Plough.....	321	49
347	Shingle Machine.....	II, 218	398
348	Steam Tubing for Heating Buildings.....	562	196
349	Hinge for Shutters.....	370	82
350	Harvester-Rake.....	271	12
14, 351	Self-Acting Farm-Gate.....	II, 38	271

No.	Invention or Discovery.	Text.	Plates.
14, 352	Lubricator.....	517	175
353	Boot-Crimp.....	II, 267	438
354	Machine for Shearing Sheep.....	341	64
355	Portable-Houses.....	II, 40	272
356	Supplementary Grating for Stoves, &c.....	581	206
357	Rifle-Box.....	413	109
358	Power-Loom.....	466	149
359	Guard for Coal-Holes.....	II, 26	260
360	Heating Buildings by Combination of Gas, Air, and Steam.....	562	196
361	Weighing-Scales.....	II, 148	343
362	Stove for Railroad-Cars, &c.....	577	204
363	Bench-Planes.....	II, 191	377
364	Railroad-Car Seats.....	II, 79	297
365	Increasing the Buoyancy of Vessels.....	631	238
366	Handle for Vise.....	427	118
367	Scythe Rifle.....	418	114
368	Bottling Fluids under Gaseous Pressure.....	507	170
369	Lamp for Burning Rosin Oil.....	565	197
370	Machine for Pegging Boots and Shoes.....	II, 272	439
371	Attaching Hubs to Axles.....	II, 89	303
372	Air-Escape for Pumps.....	II, 120	321
373	Gang-Plough.....	325	52
374	Corn-Sheller.....	263	4
375	Tanning Apparatus.....	II, 287	447
376	Candle-Dipping Machine.....	499	167
377	Ship's Capstan.....	632	239
378	Guitar.....	II, 339	477
379	Adjusting Circular-Saws.....	II, 209	391
380	Application of Soles to Boots and Shoes.....	II, 268	438
381	Machine for Heading Bolts.....	356	74
382	Weighing-Scale Beams.....	II, 149	343
383	Construction of Grand Pianos.....	II, 361	493
384	Constructing Cast-Iron Pavement.....	II, 42	273
385	Railroad-Car Brake.....	II, 66	288
386	Hot-Blast Apparatus.....	534	681
387	Valve for Lock-Gates.....	II, 40	269
388	Ore Washer.....	404	104
389	Manufacture of India-Rubber Belting.....	II, 139	-----
390	Bench-Clamp.....	II, 167	356
391	Washing Machine.....	II, 327	470
392	Apparatus for Heating Buildings by Steam.....	561	196
393	Sewing Machine.....	478	154
394	Machinery for Preparing Hemp and Flax.....	452	138
395	Apparatus to prevent Horses in Carriages from falling.....	II, 74	293
396	Parallel-Rulers.....	II, 12	251
397	Preparation of Tallow for making Candles.....	501	169
398	Spark Conductors for Locomotive Trains.....	575	203
399	Tanning.....	II, 287	-----
400	Carriage-Top.....	II, 78	296
401	Machinery for Ironing Hats.....	451	136
402	Cutter for Harvesters.....	269	11
403	Spirit Blow-Pipe.....	535	181
404	Mowing-Machine.....	304	38
405	Bending Wood.....	II, 236	410
406	Revolving Fire-Arm.....	II, 410	523
407	Carriage-Hubs.....	II, 88	302
408	Steam-Boiler.....	583	207
409	Grain and Grass Harvester.....	287	27
410	Straw-Cutter.....	345	65
411	Lime-Kiln.....	II, 251	422
14, 412	Puddling Iron.....	375	85

No.	Invention or Discovery.	Text.	Plates.
14, 413	Straining Mulley Saws.....	II, 215	394
414	Apparatus for Heating or Cooking by Gas.....	557	193
415	Boxes for Axles.....	II, 62	286
416	Mortising and Boring Machine.....	II, 168	358
417	Securing Thills to Axles.....	II, 65	287
418	Apparatus for Making Extracts.....	505	169
419	Reducing the Friction of Slide-Valves of Steam-Engines.....	616	228
420	Revolving Fire-Arm.....	II, 409	521
421	Machine for Cutting Irregular Forms.....	II, 176	366
422	Harvester-Cutter.....	269	11
423	Plane-Stock.....	II, 191	377
424	Wrench.....	430	121
425	Fountain-Pen.....	II, 354	491
426	Machine for Cutting Out and Skiving the Soles of Boots and Shoes.....	II, 273	441
427	Dovetailing-Machine.....	II, 174	363
428	Grain and Grass Harvester.....	288	25
429	Faucet.....	II, 105	313
430	Leather-Splitting Machine.....	II, 279	444
431	Umbrella Ribs.....	II, 433	-----
432	Manufacture of Boot and Shoe Soles.....	II, 267	438
433	Sewing-Machine.....	478	153
434	Boxing Carriage Wheels.....	II, 99	310
435	Welding Steel.....	424	-----
436	Bench-Plane.....	II, 190	376
437	Apparatus for Roasting and Cooking by Gas.....	559	194
438	"Dumb Jockey".....	II, 284	448
439	Hermetically Sealing Preserve-Cans.....	II, 302	457
440	Hernial Truss.....	II, 428	532
441	Grain and Grass Harvester.....	288	24
442	Making Chilled Castings.....	357	74
443	Carriage-Coupling.....	II, 72	292
444	Threshing-Machine.....	348	68
445	Mowing-Machine.....	304	36
446	Machine for Corking Bottles.....	II, 437	537
447	Fireplace.....	545	186
448	Grain and Grass-Harvester.....	289	26
449	Feed and Blow-off Apparatus for Steam-Boilers.....	587	209
450	Seeding-Machine.....	337	54
451	Inkstand.....	II, 349	477
452	Nut-Machine.....	400	101
453	Harvester-Cutter.....	270	11
454	Mortising Tool.....	II, 189	376
455	Rotary Planing-Knives.....	II, 192	378
456	Illuminating Grating.....	II, 40	272
457	Making Transparent Window Shades.....	524	177
458	Churn.....	259	2
459	Self-Regulating Wind-Wheel.....	II, 137	333
460	Percussion Projectile.....	II, 417	526
461	Stove.....	576	204
462	Machine for Felling Trees.....	349	68
463	Cone Tubes for Winding-Frames.....	492	160
464	Making Elastic Rubber Cloth.....	524	-----
465	Seed-Planter.....	316	47
466	Machine for Making Clothes-Pins.....	II, 309	461
467	Sectional Fire-Pot for Stoves and Furnaces.....	578	205
468	Boxes of Railroad Car Axles.....	II, 63	287
469	Harness Buckles.....	II, 276	442
470	Omnibus Register.....	II, 90	304
471	Machine for Sawing Marble in Taper Form.....	II, 254	425
14, 472	Producing Designs on Wood.....	II, 235	-----

No.	Invention or Discovery.	Text.	Plates.
14, 473	Adjusting the Brasses of Connecting Rods.....	II, 163	354
474	Nail-plate Feeding-Machines.....	399	104
475	Sewing-Machine.....	478	156
476	Machinery for Making Hat Bodies.....	447	134
477	Harness for Shoeing Horses.....	II, 276	443
478	Argand Lamp for Burning Rosin Oil.....	563	197
479	Boring-Machine.....	II, 172	361
480	Suspending Circular-Saw Spindles.....	II, 215	395
481	Stripping Top-Flats of Carding-Machines.....	435	125
482	Spinning-Wheel.....	488	160
483	Machine for Tunnelling Rocks.....	II, 54	282, 283
484	Safety Apparatus for Harnesses and Thills of Vehicles.....	II, 95	307
485	Adjusting Reciprocating Saws.....	II, 215	393
486	Cut-off Gear for Steam-Engines.....	597	216
487	Propelling Vessels.....	639	244
488	Needle-Gun.....	II, 413	524
489	Detaching Boats from their Tackle.....	622	232
490	Machine for Cutting Loaf-Sugar.....	II, 450	545
491	Breech-Loading Fire-Arm.....	II, 396	516
492	Regulating Flow of Oil to Wick in Carcel Lamps.....	564	197
493	Press for Punching.....	II, 145	344
494	Fruit or Grain Dryer.....	544	185
495	Stone-Drilling Machine.....	II, 263	436
496	[Number altered to 15,845].....	-----	-----
497	Paddle-Wheel.....	626	235
498	Water Cooler and Filter.....	II, 331	474
499	Lath-Machine.....	II, 182	371
500	Steam Radiator Cock.....	608	223
501	Miniature Case.....	II, 344	485
502	Pile-Driver.....	II, 44	275
503	Explosive Shell.....	II, 418	526
504	Hand Corn-Planter.....	312	45
505	Ash-Sifter.....	574	202
506	Fan Rocking-Chair.....	II, 305	459
507	Fan Rocking-Chair.....	II, 305	458
508	Spring Platform for Railroad-Cars.....	II, 83	300
509	Piano-Forte Action.....	II, 360	492
510	Cooling and Ventilating Rooms, &c.....	543	184
511	Carpenter's Bench.....	II, 166	357
512	Machine for Sweeping Streets.....	II, 51	279
513	Gun-Lock.....	II, 414	525
514	Wardrobe Bedstead.....	II, 300	456
515	Lever of Railroad-Car Brakes.....	II, 69	290
516	Valve-Motion for Oscillating Engines.....	611	227
517	Grain Separator.....	340	60
518	Field-Fence.....	II, 32	265
519	Portable Field-Fence.....	II, 35	267
520	Post-Driver.....	II, 45	275
521	Machine for Sizing Hat-Bodies.....	448	131
522	Clamp for Planking Ships.....	II, 173	363
523	Steam-Boiler.....	583	207
524	Syringe Bottle for Medical Agents.....	II, 426	531
525	Water-Metre.....	II, 127	328
526	Cock for Steam, Water, &c.....	II, 102	312
527	"Creepers" to Prevent Slipping on Ice, &c.....	II, 440	539
528	Wrench.....	431	122
529	Cotton-Seed Planter.....	311	42
530	Butter-Worker.....	258	1
531	Self-Setting Rat Trap.....	II, 452	546
532	Machine for Sawing Marble in Obelisk Form.....	II, 253	423
14, 533	Cultivating Plough.....	319	47

No.	Invention or Discovery.	Text.	Plates.
14, 534	Tools for Figuring Morocco	II, 281	445
535	Water-Wheel	II, 128	328
536	Machine for Sawing Marble in Obelisk Form	II, 253	424
537	Mould for Earthen Vessels, Pots, &c	II, 267	437
538	Machine for Raking and Loading Hay	331	54
539	Cotton Hiller	299	30
540	Cotton Scraper	335	62
541	Grain and Grass Harvester	290	27
542	Printing Cylinder	II, 364	496
543	Scythe Fastening	336	57
544	Harvester-Cutter	270	11
545	Regulating Variable Cut-Offs for Steam Engines	598	216
546	Wrench	431	122
547	Horse-Power	II, 155	348
548	Self-Inking Stamps	II, 380	509
549	Lubricator	518	175
550	Bench Vise	427	119
551	Making Seamless Metal Tubes	396	96
552	Rolling Rail-Way Bars	414	113
553	Apparatus for Removing Grain from Harvesters	280	19
554	Breech-Loading Fire-Arm	II, 397	516
555	Steam-Boiler	584	207
556	Grain Harvester	285	24
557	Hydrant	II, 112	316
558	Printing Press	II, 370	502
559	Cloths for Felting Hat Bodies, &c	443	133
560	Journal-Boxes for Railroad-Car Axles	II, 64	287
561	Manufacturing Augers	352	71
562	Automatic Steam-Whistle	608	223
563	Slide Rest	421	116
564	Mortising Machine	II, 188	375
565	Life-Boat	621	232
566	Former for Spiral Springs	423	118
567	Spark Arrestor	574	203
568	Converting Reciprocating into Rotary Motion	II, 162	355
569	Mitering-Bench	II, 167	357
570	Machine for Gathering Seeds or Grain in the Field	340	59
571	Wrench	431	122
572	Wind-Wheel	II, 136	337
573	Soldering Wire Ferrules	421	117
574	Stirring Straw and Husk Beds	II, 296	453
575	Forge Fire	366	82
576	Varying the stroke of Feeding-Pump for Steam Engines	II, 116	319
577	Wheelwright Machine	II, 232	408
578	Lathe	II, 183	372
579	Axle-boxes for Carriages	II, 60	286
580	Valve Gear of Oscillating Engines	611	226
581	Field-Fence	II, 33	265
582	Grain and Grass Harvester	290	25
583	Door-Spring	363	78
584	Bridge	II, 22	258
585	Machine for Making Carpet Lining	437	123
586	Skates	II, 449	545
587	Fishing-Lead	II, 442	540
588	Machine for Drying Wet Grain, &c	544	185
589	Enclosing Propeller-Shafts in Keels	628	237
590	Loom	458	142
591	Cooking-Range	573	202
592	Waste Attachment to Hydrants	II, 113	317
593	Pressure Bell	II, 300	456
14, 594	Door-Fastener	380	76

No.	Invention or Discovery.	Text.	Plates.
14, 595	Fastening Door-Knobs	361	77
596	Machine for Combing Seed off Broom-Corn	263	5
597	Shot-Gun	II, 414	524
598	Magneto Electric Machine	II, 7	249
599	Rotary Pump	II, 121	323
600	Sash Fastener	415	111
601	Tempering Furnace	553	190
602	Flood-Gate	II, 111	316
603	Improved Vise	425	119
604	Machine for Planing Fellos	II, 192	379
605	Piston-Valve or Steam-Boiler Regulator	616	228
606	Polishing Leather	II, 278	444
607	Carriage Coupling	II, 73	294
608	Submarine Lantern	571	200
609	Machine for Sifting Coal, &c	574	203
610	Extracting Oil from Cotton Seed	521	-----
611	Slide-Valves and means for operating them	617	230
612	Machine for Tapering Whalebone	II, 452	547
613	Machines for Mixing Lime and Sand	II, 260	437
614	Construction of Envelopes	II, 337	480
615	[Number altered to 14, 896.]	-----	-----
616	Lock	382	90
617	Automatic Thermo-Hydro-Oliso-Pneumatic Valve	II, 125	326
618	Door Lock	387	94
619	Charring Wood	537	182
620	Governor Valve for Steam-Engines	611	226
621	Felt Guide of Paper Machines	470	150
622	Boiler for Cooking by Steam	542	184
623	Treating Surface Springs	II, 124	325
624	Slate-Frame	II, 449	545
625	Machine for Making Envelopes	II, 338	479
626	Regulating Pumps by Wind-Wheels	II, 121	323
627	Valves for Hydraulic Engines	II, 126	326
628	Basin Cock	II, 102	312
629	Machine for Sowing Seed Broadcast	342	65
630	Machine for Sowing Seed Broadcast	343	66
631	Corn Planter	307	39
632	Chuck for Lathes	II, 185	374
633	Machine for Polishing Buckles	357	75
634	[Number altered to 15, 046.]	-----	-----
635	Spoke Shave	II, 224	401
636	Machine for Bending Wood	II, 235	409
637	Core-Bar for Pipe Moulding	397	109
638	Wash Board	II, 325	469
639	Boxes for Axles	II, 62	286
640	Railroad-Car Brakes	II, 66	288
641	Oil Can	536	182
642	Apparatus for Heating and Ventilating	559	195
643	Machine for Making Envelopes	II, 337	478
644	Power Loom	467	143
645	Calendar Clock	II, 2	245
646	Mechanism by which Cattle Raise Water for Themselves	II, 126	327
647	Securing and Releasing Blocks of Lasts	II, 183	370
648	Coal Stove	578	205
649	Operating Cut-Off Valves of Steam-Engines	614	228
650	Arrangement of Grates and Dampers for Chimneys	541	183
651	Stump Extractor	II, 52	280
652	Omnibus Register	II, 90	304
653	Attaching Thills and Poles to Vehicles	II, 95	306
654	Mode of Protecting Vines	349	70
14, 655	Frames for Mosquito Nets	II, 447	544

No.	Invention or Discovery.	Text.	Plates.
14, 656	Straining Marble-Saws.....	II, 262	433
657	Manufacture of India Rubber.....	514	
658	Machine for Sawing Marble in Obelisk Form.....	II, 253	423
659	Spreading-Rollers for Stretching Cloth.....	438	128
660	Bedstead Fastenings.....	II, 296	454
661	Grain and Grass Harvesters.....	290	27
662	Candle-Cutting Apparatus.....	498	166
663	Hay and Cotton Presses.....	II, 145	342
664	Electric Telegraph.....	II, 13	253
665	Safety Platforms between Railroad Cars.....	II, 83	299
666	Hoisting-Drums.....	II, 142	340
667	Fire-Arms.....	II, 387	513
668	Metallic Bedsteads.....	II, 298	455
669	Whip-Sockets.....	II, 453	547
670	Stereoscope Case.....	II, 380	509
671	Apparatus for Hoisting Coal.....	II, 141	340
672	Double-Acting Catch for Reversible Backs of Settees.....	II, 321	467
673	Implement for Reaping Rice.....	335	63
674	Apparatus for Feeding Furnaces.....	554	190
675	Lock Hasp.....	381	89
676	Floor Clamp.....	II, 173	362
677	Churn.....	259	2
678	Wheel-Hub.....	II, 457	303
679	Oil Ground to receive Photographic Impressions.....	II, 358	
680	Vault Cover.....	II, 56	285
681	Railroad Brake.....	II, 65	288
682	Electro-Magnetic Engine.....	II, 6	248
683	Wig.....	II, 433	
684	Stone and Marble Saw.....	II, 262	434
685	Apparatus for Teaching Phrenology.....	II, 448	544
686	Door Spring.....	362	76
687	Grain Weighing-Machine.....	II, 150	345
688	Adjusting the Angle in Machines for Sawing Marble Obelisks.....	II, 255	427
689	Hanging and Elevating or Depressing Farm-Gates.....	II, 37	269
690	Air Engine.....	II, 104	313
691	Door-Spring.....	362	77
692	Diaphragm Fluid Metre.....	II, 109	314
693	Harvester Raking Attachment.....	272	13
694	Grain and Grass-Harvester.....	290	27
695	Repairing Railroad Bars.....	353	72
696	Making Brass Kettles.....	377	86
697	Machine for Folding Paper.....	II, 349	489
698	Machine for Raising and Creasing Leather Straps, &c.....	II, 280	445
699	Cut-Off for Steam-Engines.....	597	217
700	Head and Tail Blocks for Saw Mills.....	II, 207	389
701	Puddle-Ball Squeezer.....	412	110
702	Weighing-Scales.....	II, 148	344
703	Seeding-Machines.....	338	61
704	Awl Haft.....	352	71
705	Adjusting Circular Saws for Concave and Convex Work.....	II, 210	391
706	Fishing Tackle.....	II, 442	540
707	Seeding Machine.....	338	64
708	Machine for Sowing Fertilizers.....	268	10
709	Balance and Slide Valve for Steam Engines.....	609	224
710	Revolving Fire-Arm.....	II, 411	521
711	Receiving Magnet for Telegraphs.....	II, 18	255
712	Waste Device for Hydrants.....	II, 113	318
713	Brick-Machine.....	II, 239	413
714	Door-Lock.....	388	90
715	Cultivator.....	267	9
14, 716	Machine for Digging Peat.....	II, 44	274

No.	Invention or Discovery.	Text.	Plates.
14, 717	Sugar Evaporator.....	531	179
718	Machine for Driving Spokes.....	II, 224	401
719	Hotel Annunciator.....	II, 434	536
720	Damper for Cooking-Stoves.....	580	206
721	Steam-Boiler.....	584	208
722	Preparing Phosphoric Acid.....	495	
723	Suspending Extra Topsail Yards.....	630	238
724	Flask for Moulding.....	397	109
725	Cotton-Cleaner.....	438	127
726	Sub-soil Plough.....	319	44
727	Hydro-carbon Vapor Lamp.....	566	198
728	[Number altered to 15, 142.].....		
729	Machine for Sawing Marble in Obelisk Form.....	II, 253	425
730	Corn Harvester.....	282	23
731	Electro-Magnetic Printing Telegraph.....	II, 17	256
732	Coal-Breaker.....	II, 440	539
733	Electro-Magnetic Scales.....	II, 146	344
734	Measuring-Faucet.....	II, 106	313
735	Apparatus for Raising and Lowering Carriage Tops.....	II, 78	297
736	Cast-Iron Pavement.....	II, 43	273
737	Gas-Burner.....	555	191
738	Working in Sheet Metal.....	394	86
739	Ring to Prevent Nocturnal Emissions.....	II, 421	528
740	Conical Tent.....	II, 450	545
741	Fastening Lamps to Lanterns.....	570	200
742	Projectile for Fire-Arms.....	II, 405	525
743	Pressure-regulating Apparatus for Boilers.....	560	195
744	Weather-Strip and Lock for Windows, &c.....	II, 58	284
745	Corn-Sheller.....	263	5
746	Loom for Weaving Bags.....	463	145
747	Divided Axle for Railroad Cars.....	II, 63	287
748	Coffee-Pot.....	II, 310	460
749	Completing the Throw of the Valves of Direct-Acting Engines by the Exhaust Steam.....	615	227
750	Link Gearing for Horse-Powers.....	II, 155	349
751	Device to allow for Contraction and Expansion in Wire Fences.....	528	121
752	Auger.....	II, 165	356
753	Hoop-Machine.....	II, 179	369
754	Combined Shovel and Tongs.....	574	202
755	Machine for Tunnelling and Quarrying.....	II, 54	281
756	Stud for Wearing Apparel.....	II, 432	534
757	Sawing-Machine.....	II, 200	384
758	Chain-Cable Hooks.....	624	234
759	Electro-Magnetic Printing Telegraph.....	II, 17	255
760	Pen and Pencil Case.....	II, 353	491
761	Cradling-Harvester.....	284	23
762	Machine for Excavating and Moving Earth.....	II, 29	264
763	Cigar-Machine.....	II, 439	539
764	Scaffolding.....	II, 47	277
765	Shingle-Machine.....	II, 219	398
766	Joint-Bodied Buggy.....	II, 69	290
767	Hand Seed-Planter.....	314	44
768	Attaching Harvester Cutter-Blades to the Sickle-Bar.....	269	10
769	Automatic Rake for Harvesters.....	280	20
770	Construction of Dry Gas-Meters.....	557	193
771	Corn-Sheller.....	264	4
772	Machine for Printing Woollen and other Fabrics.....	II, 378	508
773	Door-Fastener.....	360	77
774	Fire-Arm.....	II, 388	512
775	Machine for Paring Apples.....	II, 292	450
14, 776	Corn-Planter.....	308	49

No.	Invention or Discovery.	Text.	Plates.
14, 777	Harvester-Cutter	270	11
778	Rotary Steam-Engine	599	218
779	Wrench	430	122
780	Breech-Loading Fire-Arm	II, 397	517
781	Reaping-Machine	334	54
782	Machine for manufacturing Friction-Matches	II, 446	542
783	Box-Opener	II, 438	538
784	Self-Raker for Harvesters	295	34
785	Corn Planter	308	40
786	Propelling Boat	628	237
787	Lathe	II, 184	373
788	Machine for Cleaning Knives	II, 315	464
789	Machine for Embossing and Printing	II, 368	498
790	Harvester Fingers	270	11
791	Apparatus for Lubricating Grist-Mill Spindles	516	174
792	Rotary Shingle Machine	II, 222	398
793	Guide or Chute for Turbine-Wheels	II, 132	330
794	Wagon Tongue	II, 99	309
795	Improved Vise	425	120
796	Self-Heating Smoothing Iron	II, 322	468
797	Lubricator	518	175
798	Double-Panel Shutter	II, 49	278
799	Pegging-Jack	II, 285	447
800	Machine for Paring Apples	II, 292	450
801	Corn Planter	308	40
802	Machine for Sawing Felloes	II, 87	303
803	Mould-Press for Horse-Collars	II, 275	442
804	Making Paper from Straw	469	---
805	Hydrant	II, 112	316
806	Lard-Lamp	567	198
807	Machine for Splitting Wood	II, 237	410
808	Self-Regulating Wind-Mill	II, 135	335
809	Road-Scraper	II, 48	276
810	Potato-Digger	326	53
811	Preparing Elastic India-Rubber Cloth	513	---
812	Bagasse Furnace	549	188
813	Salt Evaporator	528	178
814	Making Gum-Elastic Cloth	510	172
815	Manufacturing Felted Yarns	494	164
816	Machine for Saving Clover-Seed	262	4
817	Dumping-Scraper	II, 48	276
818	Washing-Machine	II, 327	471
819	Breech-Loading Gun	II, 412	524
820	Repeating Fire-Arm	II, 406	520
821	Machines for Figuring and Polishing Morocco	II, 281	445
822	Gas-Burner	555	191
823	Machine for Sawing Marble in Kerfs of Varying Angles	II, 260	432
824	Preparing Artificial Stone	II, 262	---
825	Oven	571	201
826	Hanging Gates, Doors, &c.	II, 36	270
827	Furnace for Smelting Iron	375	85
828	Cooking Apparatus	542	183
829	Machine for Manufacturing Barrel-Heads	II, 165	356
830	Machine for Extracting Stumps	II, 52	280
831	Extension Wagon	II, 98	309
832	Composition for Stuffing Leather	503	---
833	Hoop Machine	II, 179	369
834	Door-Fastener	359	78
835	Heating Feed-Water Apparatus for Steam Boilers	589	211
836	Construction of Artificial Legs	II, 424	528
837	Machine for Sowing Seed Broadcast	343	64
14, 838	Ladling Molten Glass	II, 250	421

No.	Invention or Discovery.	Text.	Plates.
14, 839	Marble-Sawing Machine	II, 256	428
840	Sheep-Shears	342	59
841	Railroad-Car Seat	II, 71	291
842	Scythe Fastening	336	57
843	Propellers for Life-Boats	622	233
844	Saw-Mill Dog	II, 205	388
845	Machinery for Felting Hat-Bodies	444	131
846	Manufacture of Machine Bricks	II, 247	417
847	Rifle for Gold Washing	369	83
848	Lock	383	92
849	[Number altered to 15,724.]	---	---
850	Cartridge Opener	II, 384	512
851	Farm-Gate	II, 35	270
852	Horse-Shoe	372	83
853	Surgical Splints	II, 425	530
854	Continuous Sheet-Metal Surface	II, 41	273
855	Machine for Cutting Green Corn from the Cobs	II, 311	462
856	Bridle-Bit	II, 274	442
857	Self-Counting Measure	II, 7	249
858	Machinery for Trebling Single Thread	489	163
859	Machine for Dressing Mill Stones	II, 161	353
860	Bow for Violins	II, 381	509
861	Self-Raking Attachment to Harvesters	295	32
862	Hat-Felting Machine	450	134
863	Hand-Saw	II, 199	383
864	Husking-Thimble	302	35
865	Winnowing-Mill	349	69
866	Punching-Machine	413	110
867	Port-Monnaie	II, 363	494
868	Lock-Joint for Railroad-Bars	II, 45	276
869	Machinery for Manufacturing Wash-Boards	II, 326	470
870	Compound Rail for Railroads	II, 45	276
871	Securing Knives to Cutter-Heads	II, 181	369
872	Invalid-Chair	II, 306	459
873	Brick-Machine	II, 239	414
874	Mowing-Machine	305	39
875	Blow-Pipe	534	181
876	Fastening Bits	553	72
877	Portable-Chair	II, 307	459
878	Working Sheet Metal	394	98
879	Wardrobe Trunk	II, 289	449
880	Planing-Machine	II, 193	378
881	File-Cutting Machine	364	79
882	Reacting Water-Wheel	II, 130	328
883	Brooms and Brushes	II, 301	456
884	Cattle Pump	II, 116	319
885	Apparatus for Heating Buildings by Steam	562	196
886	Snow-Plough for Railroads	II, 46	275
887	Making Brass Kettles	377	87
888	Gas-Stoves	581	206
889	Machine for Preparing Dough for Crackers	II, 311	462
890	Chairs for Ships' Cabins	II, 306	458
891	Fire and Escape Ladder	603	220
892	Furnace for Heating Soldering-Irons	550	188
893	Gas-Regulator	558	194
894	Seed Machine	338	66
895	Oven of Cooking Range	573	201
896	Lock	383	92
897	Rolling File Blanks	414	111
898	Mowing Machine	304	39
899	Cutter-Head for Lathes	II, 186	370
14, 900	Frame for Travelling Bags and Mail Pouches	II, 435	536

No.	Invention or discovery.	Text.	Plates.
14, 901	Machine for Cutting Meat.....	II, 316	464
902	Water-Closet.....	II, 25	260
903	Boat-Framer.....	621	232
904	Pill-Machine.....	II, 448	544
905	Fire-Arm.....	II, 388	513
906	Supplemental Valves for High-Pressure Engines.....	620	231
907	Printing Machine.....	II, 367	500
908	Annealing Furnace.....	547	187
909	Operating Saw-Mill Blocks.....	II, 205	388
910	Oracular Wheel or Centre-Table.....	II, 447	544
911	Artificial Decoloring Compound.....	504	-----
912	Swing Bolt for Fastening Shutters.....	421	116
913	Gas-Retort Fastenings.....	510	171
914	Shingle Machine.....	II, 219	398
915	Horse-Shoe.....	372	82
916	Working in Sheet Metal.....	394	99
917	Telegraph.....	II, 15	252
918	Regulating Wind-Mills.....	II, 135	336
919	Printing Machine.....	II, 366	499
920	Feathering Paddle-Wheels.....	627	236
921	Water Metre.....	II, 127	327
922	Hydraulic Engine.....	II, 104	312
923	Surface Condensers for Steam Engines.....	601	219
924	Tooth-Extractor.....	II, 427	532
925	Ash-Leaching Apparatus.....	497	166
926	Construction of Gas-Generators.....	508	170
927	Elevator for Cotton, Sugar-Cane, &c.....	II, 141	339
928	Floating Draw-Bridge.....	II, 21	258
929	Lining Metal Pipes with Gutta Percha.....	513	173
930	Hanging Reciprocating Saws.....	II, 216	395
931	Carriage-Shaft Coupling.....	II, 75	296
932	Surface Condenser for Steam Engines.....	601	219
933	Excavating-Scoop.....	II, 30	265
934	Gas-Retort Cleaner.....	509	171
935	Music-Rack.....	II, 346	485
936	Saw-Set.....	II, 211	392
937	Extracting Stumps.....	II, 52	281
938	Machinery for making Rope and Cordage.....	472	143
939	Weighing Cart.....	II, 150	345
940	Ventilating Registers and Dampers for Stoves.....	582	206
941	Lathe Attachment for Turning Irregular Forms.....	II, 185	373
942	Locomotive and Railroad Lamp.....	568	199
943	Operating Head-Blocks of Saw-Mills.....	II, 207	390
944	Operating Steam-Stamps.....	608	223
945	Car-Window.....	II, 84	300
946	Photographic Pictures on Glass.....	II, 359	-----
947	Brick-Machine.....	II, 240	412
948	Attachment for Piano-Legs.....	II, 361	493
949	Breech-Loading Fire-Arm.....	II, 398	516
950	Grinding Circular Saws.....	II, 209	390
951	Boot-Tree.....	II, 274	441
952	Constructing Portable Houses.....	II, 41	272
953	Securing Nuts to Carriage Axles.....	II, 62	286
954	Engine Governor for Ocean Steamers.....	592	213
955	Reed Musical Instrument.....	II, 345	483
956	Case for Sewing Machines.....	486	161
957	Guard for Circular Saws.....	II, 209	391
958	Lock and Key.....	380	88
959	Float for Steam Boilers.....	588	210
960	Machine for Sizing Hat-Bodies.....	448	133
961	Mowing Machines.....	304	38
14, 962	Operating the Valves of Steam Hydrants.....	II, 113	317

No.	Invention or Discovery.	Text.	Plates.
14, 963	Safety Valve for Steam Engines.....	617	230
964	Billiard Cue.....	II, 435	536
965	Cotton-Gin.....	439	127
966	Excavator.....	II, 31	263
967	Instantaneous Governor for Steam Engines, &c.....	593	214
968	Tool for Boring Hubs.....	II, 170	361
969	Winding Thread from Skeins.....	489	163
970	Musical Notation.....	II, 345	483
971	Loom.....	459	146
972	Apparatus for Cleaning Gutta Percha.....	511	172
973	Hand Propeller.....	628	237
974	Self-Sealing Preserve Vessel.....	II, 319	466
975	Rotary Knitting Machine.....	457	141
976	Making Steel.....	423	-----
977	Shingle Machine.....	II, 219	399
978	Valve Gear for Steam Engines.....	610	224, 225
979	Securing Plane-Bits.....	II, 190	377
980	Grain and Grass-Harvester.....	291	25
981	Replaceable Axle-Box for Railroad Cars.....	II, 82	299
982	Drawing Fluids from Bottles.....	II, 109	314
983	Ship's Capstan.....	632	239
984	Callipers for Measuring Irregular Forms.....	II, 172	361
985	Coupling for Vehicles.....	II, 85	301
986	Ship's Capstan.....	632	240
987	Machine for Manufacturing Fellocs.....	II, 175	365
988	Self-Acting Mule.....	468	162
989	Plough.....	321	50
990	Corn-Sheller.....	264	6
991	Operating Slide-Valves for Steam-Engines.....	618	231
992	Parlor Organ.....	II, 346	484
993	Uterine Supporter.....	II, 429	532
994	Gas-Burning Lamp.....	566	198
995	Marble-Sawing Machine.....	II, 259	430
996	Feeding Apparatus for Gas-Retorts.....	510	172
997	Regulating Wind-Mills.....	II, 135	336
998	Piano-Forte Action.....	II, 360	493
999	Relieving Slide-Valves from the Pressure of Steam.....	619	227
15, 000	Window-Frame.....	II, 58	284
001	Nut-Machine.....	401	-----
002	Device for Preventing Damage to Goods by Water in case of Fires.....	II, 24	259
003	Making Nuts.....	403	102
004	Machine for Polishing Metallic Nuts.....	403	106
005	Rotary Brick-Machine.....	II, 244	416
006	Needles for Knitting-Machines.....	457	138
007	Saw-Set.....	II, 212	394
008	Machine for Felting Hat-Bodies.....	448	135
009	Gas-Consuming Furnace.....	550	189
010	Arrangement of Gas-Retort Bench.....	509	171
011	Copying Press.....	II, 363	494
012	Sawing-Machine.....	II, 201	384
013	Harvester-Frame.....	271	12
014	Melodeon.....	II, 342	480
015	Marble-Sawing Machine.....	II, 257	429
016	Wool Carding Machine.....	436	126
017	Self-Registering Ship's Compass.....	II, 3	246
018	Glass-Furnace.....	551	189
019	Melodeon.....	II, 341	480
020	Sewing-Machine.....	487	159
021	Elastic Bottoms for Chairs, &c.....	II, 305	458
022	Boring-Machine.....	II, 171	360
15, 023	Cooking-Stove.....	579	20

No.	Invention or Discovery.	Text.	Plates.
15,024	Marble-Sawing Machine.....	II, 257	427
025	Operating Valves of Steam-Engines.....	616	229, 230
026	Sawing-Machine.....	II, 200	385
027	Filter.....	II, 107	314
028	Gas-Regulator.....	559	194
029	Grain and Grass-Harvester.....	291	28
030	Attaching Stem to a Conical Valve.....	II, 125	326
031	Lock.....	378	87
032	Fire-Arm.....	II, 389	515
033	Washing-Machine.....	II, 328	470
034	Washing-Machine.....	II, 328	470
035	Hand Corn-Planter.....	312	48
036	Elastic Bearings for Railroad Chairs.....	II, 91	304
037	Amalgamator.....	350	71
038	Railroad-Car Brake.....	II, 68	290
039	Sub-soil Plough.....	325	52
040	Parallactic Instrument for Measuring Distances.....	II, 8	249
041	Fire-Arm.....	II, 389	513
042	Apparatus for Rolling and Handling Barrels, &c.....	II, 435	536
043	Washing-Machine.....	II, 328	472
044	Reaping-Machine.....	334	61
045	Revolving Last-Holder.....	II, 182	370
046	Machine for Raking and Loading Hay.....	331	60
047	Machine for Husking Corn.....	300	34
048	Lattice-Bridge.....	II, 23	259
049	Driving Wheels for Steam-Drags and Propellers.....	II, 100	310
050	Steam Land-Propeller.....	II, 91	305
051	Vise.....	426	120
052	Making Screws.....	418	114
053	Mitre-Box.....	II, 187	374
054	Nail-Machine.....	398	105
055	Hand Pegging Machine.....	II, 283	446
056	Hydro-Steam Engine.....	593	213
057	Harness Trace-Coupling.....	II, 277	443
058	Steam-Pressure Gauge.....	606	222
059	Rotary Pump.....	II, 122	324
060	Cutting Flour-Mill.....	II, 157	350
061	Machine for manufacturing Reed-Boards for Melodeons.....	II, 343	482
062	Operating Head-Blocks for Saw-Mills.....	II, 208	390
063	Water-Proof Percussion Caps.....	II, 415	115
064	Shutter-Operator.....	419	484
065	Machine for Coating Cloth with Paint.....	II, 347	485
066	Machine for Polishing Painted Cloth.....	II, 347	173
067	Cleaning India-Rubber.....	513	493
068	Pocket-Book.....	II, 362	97
069	Shears for Sheet Metal.....	393	322
070	Effecting Uniform Pressure upon the Pumping Piston of Double-Acting Steam Pumps.....	II, 120	296
071	Three-wheeled Carriage for Children.....	II, 77	517
072	Breech-Loading Fire-Arm.....	II, 398	510
073	Tool for Watchmakers.....	II, 382	70
074	Threshing Machine.....	349	527
075	Sabot for Rotating Shot and Shell.....	II, 419	454
076	Bedstead.....	II, 297	448
077	Attaching Pads to Saddle-Trees.....	II, 284	387
078	Operating Head-Blocks of Sawing-Machines.....	II, 203	407
079	Wheelwright's Machinery.....	II, 234	76
080	Die-Stock for Cutting Screws.....	359	400
081	Rotary Shingle Machine.....	II, 220	396
082	Repairing Circular Saw Teeth.....	II, 217	463
083	Ice-Cream Freezer.....	II, 314	33
15,084	Attaching Teeth to Sickle-Bars of Harvesters.....	296	

No.	Invention or Discovery.	Text.	Plates.
15,085	Sounding Whistles for Fog-Signals.....	636	242
086	Mandrel for making Gutta-Percha Tubing.....	513	173
087	Feed Apparatus for working Gutta-Percha.....	512	173
088	Hermetically Sealing Preserve-Cans.....	II, 302	457
089	Applying Horse Power to Fire-Engines.....	545	186
090	Safe for Ships and other Vessels.....	631	238
091	Machine for Sticking Pins.....	408	107
092	Constructing Railroad Car-Wheels.....	II, 101	311
093	Register and Ventilator.....	573	202
094	Bolt for Shutters.....	420	116
095	Governor for Steam Engines.....	598	216
096	Reaping and Mowing Machine.....	332	61
097	Carriage.....	II, 73	294
098	Apparatus for Cutting the Strings that secure Corks in Bottles.....	II, 436	537
099	Platform-Supporter.....	II, 45	275
100	Potato-Digger.....	326	63
101	Seed-Planter.....	316	44
102	Rotary Excavator.....	II, 30	263
103	Attaching Horses to Shafts of Vehicles.....	II, 96	308
104	Seeding-Machine.....	338	64
105	Corn-Sheller.....	264	6
106	Seed-Planter.....	317	47
107	Machine for Stuffing Horse-Collars.....	II, 275	442
108	Straw-Cutter.....	345	63
109	Casting Car-Wheels.....	II, 99	310
110	Repeating Fire-Arm.....	II, 407	522
111	Japanning Pins.....	407	109
112	Machine for Sticking Pins.....	409	107
113	Metal Beams.....	389	94
114	Hand Corn-Planter.....	313	43
115	Marble-Sawing Machine.....	II, 257	427
116	Machine for Threshing and Winnowing Grain.....	347	69
117	Machine for Counting Coin.....	II, 4	247
118	Machine for Bending Hay-Forks.....	367	81
119	Saw-Set.....	II, 212	395
120	Safety-Valve.....	617	230
121	Making Sheets of Leather from Curriers' Shavings.....	II, 278	214
122	Differential Governor for Marine and other Engines.....	594	240
123	Ship's Capstan and Windlass.....	633	91
124	Lock.....	384	242
125	Strapping Tackle-Blocks.....	637	295
126	Carriage-Spring.....	II, 76	453
127	Silver Plate Cake and Fruit Basket.....	II, 295	465
128	Molasses Pitcher.....	II, 318	381
129	Devices in Planing Machines.....	II, 195	391
130	Mechanism for Adjusting Circular Saws obliquely to their Arbors.....	II, 209	161
131	Brush for Cleaning Travellers.....	488	466
132	Refrigerator.....	II, 319	451
133	Machine for Paring Apples.....	II, 292	323
134	Valve for Double-Acting Pumps.....	II, 121	418
135	Brick-Press.....	II, 246	87
136	Door-Lock.....	380	48
137	Plough.....	321	129
138	Feeder for Roller Cotton-Gins.....	442	532
139	Adjustable Punch for Setting Artificial Teeth.....	II, 427	250
140	Odometer.....	II, 9	512
141	Cartridges.....	II, 385	339
142	Non-Elastic Bands for Bales of Cotton and other Fibrous Materials.....	II, 139	467
15,143	Smoothing-Iron.....	II, 321	

No.	Invention or Discovery.	Text.	Plates.
15, 144	Fire-Arm	II, 390	514
145	Clutch for Flour-Packer	II, 143	341
146	Harvester	274	14
147	Auger-Handle	351	71
148	Machine for Paring Apples	II, 293	451
149	Feathering Paddle-Wheels	627	236
150	Port-Folio	II, 362	494
151	Revolving Harrow	268	11
152	Corn-Harvester	283	23
153	Operating Cutters in their Heads for Irregular Forms	II, 177	367
154	Machine for Sizing Hat-Bodies	449	132
155	Coal-Heating Baker	534	181
156	Water-Heater surrounding Fire-Pots of Cooking Apparatus	542	184
157	Pre-Tanning Composition	II, 288	---
158	Saponifying Fats	506	---
159	Welding Iron Plates	375	85
160	Mowing Machine	305	38
161	Composition for Working Steel	503	---
162	Reflecting Quadrant	II, 11	251
163	Self-Setting Saw	II, 198	382
164	Printing Instruments for the Blind	II, 366	498
165	Smoothing Iron	II, 322	467
166	Hemp-Brake	453	137
167	Fire-Arm	II, 391	514
168	Alarm Lock	379	88
169	Securing Shafts to Axles	II, 63	287
170	Vise	426	119
171	Lime and Guano Spreader	344	67
172	Locomotive Lamp	567	199
173	Rotary Pump	II, 117	320
174	Reaper	331	56
175	Water-Wheel	II, 129	330
176	Shoemakers' Edge-Plane	II, 285	448
177	Cooling and Drawing Fluids from Casks, &c.	II, 110	315
178	Felling Trees	II, 231	406
179	Detaching Horses from Vehicles	II, 96	307
180	Hanging Grindstones	II, 154	348
181	Adjustable Cut-Off for Steam Engines	595	214
182	Seed-Planter	317	49
183	Plotting-Instrument	II, 11	251
184	Wrench for Gas-Pipe	431	122
185	Envelope	II, 336	480
186	Loom	460	144
187	Attachment to Ice-Boats	622	232
188	Portable Field-Fence	II, 33	266
189	Running-Gear of Carriages	II, 76	295
190	Tool for Cutting Metals	396	97
191	Running Gear of Vehicles	II, 96	307
192	Tubular Elastic Valve	II, 125	326
193	Self-Regulating Wind-Wheel	II, 137	338
194	Hand Seeding-Machine	336	57
195	Machine for making Rake-Teeth	424	118
196	Turning Tapering Forms	II, 178	368
197	Pug-Mill for mixing Clay	II, 248	419
198	Fountain Lamp	565	198
199	Washing-Machine	II, 328	472
200	Tidal Alarm-Buoy	624	234
201	Safety-Hatch for Warehouses	II, 41	272
202	Fire-Arm	II, 391	514
203	Dividing Shoe for Mowing Machines	306	41
204	Harvester	275	15
15, 205	Cutting Apparatus for Harvesters	284	21

No.	Invention or Discovery.	Text.	Plates.
15, 206	Safety-Can for Burning-Fluids	537	182
207	Operating Cut-Off Valves for Steam-Engines	613	227
208	Cut-Off Valve-Check for Steam-Engines	609	224
209	Spring-Bottom for Bedsteads	II, 299	456
210	Grain Drill	267	10
211	Operating Steam-Valves of Steam-Pumps	II, 123	324
212	Shield to Protect Breastpins	II, 335	475
213	Farm Gate	II, 36	269
214	Securing Tire on Wheels	II, 94	306
215	Dental Forceps	II, 422	529
216	Machine for Sawing Felloses	II, 199	383
217	Brake for Wagons	II, 65	288
218	Melodeon	II, 342	481
219	Machine for Reaming and Tapping Gas-Fittings	556	192
220	Framing and Straining Wood-Saws	II, 217	396
221	Rotary Pump	II, 122	324
222	Concentrating Apparatus for Sulphuric Acid	495	166
223	Metallic Pen	II, 356	491
224	Machine for Cutting and Coring Apples	II, 290	451
225	Base-Piece of Locomotive Smoke-Stacks	606	222
226	Metallic Hook for Labels	II, 444	541
227	Operating Valves of Steam-Pumps	II, 123	326
228	Making Boxes of Paper Pulp	II, 352	486
229	Steam-Pressure Regulator	607	223
230	Machine for Sawing Stone	II, 261	433, 434
231	Refrigerating Pitcher	II, 319	466
232	Paper-Clip	II, 348	486
233	Turning Carriage, &c., Axletrees	II, 72	292
234	Adjusting Carriage Springs	II, 76	295
235	Bedstead	II, 297	455
236	Harvester	275	15
237	Raking Attachment to Reapers	330	59
238	Match-Machine	II, 447	543
239	Lock	384	93
240	Breech-Loading Fire-Arm	II, 399	518
241	Machine for Grinding Butt Hinges	371	83
242	Marble-Sawing Machine	II, 257	428
243	Disinfecting Pastilles	523	---
244	Gun-Carriage	II, 413	523
245	Netting Machine	469	158
246	Steam-Gauge	606	222
247	Brass-Kettle Machine	376	86
248	Machine for Mincing Meat	II, 316	464
249	Bedstead	II, 296	453
250	Swinging Spout for Feeding Mill-Stones	II, 162	353
251	Independent Seconds Movement for Watches	II, 19	254
252	Reaping and Mowing Machine	333	55
253	Machine for Sweeping Streets	II, 51	279
254	Machine for Making and Kneading Dough	II, 313	462
255	Corn and Cob Mill	II, 156	350
256	Balance-Gate for Flumes in Water-Power	II, 111	316
257	Blasting Powder	II, 20	---
258	Curtain Fixtures	II, 312	461
259	Steam-Pressure Indicator and Regulator	607	223
260	Cotton-Seed Planter	311	43
261	Machinery for Felting Hat-Bodies	445	131
262	Magazine Hammer for Fire-Arms	II, 403	519
263	Filter Attachment for Faucets	II, 107	314
264	Guard-Finger for Harvesters	292	30
265	Machines for Mowing Grass and Cutting Grain	303	38
15, 266	Macaroni Server	II, 316	464

No.	Invention or Discovery.	Text.	Plates.
15, 267	Dry-Lime Gas Purifier	508	170
268	Machinery for Combing Wool	493	165
269	Machine for Hulling and Scouring Grain, Seed, &c.	299	33
270	Padlock	382	89
271	Method of Extinguishing Fires	546	197
272	Machine for Upsetting Tire	II, 94	306
273	Drawing Water from Wells	II, 131	331
274	Rotary Pump	II, 122	325
275	Roofing-Cement	502	-----
276	Brick-Machine	II, 240	413
277	Vise	426	119
278	Dies for Stamping or Pressing Sheet Metal	359	75
279	Apparatus for Hitching Horses, Clothes-Lines, &c.	II, 443	540
280	Rotary Pump	II, 123	324
281	Rotary Steam-Engine	599	217
282	Machine for Rounding and Backing Books	II, 335	476
283	Tool for Index Lettering	II, 341	480
284	Smut-Machine	II, 163	355
285	Stave-Jointer	II, 226	403
286	Securing Pearl Ornaments in Handles of Cast Metal	389	97
287	Shutter Operator	419	115
288	Attaching Shafts to Vehicles	II, 96	307
289	Machine for Quarrying and Cutting Stone	II, 264	434
290	Machinery for Felting Hat-Bodies	445	130
291	Jacquard Loom	463	148
292	Fire-Arm	II, 391	512
293	Brick Machine	II, 237	411
294	Curry-Comb	II, 440	539
295	Loom	460	147
296	Reversible Horse-Power	II, 155	349
297	Wheel for Steam-Carriages	II, 77	296
298	Balancing and Propelling Life and Property Saving Vessels	638	244
299	Stone-Sawing Mill	II, 265	435
300	Apparatus for Raising and Dumping Coal	II, 26	261
301	Dovetailing Machine	II, 174	364
302	Shingle Machine	II, 220	399
303	Tanning Hides	II, 288	-----
304	Guiding Circular and other Saws	II, 208	390
305	Locomotive Reflector Lamp	568	199
306	Horse-Shoe	372	84
307	Breech-Loading Fire-Arm	II, 399	518
308	Brush for Dressing Warps	490	-----
309	Water-Wheel	II, 129	329
310	Turning Machine	II, 231	406
311	Raking Attachment to Harvesters	292	31
312	Hand Printing-Press	II, 376	508
313	Machinery for Cleaning the Top-Flats of Carding Engines	435	124
314	Knitting Machine	454	138
315	Automatic Cannon	II, 383	511
316	Base-Damper for Melodeons, &c.	II, 343	483
317	Constructing Dams	II, 27	261
318	Cooking-Stove	579	205
319	Sounding-Guard for Vessels	639	242
320	Straw Cutter	344	67
321	Plough	322	49
322	Corn-Planter	309	41
323	Electro-Magnetic Fog-Bell	625	234
324	Controlling Feed-Water Apparatus for Steam-Boilers	590	211
325	Nutmeg-Grater	II, 314	463
326	Rope Machine	474	141
15, 327	Turning Ornamental Forms	II, 178	366

No.	Invention or Discovery.	Text.	Plates.
15, 328	Marble-Sawing Machine	II, 268	430
329	Machine for Striking Unburnt Bricks	II, 247	418
330	Self-Setting Tail-Block for Sawing Mills	II, 204	386
331	Fire-back of Fire-places	545	185
332	Door-Knob	361	77
333	Straw-Cutter	345	67
334	Cutting Device for Harvesters	II, 454	12
335	Stone-Dressing Machine	II, 263	436
336	Collodion for Photographic Pictures	II, 359	-----
337	Apparatus for Slaughtering Hogs	II, 449	541
338	Frames of Mowing and Reaping Machines	307	42
339	Railroad-Car Wheel	II, 100	311
340	Machine for Composing and Distributing Type	II, 381	510
341	Tinting Photographic Pictures	II, 359	-----
342	Straw-Cutter	344	66
343	Sash-Lock	416	112
344	Ploughs	322	43
345	Three-Wheel Pleasure Carriage	II, 73	293
346	Adjustment of Mill-Stones	II, 160	352
347	Fire-Arms	II, 392	514
348	Making Seamless Metal Tubes	396	97
349	Machine for Threshing and Cleaning Grain in the Field	347	68
350	Cattle Stall	259	1
351	Detachable Shaft-Coupling	II, 87	302
352	Mop-Heads	II, 317	465
353	Washing Machine	II, 326	470
354	Mowing Machines	305	40
355	Car-Coupling	II, 85	301
356	Regulating the Conical Pendulum of Time-Keepers	II, 10	250
357	Charging Cannon	II, 384	512
358	Printers' Composing Stick	II, 364	495
359	Centro-lineads	II, 1	245
360	[Cancelled]	-----	-----
361	Preparing Vegetable Dye-Stuff	505	-----
362	Fenders for Fire-places	545	186
363	Filtering Medium	II, 108	314
364	Lard-Lamps	567	198
365	Cutter-Heads for Planing Machines	II, 195	379
366	Attaching Sleigh-Bells to Straps	II, 449	545
367	Door Knobs	361	76
368	Driving Circular Saws	II, 210	392
369	Fixed Cartridges	II, 386	512
370	Percussion Tube-Primers	II, 415	525
371	Vibratory Steam Engines	602	218
372	Artificial Hands and Arms	II, 423	529
373	Self-Acting Electric Telegraphs	II, 16	254
374	Machine for Moulding and Pressing Building-Blocks from Clay, &c.	II, 247	417
375	Machines for Felting Hat-Bodies	445	130
376	Gas Stop-Cocks	510	172
377	Harvester	275	16
378	Fly-Trap	II, 450	446
379	Cutter-Stock Metal Planers	391	98
380	Machine for Sawing Stone or Marble	II, 264	434
381	Cotton-Gin	439	130
382	Polishing Machines	II, 197	382
383	Marble-Sawing Machine	II, 259	432
384	Reacting Water-Wheel	II, 130	329
385	Tapping Fluids under Pressure	II, 110	315
386	Valve for Type-Casting Machines	II, 380	510
15, 387	Self-Raker for Harvesters	294	31

No.	Invention or Discovery.	Text.	Plates.
15, 388	Repeating Fire-Arm	II, 407	520
389	Glass Furnace	552	189
390	Scaffold for Shingling Roofs	II, 47	277
391	Liquid used as a Motive Power	515	-----
392	Riding Saddle	II, 283	446
393	Friction-Match Machine	II, 446	542
394	[Cancelled.]	-----	-----
395	Pendulum Pump for Ships	634	240
396	Sewing Machine	479	157
397	Trigger-Protector for Fire-Arms	II, 411	522
398	Riving equal Pieces from a Block	II, 197	382
399	Machine for Sawing Coopers' Hoops	II, 199	383
400	Relieving Steam Slide-Valves from Pressure	614	226
401	Valves of Accordeons	II, 333	475
402	Folding-Guide of Sewing Machines	486	154
403	Planing Machine	II, 193	380
404	Machine for Sewing Pins upon Paper, &c	410	112
405	Chair	II, 305	458
406	Pegging Jack	II, 282	446
407	Portable Folding Table	II, 324	469
408	Raking Apparatus of Corn and Cane Harvesters	284	19
409	Cutting Apparatus of Corn and Cane Harvesters	283	22
410	Machine for Sawing Stone in Taper Form	II, 264	432
411	Apparatus for Solar Salt Evaporation	528	178
412	Churn	260	3
413	Metal-Plane	391	99
414	Sawing Machinery	II, 202	387
415	Harness for Weaving Seamless Bags	491	162
416	Shutter Operator	420	116
417	Fountain-Pen	II, 354	491
418	Pyrogenous Lubricating Oil	522	-----
419	Machine for Sawing Marble	II, 260	431
420	Fore-and-aft Rig of Vessels	638	243
421	Sugar Evaporator	532	180
422	Bake-Oven	572	201
423	Stave Machinery	II, 227	402
424	Steam-Boiler Furnace	589	210
425	"Patching" Rifle-Shot	II, 418	-----
426	Corn Planter	309	42
427	Clamp for Plumbers	357	76
428	Portable Printing Press	II, 377	508
429	Stave Machine	II, 227	404
430	Inserting Faucets into Fluids under Pressure	II, 107	314
431	Hand Seed-Planter	314	45
432	Soap-Boiling Apparatus	529	178
433	Potatoe Planter	315	51
434	Coal-Scuttle	II, 27	261
435	Knitting Machine	455	139
436	Machine for Binding Grain, &c	258	1
437	Printing Press	II, 370	496
438	Sawing Machine	II, 201	383
439	Gutta Percha Apparatus for Covering Wire	511	172
440	Pick-Pocket Detector	II, 441	539
441	Carving Wood	II, 235	408
442	Smut-Machine	II, 164	354
443	Machinery for Forming Hat Bodies	445	132
444	Ox Yoke	350	70
445	Turning Ellipsoidal Forms	II, 176	364
446	Machine for Manufacturing Spools	II, 225	402
447	Hanging Window-Sash	II, 59	285
15, 448	Apparatus for Purifying White Oxyde of Zinc	533	180

No.	Invention or Discovery.	Text.	Plates.
15, 449	Clover-Seed Harvester	281	19
450	Sad-Iron Heater	II, 320	466
451	Machine for Cutting out Soles of Boots and Shoes	II, 269	438
452	Apparatus for Smoking Meats	II, 317	465
453	Cultivator	267	9
454	Mould for Hollow Projectiles	II, 417	526
455	Flour Bolt	II, 151	346
456	Face-Plate for Locks	388	94
457	Bee-Hive	257	1
458	Chimney Damper	540	183
459	Faucet	II, 105	313
460	Whiffle-Tree	II, 101	311
461	Whiffle-Tree	II, 102	311
462	Pegging-Jack	II, 281	445
463	Operating Gates for Water-Wheels	II, 130	330
464	Fly-Trap	II, 451	546
465	Weather-Strip for Doors	II, 28	262
466	Reel for Fishing-Rods	II, 442	540
467	Mortising Machine	II, 188	376
468	Spike Machine	422	117
469	Sewing Machine	479	155
470	Sewing Machine	480	157
471	Brick-Press	II, 244	417
472	Ice-Breaking Boat	622	232
473	Attaching and Detaching Boats to and from their Tackle	623	233
474	Water-Closet	II, 57	283
475	Envelope	II, 336	480
476	Sash-Supporter	II, 47	277
477	Printing Press	II, 371	503
478	Carpet Fastening	II, 303	457
479	Metal Pavement	II, 42	273
480	Mechanism for Compressed Air Railroad-Signals	II, 91	305
481	Bagasse Furnaces	550	188
482	Wrench	430	122
483	Breaking Ice	II, 444	542
484	Knitting Machines	456	137
485	Straw Cutters	346	63
486	Blanks for Bank-Notes, Bills, &c	II, 334	-----
487	Guiding Line Ferry-Boats or Flying Bridges	623	233
488	Corn and Cob-Mills	II, 158	351
489	Locks	385	91
490	Pen-Holder	II, 356	491
491	Lightning-Rods	II, 7	248
492	Rotary Knitting Machines	458	140
493	Door-Stay	364	78
494	Heating Feed-Water Apparatus for Steam-Boilers	590	211
495	Combined Steam and Hot-Air Cooking Stove	576	204
496	Breech-Loading Fire-Arms	II, 401	517
497	Coloring Photographic Pictures on Glass	II, 359	-----
498	Hemp-Brakes	453	137
499	Stuffing Leather	II, 280	-----
500	Bolt for Vault and Safe Doors	354	73
501	Securing Types on Rotary Beds	II, 381	510
502	Corn-Sheller	265	6
503	Washing-Machine	II, 326	470
504	Invalid Supporters	II, 426	531
505	Production of Oil from Cannel Coal	521	-----
506	Preparing Oil from Bitumens	520	-----
507	Mowing Machines	306	41
508	Felting Hat-Bodies	443	130
15, 509	Odometers	II, 9	250

No.	Invention or Discovery.	Text.	Plates.
15, 510	Steering-Apparatus	636	242
511	Accordeons	II, 333	475
512	Dies for Screw Planks	358	76
513	Manufacture of Sheet-Metal Ware	397	98
514	Fruit-Box	II, 438	538
515	Nail-Plate Feeding Apparatus	399	103
516	Fire-Arm	II, 393	515
517	Filtering-Sand for Cider	506	---
518	Raising, Lowering, and Opening Farm-Gates	II, 38	270
519	Coal-Hod	541	183
520	Vehicle for Paint Compounds	504	---
521	Fire-Arm	II, 392	515
522	Fire-Arm	II, 393	515
523	Sash-Fastener	415	112
524	Gold Washer and Amalgamator	351	71
525	Improved File	365	79
526	Artificial Stone	II, 262	---
527	Attaching Inkstands to Desks	II, 340	477
528	Spring-Pulley for Window-Sashes	II, 59	284
529	Machine for Throwing Projectiles	II, 418	526
530	Manufacturing Chairs	II, 172	361
531	Treating India-Rubber	515	---
532	Lettering and Ornamenting Glass	II, 339	---
533	Corn Harvester	283	22
534	Manufacture of Hat-Bodies	449	135
535	Spinning Frame	487	160
536	Chimney Cowl	538	182
537	Extracting Stumps	II, 53	281
538	Planing Metal	392	96
539	Valve-Gear for Steam-Hammers	603	220
540	Rock-Drill	II, 248	419
541	Blast-Furnace	368	80
542	Processes for Separating Silver from the Ore	525	177
543	Machine for Wringing Clothes	II, 309	460
544	Ore Washer	404	105
545	Refrigerator	II, 320	466
546	Brick-Machine	II, 241	414
547	Vapor-Burning Lamp	569	199
548	Mould for Pressing Glass Fountain Lamps	II, 250	420
549	Lime-Kiln	II, 251	422
550	Furniture Polish	II, 314	---
551	Blastic Compound	503	---
552	Bedstead	II, 298	455
553	Concentration of Milk	519	176
554	Wheel for Carriages	II, 100	311
555	Door-Spring	363	78
556	Carpenter's Gauge	II, 179	367
557	Sash-Supporter	II, 47	277
558	Clamping and Upsetting Tire	II, 93	306
559	Regulating Velocity of Feed for Sawing-Mills	II, 203	386
560	Coupling Pipes	358	74
561	Farm-Fence for Rolling Ground	II, 32	266
562	Knife-Cleaner	II, 315	464
563	Felting Compound	504	---
564	Paddle-Wheel	626	236
565	Machine for Adding Numbers	II, 1	245
566	Machine for Sweeping Gutters	II, 53	281
567	Thorough-Braces for Carriages	II, 77	296
568	Cupping Instrument	II, 421	528
569	Harvesting Machine	296	33
15, 570	Machine for Pressing Bonnets	II, 429	533

No.	Invention or Discovery.	Text.	Plates.
15, 571	Machine for Forging Horse-Shoe Nails	367	81
572	Tenoning Machine	II, 229	405
573	Bristle-Separator	II, 301	456
574	Hand-Stamp	II, 378	509
575	Cart-Saddle	II, 283	446
576	Valve-Motion for Steam-Engines	612	226
577	Projectile	II, 416	525
578	Window-Sash	II, 58	285
579	Arrangement of Steam Cylinder within the Boiler	586	209
580	Washing Machine	II, 327	473
581	Head-Rest to be used in Railroad Cars	II, 81	299
582	Harvester	275	15
583	Vise	426	121
584	Self-Clearing Chimney Cowl	538	182
585	Water-proofing Textile Fabrics	442	---
586	Grapple for Raising Sunken Bodies	626	235
587	Apparatus for Boring Artesian Wells	II, 20	257
588	Machine for Swaging Iron	II, 456	85
589	Lock	386	93
590	Frame for Bleaching Ivory	498	166
591	Machine for Drilling and Dressing Stone	II, 263	435
592	Mosquito Canopy	II, 317	465
593	Wheelwright's Machine	II, 233	407
594	Preparing Linseed, &c., for Pressing	526	177
595	Rock-Drill	II, 249	420
596	Magneto-Electro Machine	II, 6	248
597	Applying one Stream of Water to assist in raising another	II, 128	329
598	Apparatus for Evaporating Salt	527	177
599	Wind-Wheel	II, 136	338
600	Instrument for Laying Out Rafters	II, 197	382
601	Hay-Rake	327	55
602	Instrument for Measuring Distances	II, 8	249
603	Apple-Parer	II, 290	450
604	Condenser for Steam-Engines	596	215
605	Self-Adjusting Fog-Bell	625	234
606	Cultivator	267	9
607	Manufacturing Seamless Hosiery	454	138
608	Dynamometer	II, 4	247
609	Bedstead	II, 296	453
610	Hand Seed-Planter	314	46
611	Ball-Caster for Trunks and Furniture	II, 303	457
612	[Number altered to 16,033.]	---	---
613	Air-Heating Furnaces	549	188
614	Automatic Attachment to Gas-Burners	555	192
615	Curtain-Fixtures	II, 312	461
616	Hand Corn-Planter	313	44
617	Water-Gauge for Steam-Boilers	590	212
618	Brick-Machine	II, 242	415
619	Amalgamator	350	71
620	Making Lead-Pipe	411	108
621	Bedstead	II, 298	454
622	Fountain-Pen	II, 355	490
623	Machinery for Filling Seine Needles	475	153
624	Bilge and Leakage Water-Indicator	630	238
625	Apple-Parer	II, 290	450
626	Cupping	II, 421	528
627	Machinery for Felting Hat-Bodies	444	129
628	Potato-Digger	326	52
629	Milking Cows	302	36
630	Grain Cleaner and Separator	II, 152	347
15, 631	Opening Farm-Gates	II, 38	270

No.	Invention or Discovery.	Text.	Plates.
15, 632	Brace	II, 456	73
633	Preventing Liquids from Boiling Over	535	181
634	Machine for Sizing Corn-Blanks	II, 431	534
635	Sewing-Machine	480	156
636	Lamp	563	197
637	Calendar-Clock	II, 2	245
638	Harvester	276	16
639	Machine for Feeding Paper to Printing-Presses	II, 376	506
640	Cotton Seed-Planter	311	43
641	Rotary Steam-Engine	600	217
642	Apparatus for Purifying Mineral Coal Oil	522	176
643	Apparatus for Distilling Mineral Coal Oil	520	176
644	Preparation of Drying-Oil from Bituminous Mineral Oil	522	-----
645	Apparatus for Arresting Carbon in Chimneys	540	183
646	Filter	II, 108	314
647	Street-Sprinkler	II, 50	278
648	Bedstead	II, 298	455
649	Plough	323	46
650	Adjustable Cut-Off for Steam-Engines	595	215
651	Charger for Shot-Pouches	II, 420	527
652	Boring and Mortising Hubs	II, 168	358
653	Hay-Rake	328	52
654	Plough	322	50
655	Raking-Attachment for Reapers	332	56
656	Machine for Testing Axes	352	72
657	Fountain Ruling-Pen	II, 355	490
658	Spring-Bedstead	II, 299	455
659	Harvesting-Machine	297	29
660	Pen and Pencil Case	II, 353	491
661	Churn	260	3
662	Ale and Beer Cooler	495	166
663	Condenser for Steam-Engines	596	215
664	Stiffening Hat-Bodies	527	-----
665	Manufacture of Black Bottle Glass	II, 249	-----
666	Buckle for Wearing-Apparel	II, 430	533
667	Rotary Steam-Engine	600	216
668	Candle-Moulding Machine	500	168
669	Harvesting-Machine	297	32
670	Whistle-Tree for Detaching Horses from Carriages	II, 101	311
671	Buckle for Wearing-Apparel	II, 430	533
672	Grain and Grass-Harvester	291	28
673	Invalid-Chair	II, 306	460
674	Straw-Cutter	346	63
675	Self-Waiting Table	II, 323	468
676	Curtain-Fixture	II, 313	462
677	Cutting-Device for Harvesters	285	22
678	Boring Hubs for Boxes	II, 170	359
679	Saw-Set	II, 212	393
680	Dress of Metallic Hemispherical Grinding-Mill	II, 158	352
681	Lady's Riding Saddle	II, 283	446
682	Breech-Loading Ordnance	II, 414	525
683	Apple-Parer	II, 291	450
684	Washing-Machine	II, 329	472
685	Steam-Engine	595	214
686	Extinguisher for Fluid-Lamps	565	198
687	Repairing Railroad Bars	353	72
688	Artificial Fuel	546	-----
689	Feeding Sawing-Mills	II, 203	387
690	Lubricating Throstle-Spindles	516	175
691	Seed-Planter	317	46
15, 692	Attaching Horses to Vehicles	II, 95	307

No.	Invention or Discovery.	Text.	Plates.
15, 693	Link of Horse-Powers	II, 156	349
694	Pan for Evaporating Sugar	531	179
695	Sewing-Machine	481	153
696	Hand Corn-Planter	313	48
697	Reversing Gear	II, 152	347
698	Metallic Car-Spring	II, 79	297
699	Collision Apparatus for Railroad Cars	II, 80	298
700	Screw-Cutter	417	113
701	Grain and Grass Harvester	271	12
702	Machine for Manufacturing the Wooden Part of Brushes	II, 301	456
703	Process of Manufacturing Delaines	442	-----
704	Hanging Ships' Rudders	634	240
705	Cutting and Drawing Wire	428	121
706	Casting Artificial Tooth Plates by the Electrotpe Process	II, 428	532
707	Cartridges	II, 385	512
708	Lock	378	87
709	Wind-Mill	II, 133	332
710	Machine for Sweeping Streets	II, 51	280
711	Washing Machine	II, 329	471
712	Suspending Hydraulic Puppet-Valves	II, 115	318
713	Marble-Sawing Machine	II, 259	431
714	Wind-Mill	II, 133	333
715	Machinery for Forming Hat-Bodies	446	135
716	Drawing from Manufacturing Enclosures Waste Gases, &c.	II, 111	315
717	Jacquard-Loom	464	146
718	Saw-Gummer	II, 198	382
719	Faucet	II, 105	313
720	Shingling Bracket	II, 223	400
721	Harvester	276	16
722	Harvester	277	17
723	Furnace Smoothing-Iron	II, 322	467
724	Lamp for Burning Fluids	565	197
725	Adjusting Carriage-Top	II, 78	297
726	Chimney Cap	537	182
727	Machine for Dressing Felloes	II, 175	366
728	Feed-Motion for Shingle Machines	II, 222	400
729	Heading Bolt	354	73
730	Dentist's Forceps	II, 422	529
731	Saw-Set	II, 213	394
732	Reefing Ships' Sails upon Extra Yards	635	241
733	Granulating Metals	395	96
734	Fire-Arm	II, 393	515
735	Harvester	278	18
736	Preparation of Hides for Tanning	II, 288	-----
737	Attaching Shafts to Sleighs	II, 93	306
738	Machine for Cutting Paper	469	151
739	Carpenter's Bench	II, 166	357
740	Printing-Press	II, 372	501
741	Churn	260	3
742	Locomotive and Steam-Boiler Furnace	582	207
743	Clevis	262	4
744	Riding-Saddle	II, 283	446
745	Variable Cut-Off for Steam Engines	602	219
746	Cotton-Picker	266	9
747	Shingle Machine	II, 221	400
748	Harvesting Machine	297	32
749	Shingle Machine	II, 221	397
750	Construction of Iron Fence Posts and Ties	373	84
751	Self-acting Rake for Harvesters	294	32
752	Fly-Trap	II, 451	546
15, 753	Oven	572	201

No.	Invention or Discovery.	Text.	Plates.
15, 754	Reefing Topsails.....	629	237
755	Corn Planter.....	309	40
756	Feeding and Sawing Shingles.....	II, 222	399
757	Stave-Jointer.....	II, 225	404
758	Adjusting the Slats of Window-Blinds.....	II, 57	284
759	Machine for Painting Carriage Wheels.....	II, 99	310
760	Explosive Shell.....	II, 419	526
761	Feed-Roller of Straw-Cutters.....	346	66
762	Metallic Brace for heels of Boots and Shoes.....	II, 269	438
763	Machine for Manufacturing Bed-Pins.....	II, 166	357
764	Hand-Stamp.....	II, 379	509
765	Corn-Sheller.....	265	7
766	Brick-Machine.....	II, 242	415
767	Manufacturing Ingrain Carpeting.....	437	
768	Machine for Notching Hoops.....	II, 181	369
769	Omnibus.....	II, 90	304
770	Securing Spokes in the Hubs of Wheels.....	II, 89	303
771	Al- Engine.....	II, 103	312
772	Making Brass Kettles.....	377	87
773	Machine for Grinding Saws.....	II, 214	395
774	Blow-Pipe.....	534	181
775	Lubricator.....	518	175
776	Cast-Iron Pavement.....	II, 42	273
777	Hay Rake.....	328	56
778	Hydraulic Brick-Press.....	II, 245	413
779	Self-Regulating Draught for Chimney Tops.....	541	183
780	Hoop Machine.....	II, 180	368
781	Carding Engine.....	434	126
782	Lantern.....	570	200
783	Lock and Freight Car.....	381	89
784	Carding Engine.....	434	123
785	Grain Separator.....	II, 153	348
786	Grain Threshing Machine.....	347	70
787	Churn.....	260	3
788	Tool for Forming Grooves around the Orifice of Bottles, &c.....	II, 436	537
789	Feather-Edge Gauge.....	II, 276	442
790	Sawing Machine.....	II, 202	387
791	Warm-Air Furnace.....	553	190
792	Machines for Sawing Marble.....	II, 254	426
793	[Cancelled].....		
794	Boat-Oar.....	621	232
795	Belt-Punch.....	II, 140	339
796	Reaping and Mowing Machine.....	333	62
797	Fire-Arm.....	II, 394	515
798	Brick Machine.....	II, 243	413
799	Gridiron.....	II, 315	463
800	Lock.....	386	94
801	Self-Heating Smoothing Iron.....	II, 322	468
802	Hermetically Sealing Bottles.....	II, 438	538
803	Steam Boilers.....	585	208
804	Journal-Box Alloy.....	496	
805	Wind-Mill.....	II, 134	334
806	Mixing Wheat Flour with Paints.....	504	
807	Machine for Softening Leather.....	II, 279	444
808	Brick-Machine.....	II, 243	414
809	Photographic Instruments.....	II, 358	492
810	Seed Planter.....	318	44
811	Saw-Gummer.....	II, 199	383
812	Portable Fence.....	II, 34	267
813	Excavator.....	II, 31	264
15, 814	Sawing Marble in Taper Form.....	II, 256	427

No.	Invention or Discovery.	Text.	Plates.
15, 815	Steam-Wagon.....	608	223
816	Machine for Finishing Leather.....	II, 278	443
817	Lubricating the Sheave-Pin of Ships' Blocks.....	632	239
818	Attaching Hubs to Axles.....	II, 89	303
819	Cultivator.....	II, 454	9
820	Locomotive for Roads, &c.....	604	221
821	Many-Wicked Candle.....	501	169
822	Seed Planter.....	317	46
823	Bridge.....	II, 22	258
824	Tailor's Measure.....	II, 432	534
825	Steam-Boiler Grate.....	589	210
826	Trunk.....	II, 289	449
827	Ore Washer.....	405	105
828	Putting Pillows and Bolsters into their Cases.....	II, 313	465
829	Hydro-Carbon Vapor Lamp.....	566	198
830	Furnace for Zinc White.....	551	189
831	Artificial Leg.....	II, 423	529
832	Furnace.....	549	188
833	Disconnecting Railroad Cars and Applying Brakes.....	II, 81	299
834	Regulating Valve for Steam-Engines.....	617	231
835	Machine for Separating Green Corn from the Cob.....	II, 310	461
836	Dash-Wheel for Washing and Bleaching.....	432	125
837	Ring-Bolt for Ships' and Boats' Tackle.....	630	238
838	Soda Fountain.....	530	179
839	Bumper Arrangement for Uncoupling Railroad Cars.....	II, 83	301
840	Vegetable-Cutter.....	II, 324	469
841	Smut-Mill.....	II, 159	352
842	Machine for Folding Paper.....	II, 350	491
843	Harvester.....	278	16
844	Construction of Hide Frames in Tan-Vats.....	II, 288	447
845	Buoy.....	624	233
846	Hose Coupling.....	II, 111	316
847	Machines for Mixing Mortar.....	II, 261	437
848	Fly-Trap.....	II, 451	516
849	Attaching Scythes to Snaths.....	336	57
850	Elastic Plate Paddles for Steam Vessels.....	640	243
851	Bending Wood.....	II, 234	408
852	Feeding Pulp to Paper-Making Machines.....	470	152
853	Measuring Fluids while Drawing.....	II, 109	315
854	Plate-Holder for Photographic Cameras.....	II, 358	492
855	Harvester.....	278	18
856	Machinery for Cleaning Wool.....	492	163
857	Sash Lock.....	416	114
858	Glass or Earthen Truss-Pad.....	II, 429	532
859	Machine for Cutting Irregular Forms.....	II, 176	365
860	Machine for Finishing Gas-Pipe Fittings.....	411	110
861	Nut Machine.....	401	101
862	Vise.....	427	119
863	Brick-Machine.....	II, 243	416
864	Bracket for Door-Springs.....	363	78
865	Hoop-Machine.....	II, 180	369
866	Pincers for Lasting Boots and Shoes.....	II, 273	440
867	Cutting Round Files.....	366	80
868	Mill-Stone Dress.....	II, 159	352
869	Coil-Spring for Railroad Cars.....	II, 80	297
870	Regulating the Draught of Steam Boilers.....	586	209
871	Sticking Pins in Paper.....	406	106
872	Guide for Working Button Holes.....	433	125
873	Canal Bridge.....	II, 21	257
874	Papering Pins.....	410	108
15, 875	Excavator.....	II, 31	264

No.	Invention or Discovery.	Text.	Plates.
15, 876	Manure-Distributor	302	35
877	Sticking Pins in Paper	406	108
878	Pump	II, 116	319
879	Grain-Separator	II, 154	347
880	Making Axe-Poles	352	72
881	Opening and Closing Farm-Gates	II, 37	269
882	Harvester	279	17
883	Firemens' Ladder	II, 445	541
884	Salt-Evaporator	528	178
885	Springs for Side-Spar Wagons	II, 98	308
886	Anti-Friction Bushing for Ships' Blocks	631	239
887	Plough	323	50
888	Pump	II, 118	320
889	Escapement Movement for Automatic Fans	II, 441	540
890	Hanging Reciprocating Saws	II, 216	396
891	Porte-Monnaie	II, 362	494
892	Sawing Stone	II, 265	427
893	Adjustable Stirrup for Saw-Mill Pitman	II, 206	389
894	Bee-Hive	258	1
895	Washing-Machine	II, 329	471
896	Applying Tan-Liquor to Hides	II, 286	-----
897	Uterine Supporter	II, 429	532
898	Submarine Exploring Armor	637	242
899	Machine for Bending Metal-Pipe	391	96
900	Spring Bed-Bottom	II, 295	453
901	Wheelwrights' Machine	II, 233	407
902	Finishing Caster-Wheels for Furniture	II, 304	457
903	Machinery for Forming Hat-Bodies	446	133
904	Manufacturing Cylinders for Cotton-Gins	441	127
905	Card-Teeth for Machine-Cards	437	124
906	Cotton-Gin	440	129
907	Gimlet-Handle	368	80
908	Arrangement of the Thills of Vehicles	II, 95	306
909	Railroad-Car Coupling	II, 70	291
910	Nail-Machine	398	100
911	Fastening Farm-Gates	II, 39	270
912	Machine for Cleaning Emery Wheels	364	79
913	Felling Trees	II, 230	406
914	Brace for Carriage-Springs	II, 76	295
915	Hinge for Picture-Cases	II, 361	-----
916	Chimney Cowl	538	182
917	Grain Threshing and Separating Machine	348	70
918	Cotton-Seed Planter	312	45
919	Apparatus for Cleaning Coulters of Ploughs	324	51
920	Corn-Sheller	265	7
921	Reed for Musical Instruments	II, 345	483
922	Pump	II, 119	320
923	Carriage	II, 74	293
924	Bituminous Ground for Photographic Pictures	II, 358	-----
925	Fire-Arm	II, 394	514
926	Sickle for Harvester	296	34
927	Harvester	279	18
928	Spike-Machine	422	117
929	Slain Hat-Bodies	450	136
930	Cotton-Gin	440	128
931	Head-Rest for Chairs	II, 306	458
932	Screw-Machine	417	113
933	Ship's Capstan	633	239
934	Preparing Clay for Alum-making	496	-----
935	Cast-Iron Railroad-Car Wheel	II, 100	311
15, 936	Cotton-Press	II, 144	342

No.	Invention or Discovery.	Text.	Plates.
15, 937	Scale for Instrumental Music	II, 345	483
938	Nail-Plate Feeding	398	100
939	Balance and Fastener for Window-Sash	416	112
940	Filing and Setting Saws	II, 214	393
941	Machine for Splitting Mackerel	II, 445	541
942	Lard-Rendering Kettle	515	174
943	Combined Table and Bedstead	II, 323	468
944	Bending Wood	II, 234	409
945	Washing-Machine	II, 330	472
946	Bottle Caster	II, 304	457
947	Making India-Rubber Hose	514	173
948	Machine for Shearing Sheep	341	65
949	Washing-Machine	II, 330	473
950	Process for Silvering Mirrors	525	-----
951	Rosin Soaps	530	-----
952	Cooking-Stove	579	204
953	Process of Coating Metals with Metals	525	-----
954	Capstan for Steam-Boats	623	233
955	Seed-Planter	318	50
956	Stove Blacking	497	-----
957	Device for Putting up Caustic Alkalies	496	-----
958	Washing-Machine	II, 329	472
959	Dyeing	505	169
960	Puppet-Valve	II, 126	326
961	Machine for Making Brass Kettles	376	85
962	Lock	387	93
963	[Cancelled]	393	98
964	Machine for Bending Sheet Metal	II, 427	532
965	Tooth Extractor	II, 427	532
966	Apparatus for Applying Freezing Mixtures to the Teeth	627	236
967	Buckets of Paddle-Wheels	500	168
968	Mould-Candle Machine	II, 340	477
969	Fastening Jewelry	II, 131	331
970	Current-Wheel	580	206
971	Cooking-Stove	524	-----
972	Preserving Dead Bodies	507	170
973	Gas-Generator	318	47
974	Seed-Planter	529	178
975	Evaporator for Salts	268	10
976	Handles of Agricultural Implements	II, 129	328
977	Water-Wheel	II, 164	354
978	Smut-Machine	II, 75	294
979	Perch-Coupling for Carriages	529	-----
980	Soap Mixture	II, 330	470
981	Washing-Machine	II, 315	463
982	Suspension Hook and Insect Insulator	497	166
983	Ivory-Bleaching Apparatus	576	204
984	Stoves and Furnaces	300	34
985	Machine for Husking Corn	536	182
986	Oil-Can	II, 97	309
987	Dumping-Wagon	II, 46	276
988	Securing Sheet-Metal Coverings for Roofs	II, 331	473
989	Washing-Machine	II, 401	518
990	Breech-Loading Fire-Arm	II, 93	306
991	Shaft-Tug	II, 357	492
992	Metallic Pen	II, 277	443
993	Back-Band Hook for Plough Harness	II, 436	537
994	Billiard-Table Cushion	II, 402	519
995	Breech-Loading Fire-Arms	II, 385	-----
996	Cartridge	II, 70	291
15, 997	Railroad-Car Coupling	II, 70	291

No.	Invention or Discovery.	Text.	Plates.
15,998	Working Over Vulcanized India-Rubber.....	515	-----
999	Projectile for Ordnance.....	II, 417	525
16,000	Machinery for Operating Pawl-Cases of a Ship's Windlass.....	636	242
1	Cutting Metals.....	395	95
2	Instrument called an Equatorial Sextant.....	II, 12	256
3	Odometer.....	II, 9	250
4	Railroad-Car Brake.....	II, 67	289
5	Railroad-Station Indicator.....	II, 92	305
6	Rocking-Chair.....	II, 307	460
7	Spading-Machine.....	343	67
8	Machines for Husking Corn.....	300	34
9	Automatic Musical Instrument.....	II, 344	483
10	Cowl or Draught-Accelerator for Steamers.....	543	184
11	Railroad-Car Brake.....	II, 67	289
12	[Cancelled].....	-----	-----
13	Catch for India-Rubber Shoes.....	II, 286	447
14	Fishing Implement.....	II, 441	540
15	Loom.....	461	142
16	Automatic Rake for Reapers.....	327	53
17	Burglars'-Alarm.....	II, 438	538
18	Lubricator.....	519	176
19	Spring-Frame for Packages.....	II, 448	544
20	Joint for Uniting a Mortising Chisel to its Mandrel.....	II, 187	374
21	Trowel.....	II, 266	436
22	Cotton-Gin.....	440	129
23	Machine for Husking Corn.....	301	36
24	Chain-Pump.....	II, 120	322
25	Hay-Rake.....	328	52
26	Sewing-Machine.....	482	157
27	Starting and Stopping Water-Wheels.....	II, 131	329
28	Throstle Spinning-Machine.....	488	160
29	Weaving Long Warps.....	491	159
30	Sewing-Machine.....	482	157
31	Apparatus for Heating and Cooking by Gas.....	557	193
32	Stirrup for Riding-Saddles.....	II, 284	448
33	Machine for Sawing Marble and Stone.....	II, 251	424
34	Self-acting Head and Tail Blocks for Sawing-Mills.....	II, 204	386
35	Drain-Tile Machine.....	II, 265	435
36	Fabric for Underlaying Carpets.....	II, 303	457
37	Power Loom.....	467	-----
38	Shutter-Fastener.....	419	115
39	Crushing-Rollers for Ores, &c.....	403	103
40	Cider-Mill.....	II, 156	349
41	Tool for Tenoning, &c.....	II, 228	405
42	Bumper-Brake for Railroad Cars.....	II, 68	289
43	Anti-Frost Faucet.....	II, 106	313
44	Steam-Drag.....	II, 87	302
45	Steering Apparatus for Ships.....	635	241
46	Draining Machine.....	II, 29	262
47	Fastening Door-Knob Spindles.....	362	77
48	Door-Fastener.....	360	78
49	Diaphragm Fluid Metre.....	II, 115	319
50	Sleeve-Fastener.....	II, 432	534
51	Draining Apparatus.....	530	179
52	Machine for Harvesting Grain.....	296	30
53	Spring-Holder for Slat Blinds.....	II, 20	257
54	Water-Gauge for Steam Boilers.....	591	212
55	Regulating the Draught of House Furnaces.....	552	190
56	Candle-Mould Machine.....	501	168
57	Grain and Grass Harvester.....	291	28
16,058	Fork for Handling heated Plates.....	II, 314	463

No.	Invention or Discovery.	Text	Plates.
16,059	Ventilating Ships, &c.....	634	240
60	Wagon.....	II, 98	308
61	Waste-Valve for Hydrants.....	II, 114	317
62	Hanging Reciprocating Saws.....	II, 216	396
63	Preparing Ratan for Umbrellas.....	II, 333	535
64	Cutting Files.....	365	79
65	Clothes-Dryer.....	II, 408	462
66	Medical Resprator.....	II, 425	530
67	Machine for Slicing Apples.....	II, 294	452
68	Washing-Machine.....	II, 331	473
69	Cleaning India-Rubber.....	514	174
70	Breech-Loading Fire-Arm.....	II, 402	518
71	Heating Feed-Water of Locomotive Engines.....	604	221
72	Breech-Loading Gun.....	II, 413	523
73	Gas-Regulator.....	558	193
74	Mill-Stone Dress.....	II, 160	352
75	Copper-Ring Gas-Retort Fastening.....	509	171
76	Projectile for Fire-Arms.....	II, 416	525
77	Weather-Strips for Doors.....	II, 28	262
78	Machine for Cutting Vegetables.....	II, 325	469
79	Harvester.....	279	18
80	Machine for Paring Apples, &c.....	II, 294	451
81	Excavator.....	II, 32	265
82	Manufacture of Iron and Steel.....	373	84
83	Smelting Iron Ore.....	371	84
84	Attaching Centre-Boards to Vessels.....	637	243
85	Machinery for Polishing Glass.....	II, 250	421
86	Machine for Sawing Marble.....	II, 260	431
87	Burglar-Proof Safe.....	415	110
88	Machine for Cleaning Grain.....	II, 153	347
89	Spring Latch and Lock.....	389	94
90	Lee-Board for Vessels.....	638	243
91	Propeller Shaft.....	628	237
92	Combined Steam Boiler and Kettle.....	585	209
93	Bedstead-Fastening.....	II, 297	454
94	Melodeon.....	II, 342	481
95	Stave-Jointer.....	II, 226	403
96	Cotton Gin.....	441	130
97	Binder for Grain Harvesters.....	292	28
98	Softening Cork by Steam.....	II, 440	539
99	Lubricating Car-Axle and other Journals.....	II, 61	286
100	Bleaching Process.....	498	166
101	Boring and Mortising Machine.....	II, 169	359
102	Tail-Piece for Violins, &c.....	II, 381	508
103	Grain-Separator and Conveyer.....	II, 156	348
104	Machine for Paring Apples.....	II, 293	452
105	Governing the Parallel Yielding of Lumber-Feeding Rollers.....	II, 186	374
106	Tailors' Pressing-Machine.....	II, 433	535
107	Machine for Stuffing Horse Collars.....	II, 275	442
108	Lathe for Cutting Fluted Mouldings.....	II, 185	370
109	Printing Press.....	II, 373	499
110	Fourneyron Turbine Wheel.....	II, 132	332
111	Treating Feldspar for Manure.....	527	-----
112	Alcohol Cooking Apparatus.....	542	184
113	Boxes and Axles, Journals, &c.....	II, 61	286
114	Machine for Polishing Leather and Harness.....	II, 277	443
115	Curry-Comb.....	358	74
116	Backgammon and Checker Board.....	II, 435	536
117	Manufacturing Cotton Yarns.....	494	165
118	Lathe for Planing Metal.....	390	99
16,119	[Cancelled.].....	-----	-----

No.	Invention or Discovery.	Text.	Plates.
16, 120	Stitch for Sewing Machines.....	487	154
121	Machine to aid in making Spokes by Hand.....	II, 223	401
122	Turning-Circle for Carriages.....	II, 78	296
123	Machine for Turning Boot-Legs.....	II, 268	438
124	Fire-Arm.....	II, 395	516
125	Travelling Trunk.....	II, 289	449
126	Apparatus for Hermetically Sealing Vessels.....	II, 302	457
127	Disk for Shelling Corn.....	266	8
128	"Edge-Keys" for making and Polishing the Edges of Boots and Shoe-Soles.....	II, 267	438
129	Gas-Cock and Swinging-Joint.....	507	169
130	Construction of Tubular Condensers and Heaters.....	592	212
131	Raking Attachment for Harvesters.....	293	32
132	Adjustable Cut-Off for Steam Engines.....	596	215
133	Apparatus for Hoisting Coal.....	II, 25	261
134	Finger-Bar arrangement for Harvesters.....	285	23
135	Hand Corn-Planter.....	314	49
136	Sewing Machine.....	483	155
137	Mop-Head.....	II, 317	465
138	Feeding Paper to Printing Presses.....	II, 374	504
139	Earthen Vessel for Hermetically Sealing Purposes.....	II, 266	435
140	Wristband Fastener.....	II, 434	535
141	Backing Electrotypes Plates.....	II, 336	477
142	Nut-Machine.....	402	102
143	Oven.....	572	201
144	Clamping Cutters in Cutter-Heads for Planing-Machines.....	II, 196	378
145	Raking Apparatus for Harvesters.....	330	58
146	Rock-Drilling Machine.....	II, 249	420
147	Railroad Chair.....	II, 85	301
148	Pentagraph.....	II, 11	250
149	Drying Cylinder for Fibrous Manufactures.....	443	127
150	Baby Walker and Jumper.....	II, 295	453
151	Expanding Tap.....	424	119
152	Ice-Saw.....	II, 444	541
153	Axle-Box.....	II, 60	286
154	Siphon à Clapet.....	II, 124	325
155	Converting Rotary into Reciprocating Motion.....	II, 162	355
156	Self-Acting Rake for Harvesting Machines.....	330	58
157	Applying Steam to Wood.....	II, 236	410
158	Wrench.....	432	122
159	Railroad Car Seats and Couches.....	II, 72	292
160	Railroad Car Seats and Couches.....	II, 71	292
161	Vault-Cover.....	II, 56	285
162	Engine for Grinding Paper Stock.....	472	149
163	Bramah Planing-Wheel.....	II, 191	377
164	Covering Thread with Wool.....	489	163
165	Steering Apparatus for Ships.....	635	241
166	Casting Metallic Tubes.....	390	95
167	Automatic Hand-Stamp.....	II, 379	509
168	Machine for Feeding Paper to Printing Presses.....	II, 374	505
169	Sail-Hank.....	628	237
170	Alloy Composition.....	502	225
171	Valve Gear for Steam Engines.....	610	225
172	Yielding-Joint for Portable Fences.....	II, 35	267
173	Float for Steam-Boilers.....	588	210
174	Machine for Pressing Hollow Brick.....	II, 237	411
175	Elliptograph.....	II, 6	248
176	Gas-Burner.....	555	191
177	Machines for Cutting the Stalks of Standing Corn.....	266	8
178	Valves, &c., in Siphon Rams.....	II, 124	325
16, 179	Process for Mashing Grain.....	525	177

No.	Invention or Discovery.	Text.	Plates.
16, 180	Pocket-Lamp.....	569	199
181	Prairie-Fence for Stock Pen.....	II, 34	267
182	Water Gauge for Steam Boilers.....	591	212
183	Teeth for Reaping-Machines.....	335	56
184	Potato-Digger.....	326	53
185	Planing-Machine.....	II, 193	381
186	Machine for Forging Iron.....	371	85
187	Approach-Opening Gate.....	II, 35	268
188	Nut-Machine.....	402	105
189	Preparing Tannate of Lime.....	526	473
190	Washing-Machine.....	II, 331	7
191	Corn-Shellers.....	265	374
192	Lathe for Irregular Forms.....	II, 186	3
193	Churn.....	261	18
194	Harvester.....	279	64
195	Implement for Rolling Seeds in the Earth.....	339	123
196	Cleaning the Top Flats of Carding Machines.....	434	376
197	Cutting Carved Mouldings.....	II, 189	47
198	Seed-Planter.....	319	112
199	Machine for Sticking Pins.....	409	538
200	Cigars.....	II, 439	37
201	Machine for Husking Corn.....	301	213
202	Cylinder and Piston of Hydraulic and Steam Engines.....	594	3
203	Churn.....	261	35
204	Machine for Husking Corn.....	302	444
205	Machine for Stamping Leather.....	II, 280	210
206	Feed Water Pump for Steam Boilers.....	587	476
207	Machine for Paging Books, &c.....	II, 334	502
208	Mode of Incorporating Bituminous Liquids with Wet Earths for Cement.....	502	55
209	Seeding Machine.....	339	4
210	Churn.....	262	167
211	Candle-Dipping Machine.....	498	43
212	Seed-Planter.....	II, 455	120
213	Connecting Tube.....	425	172
214	Making Cast-Steel.....	423	51
215	Making Gutta Serena Cord.....	512	546
216	Prairie Plough.....	II, 455	50
217	Trap for Catching Fish, &c.....	II, 452	55
218	Plough.....	II, 455	221
219	Seeding Machine.....	339	504
220	Charging the Receiver of a Locomotive with Compressed Air from fixed stations.....	605	339
221	Printing Press.....	II, 373	395
222	Adjustable Cant-Hook for Moving Logs, &c.....	II, 140	89
223	Machine for Grinding Saws.....	II, 214	369
224	Case for Padlocks.....	382	465
225	Planing and Tapering Wooden Hoops.....	II, 181	225
226	Bake-Pan.....	II, 318	75
227	Valve-Motion for Steam Engines.....	613	321
228	Spring Bolt.....	355	301
229	Pump.....	II, 119	544
230	Railroad Car Coupling.....	II, 86	313
231	Skate-Runner.....	II, 449	340
232	Filtering Faucet.....	II, 106	158
233	Lifting-Jack.....	II, 142	328
234	Sewing Machine.....	483	266
235	Portable Water-Mill.....	II, 128	161
236	Portable Field-Fence.....	II, 33	241
237	Sewing Machine.....	484	
16, 238	Ship's Windlass.....	635	

No.	Invention or Discovery.	Text.	Plates.
16, 239	Machinery for Grinding Paper Pulp.....	471	152
240	Machine for Paring Apples.....	II, 293	451
241	Boring Machine.....	II, 171	360
242	Photographic Bath.....	II, 357	492
243	Railroad-Gate for Cattle-Guard.....	II, 36	268
244	Harvesting Machine.....	298	31
245	Press for Printing Hat-Linings.....	II, 363	495
246	Chimney Cowl.....	539	183
247	Mowing and Reaping Machine.....	307	41
248	Machinery for Weaving Shade Cord.....	492	164
249	Grinding Mill.....	II, 157	351
250	Machine for Making Metallic Slats for Blinds.....	390	99
251	Reaping and Mowing Machine.....	334	61
252	Machinery for Wiring Blind Rods.....	428	120
253	Finger-Bar for Harvesting Machines.....	298	34
254	Securing Springs in Upholstery.....	II, 323	468
255	Apparatus for Coal Oil.....	520	176
256	Machine for Cutting and Folding Paper.....	II, 348	487, 488
257	Wind-Mill.....	II, 134	334
258	Reaping and Mowing Machine.....	334	54
259	Apparatus for Drying Grain in the Mass.....	544	185
260	Plough.....	324	51
261	Cider-Mill.....	II, 156	349
262	Steam-Boiler.....	585	208
263	Printing Press.....	II, 374	500
264	Securing Braces in the Snath of a Grain-Cradle.....	342	65
265	Portable Field Fence.....	II, 34	266
266	Machinery for Folding Paper.....	II, 351	490
267	Rotary Egg-Beater.....	II, 313	463
268	Stoves and Furnaces.....	577	204
269	Machine for Cutting India-Rubber Thread.....	514	174
270	Hand Printing-Press.....	II, 377	507
271	Loom.....	462	144
272	Spring-Hinge.....	370	82
273	Hoof Expander.....	371	82
274	Mowing Machine.....	306	40
275	Trimming Card-Clothing.....	438	129
276	Bedstead.....	II, 297	454
277	Plough.....	323	50
278	Paper-Pulp Engine.....	470	150
279	Hemp-Brake.....	453	138
280	Machine for Pointing Shoe-Pegs.....	II, 286	447
281	Sewing Machine.....	484	158
282	Door-Fastener.....	360	77
283	Blacksmith's Crane.....	II, 140	339
284	Operating Fluid Metres by hand.....	II, 109	314
285	Manufacture of Hosiery.....	454	138
286	Railroad Platform-Scales.....	II, 147	343
287	Hot-Air Furnace.....	548	187
288	Breech-Loading Fire-Arm.....	II, 403	519
289	Shirt.....	II, 431	534
290	Tinner's Shears.....	418	115
291	Corn-Sheller.....	265	8
292	Truss Pads.....	II, 428	532
293	Preparing Vegetable Fibres for Stuffing Mattresses.....	443	-----
294	Connecting Shafts with the Axletrees.....	II, 65	288
295	Hanging Reciprocating Gig-Saws.....	II, 216	396
296	Melodeon.....	II, 343	483
297	Knitting Machine.....	456	141
298	Lubricating Spindle Steps.....	516	174
16, 299	Fountain-Pen.....	II, 356	490.

No.	Invention or Discovery.	Text.	Plates.
16, 300	Portable Head-Rest.....	II, 93	306
301	Machine for Trimming Bolts.....	356	73
302	Weighing-Scales.....	II, 148	344
303	Converting Reciprocating into Rotary Motion.....	II, 163	354
304	Burning Charcoal.....	502	169
305	Machinery for Sizing Hat-Bodies.....	450	136
306	Loom.....	462	147
307	Automatic Rake for Harvesters.....	281	21
308	Machine for Cutting Veneers from the Log.....	II, 231	407
309	Adjusting the Bits of Carpenters' Planes.....	II, 191	378
310	Spring Bed-Bottom.....	II, 296	453
311	Machine for Feeding Paper to Printing Presses.....	II, 375	607
312	Horse-Fastening.....	II, 443	543
313	Harvesting Machine.....	298	34
314	Seed-Planter.....	319	45
315	Sewing Machine.....	485	152
316	Process of Grinding Paper Pulp.....	471	150
317	Smoke-Consuming Furnace.....	552	190
318	Hay-Rake.....	329	56
319	Manufacturing Callender Rolls.....	433	124
320	Refrigerator.....	II, 320	466
321	Sewing Machine.....	485	151
322	Machine for Sowing Seed Broadcast.....	343	67
16, 323	Counting Machine.....	II, 4	247

ADDITIONAL IMPROVEMENTS.

No.	Invention or Discovery.	Text.	Plates.
131	Hydraulic Heater, [10, 942].....	499	548
132	Ornamental Felt-Cloth, [13, 018].....	499	548
133	Candle-Stick, [14, 074].....	500	548
134	Daguerreotype Case, [9, 611].....	500	548
135	Grinding Mill, [12, 181].....	500	548
136	Excavating Machine, [14, 068].....	500	548
137	Mash Machine, [12, 205].....	501	549
138	Gas-Burner, [13, 130].....	501	550
139	Ventilating Railroad Cars, [11, 268].....	501	549
140	Grain-Binder for Harvester, [14, 036].....	501	549
141	Grass Harvester, [11, 155].....	501	550
142	Faucet, [14, 429].....	502	550
143	Means for Holding Window-Blinds, [12, 275].....	502	550
144	Coupling for Carriage, [11, 668].....	502	550
145	Breech-Loading Fire-Arm, [11, 198].....	502	552
146	Bulwarks for War-Vessels, [10, 174].....	503	551
147	Loom, [13, 724].....	503	551
148	Regulating Pumps by Wind-Wheels, [14, 626].....	503	552
149	Gas-Heater, [12, 267].....	503	554
150	Apparatus for Raising and Lowering Carriage Top, [14, 735].....	504	554
151	Rotary Brick-Machine, [15, 005].....	504	-----
152	Fire-Arm, [15, 521].....	504	552
153	Fender for Fire-Places [15, 362].....	505	552
154	Rotary Brick Machine, [15, 005].....	505	553
155	Harvesting Machine, [3, 803].....	505	553
156	Hubs for Carriage, [14, 294].....	505	554
157	Breech-Loading Fire-Arm [11, 198].....	505	554

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